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WEAVE
WEb Accessibility through VEt

WEB ACCESSIBILITY THROUGH VET

WEAVE Accessible Web Design VET Toolkit

BKPLUS EUROPE

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INNOVATION PARK JOIST

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1 INTRODUCTION

1.1 PROJECT INTRODUCTION

The Erasmus+ WEAVE project (2022-2-CY01-KA210-VET-000093954) seeks to advance digital inclusion by promoting web accessibility, aligning with key international and EU standards. The specific goals include equipping VET providers with resources on accessible web design, fostering online inclusion of individuals with disabilities, enhancing professional competences of web developers, and preparing stakeholders for the European Accessibility Act (EAA) implementation. This initiative stands firmly on the pillars of Europe's Digital strategy and relevant EU directives, championing a digitally inclusive Europe.

Access to information and communications technologies, including the Web, is defined as a basic human right in the United Nations Convention on the Rights of Persons with Disabilities. The European Union is committed to making life better for its citizens and actively promotes inclusion. Due to the digital transformation, coupled with the effects of the COVID-19 pandemic an increasing part of everyone's life takes place online. As highlighted by the EU Commission (2019) "Web accessibility is an inclusive practice that allows everybody, in particular persons with disabilities or some form of impairment, to perceive, understand, navigate, and interact with the online environment."

According to the EU Commission, an estimated 100 million people in the EU have some form of disability. Accessible websites allow for a more inclusive society and facilitate independent living for persons with disabilities. To promote online accessibility, the EU has adopted specific legislative measures:

• The Web Accessibility Directive (WAD) (Directive (EU) 2016/2102), which concerns only the public sector's websites and mobile applications, with the aim to make them more accessible

• The European Accessibility Act (EAA) (Directive (EU) 2019/882) on the accessibility requirements for products and services.

Therefore, the overall objective of WEAVE is to contribute to increasing digital inclusion by promoting web accessibility. To achieve this, it sets the following specific objectives:

1. Equip post-secondary VET providers with resources on accessible web design
2. Increase and encourage the inclusion of people with any kinds of disabilities online
3. Enrich the professional competences and the employment prospects of web developers
4. Increase the readiness of the stakeholders for the implementation of the European Accessibility Act (EAA)

The project is designed according to the pillars of Shaping Europe's Digital Europe strategy, the Web Accessibility Directive (EU) 2016/2102 and the European Accessibility Act (EAA) (Directive (EU) 2019/882).

1.2.1 PURPOSE OF THE DELIVERABLE

The purpose of the deliverable in question is to create a comprehensive and effective Accessible web design VET (Vocational Education and Training) Toolkit as part of the WEAVE project. Activity 3 aims to design a specific section within the toolkit dedicated to providing essential information about relevant EU legislation and initiatives. The goal is to equip VET educators with the necessary knowledge to educate their students about EU regulations and their significance, thereby promoting a better understanding of these important legal and regulatory frameworks in the educational community.

Furthermore, the deliverable intends to leverage the best practices identified in Activity 2 to develop educational materials suitable for post-secondary VET education. These materials are designed to be tailored to the needs of the target audience and are rooted in the best practices established by the project partners. Instead of attempting to be an exhaustive resource, the toolkit will compile a catalog of additional resources that VET educators can explore or share with their students, enriching their educational offerings.

In addition to addressing the technical aspects of web accessibility, the project also aims to cultivate a holistic understanding of the subject. This approach goes beyond providing technical guidance and information on regulatory obligations, as it also includes a section that underscores the importance of integrating accessibility features. By incorporating data on individuals with disabilities, the challenges they face, and the advantages of web accessibility, the deliverable seeks to foster empathy among VET educators and their students. The inclusion of anecdotal and empirical data obtained from focus groups adds a real-world perspective to the educational materials, enhancing their effectiveness.

Ultimately, the toolkit will be translated and made available in multiple languages, including Greek, Spanish, and English. This ensures that a wider audience can access the toolkit, facilitating the dissemination of valuable information across various linguistic and geographical boundaries. This deliverable is central to achieving the overarching goals of the project and contributes significantly to enhancing VET education in the field of web accessibility.

1.2.2 STRUCTURE OF THE DELIVERABLE

The deliverable is structured as follows:

Section 2 presents the *current accessibility and inclusion requirements of individuals with disabilities*. The section incorporates the following sub-sections:

- **Needs and Challenges:** Dives into the specific needs and hurdles of web accessibility for individuals with disabilities, crucial for creating an inclusive digital environment. Understanding these diverse needs is key, but challenges like inaccessible websites persist, limiting access and opportunities.
- **Benefits Web Accessibility Provides:** Exploring the benefits of web accessibility reveals its inclusive power, enabling diverse abilities to engage seamlessly online. This fosters belonging,

expands audience reach, ensures legal compliance, boosts SEO, and enhances usability, fostering economic and social inclusion.

- **Anecdotal and Empirical Data Gathered Through the Focus Groups:** These observations enhance our comprehension of the elements that define best practices in web accessibility from a subjective standpoint. JOIST and INERCIA DIGITAL conducted focus group studies on EU web accessibility, revealing challenges and a lack of awareness regarding regulations. They emphasized the need for education and inclusive design for genuine digital inclusion.

Section 3 presents the *specific designs and features promoting web accessibility for students to follow*. The entries in this section will encompass an inclusive catalog that offers specific web designs for students, while integrating best practices for web accessibility, serving as a comprehensive learning resource.

Section 4 presents *additional resources for further exploration* in the topic. These resources include projects that are relevant and noteworthy in the context of the main topic, as well as toolkits specifically designed for testing the accessibility of web content.

1.3 Introduction to EU legislation on accessibility

The European Union has an extensive and multifaceted legislative framework governing digital accessibility, encompassing various digital platforms and services beyond just websites. This holistic approach, detailed in subsection 1.3.3, showcases the EU's commitment to ensuring full participation in an increasingly digitized society, particularly for citizens with disabilities.

The WEAVE project specifically focuses on meeting the requirements outlined in the Web Accessibility Directive and the European Accessibility Act, concentrating on their effective implementation for websites. While the Web Accessibility Directive concentrates narrowly on improving website and mobile app accessibility, it applies solely to public sector entities. In contrast, the European Accessibility Act takes a broader approach, mandating accessibility standards across a wide range of products and services in both public and private sectors.

Both directives are anchored in four fundamental principles of accessibility:

- **Perceivability:** Ensuring information and user interface elements are presented in ways that users can comprehend.
- **Operability:** Guaranteeing that user interface elements and navigation are functional.
- **Understandability:** Ensuring information and user interface operations are easily comprehensible.
- **Robustness:** Making content durable enough to be reliably interpreted by various user agents, including assistive technologies.

These directives play a pivotal role in the EU's larger mission to cultivate an inclusive 'Union of equality.' They align with principles outlined in international frameworks like the United Nations Convention on the Rights of Persons with Disabilities, ratified by the EU and its Member States. Their objective is not

solely to improve user experience for individuals with disabilities but also to establish digital inclusion as a fundamental civil right.

1.3.1 Web Accessibility Directive (WAD)

The Web Accessibility Directive (Directive (EU) 2016/2102) came into effect on December 22, 2016, and required implementation in Member States by September 23, 2018, specifically targeting the public sector within the EU.

Its primary objective is to enhance the accessibility of public sector websites and mobile applications while standardizing these accessibility measures across the European Union. This harmonization aims to minimize obstacles for developers creating accessibility-related products and services. Ultimately, it seeks to facilitate easier access to public services for EU citizens, particularly those with disabilities.

The Directive embodies the Commission's commitment to forge a socially inclusive European 'Union of equality,' enabling full participation in the digital economy and society for all Europeans.

Key obligations outlined in the Directive include:

- Mandating an accessibility statement for each website and mobile app within public sector bodies. This statement should detail inaccessible content, alternatives, and contact information.
- Implementing a feedback mechanism, allowing users to report accessibility issues or request information from non-accessible content.
- Enforcing regular monitoring of public sector websites and apps by Member States, with reporting to the Commission every three years.

Furthermore, the Directive sets a standard for accessibility, specifying what constitutes "accessible," while offering limited exceptions for entities such as broadcasters and live streaming services. This technical standard aims to provide clarity on accessibility expectations.

The accessibility requirements outlined in the Directive emphasize four core principles: perceptibility, operability, understandability, and robustness. These standards are detailed in the harmonized European standard EN 301 549 v3.2.1 (2021-03), specified in Annex A of the standard.

Implementing Decision (EU) 2018/1523, an implementing act adopted by the European Commission, establishes a **model accessibility statement**.

Member States must also:

- Ease the implementation of accessibility standards for different categories of websites and mobile applications governed by current national legislation.
- Organize and conduct training initiatives focused on enhancing the accessibility of websites and mobile applications.
- Promote awareness regarding the necessary accessibility criteria.
- Foster the exchange of exemplary approaches facilitated by the Commission.

- Guarantee the presence of an efficient enforcement mechanism to ensure compliance.

Member States may maintain or enact legislation which goes beyond the minimum requirements of this directive.

Exclusions

This directive does not apply to public service broadcasters or non-governmental organisations that do not provide services that are essential to the public or specifically to people with disabilities. In addition, it does not apply to the following **content elements**:

- office file formats published before 23 September 2018, unless needed for administrative processes by the public sector body concerned;
- audio or video published before 23 September 2020;
- live audio or video;
- online mapping, as long as essential navigational information is provided in an accessible manner;
- third-party content not under the control of the public sector body concerned;
- reproductions of heritage items or manuscripts in certain circumstances;
- extranet and intranet content intended for a closed group of people, published before 23 September 2019, until they have a major update;
- content of websites and mobile applications not updated or edited after 23 September 2019 (archives), if their content is not needed for administrative processes.

The timeline for the implementation WAD's measures, since its transposition in the Member States by 23 September 2018 is as follows:

- from 23 September 2019 for websites published after 22 September 2018;
- from 23 September 2020 for all other websites of public sector bodies;
- from 23 June 2021 for mobile applications of public sector bodies.

It's important to mention that while the Directive covers mobile applications of public sector bodies, they fall outside the project's scope. Consequently, the current report does not incorporate relevant best practices for these applications.

1.3.2 European Accessibility Act (EAA)

The European Accessibility Act (Directive 2019/882) stands as a pivotal EU legislation mandating the accessibility of certain everyday products and services for individuals with disabilities. This directive aligns with the commitment to accessibility pledged by the EU and all Member States upon ratifying the United Nations Convention on the Rights of Persons with Disabilities.

While WEAVE primarily focuses on website accessibility, it's crucial to highlight that the scope of the EAA extends far beyond this realm. Unlike being confined to the public sector, the EAA encompasses private businesses and companies as well. This broader coverage allows for a more expansive approach to accessibility, encompassing everyday products and services essential to contemporary life. Consequently, the EAA holds the potential to trigger widespread systemic changes, fostering a digital

landscape that's inherently more inclusive and beneficial for everyone, including individuals with disabilities.

The Act covers the following products and services[1]:

Products

- Computers and operating systems
- Smartphones and other communication devices
- TV equipment related to digital television services
- ATMs and payment terminals (e.g., card payment machines in supermarkets)
- E-readers
- Ticketing and check-in machines

Services

- Phone services
- Banking services
- E-commerce
- Websites, mobile services, electronic tickets and all sources of information for air, bus, rail and waterborne transport services
- E-books
- Access to Audio-visual media services (AVMS)
- Calls to the European emergency number 112

The European Accessibility Act outlines specific features of products and services that should be accessible to individuals with disabilities. It employs functional EU accessibility requirements, which encompass the following criteria:

- Usage without vision
- Usage with limited vision
- Usage without perception of colour
- Usage without hearing
- Usage with limited hearing
- Usage without vocal capability
- Usage with limited manipulation or strength
- Usage with limited reach
- Minimising the risk of triggering photosensitive seizures
- Usage with limited cognition
- Privacy

The Act refrains from imposing intricate technical constraints for making products and services accessible. This deliberate approach fosters innovation and adaptability. This rationale underpins the project's emphasis on pinpointing best practices, acting as both a wellspring of inspiration and a guiding structure for implementing these accessibility features in the most efficient way. This ensures that the varied needs of end-users are sufficiently addressed.

[1] https://ec.europa.eu/social/main.jsp?catId=1202&intPageId=5581&langId=en

Additionally, the Act mandates websites to present information regarding the accessibility features of services. Users should have the ability to access a website's content, understand its structure, and navigate through webpages seamlessly, even while utilizing assistive devices.

Timeline

The EAA was originally proposed in 2011 to complement the EU's Web Accessibility Directive, which was passed in 2016.

The EAA came into effect in April 2019.

Transposition deadline: June 28, 2022

As of 28 June 2025, companies must ensure that the newly marketed products and services covered by the Act are accessible.

As of 28 June 2025, customers will be able to file complaints before national courts or authorities if services or products do not respect the new rules.

The reporting and review period must be completed by June 28, 2030, and every five years thereafter.

1.3.3 OTHER EU LEGISLATION ON DIGITAL INCLUSION

While the project and the current report specifically target website accessibility, it's essential to acknowledge the European Union's extensive legislative frameworks that promote digital inclusion across diverse platforms and sectors. The EU has taken measures in several domains to foster digital inclusion, including:

1. **The European Electronic Communications Code:** This ensures equitable access to affordable electronic communication services, encompassing emergency services for all individuals.
2. **Revised** Audiovisual Media Services Directive **(AVMSD):** Encompassing sign language, subtitling for the deaf and hard of hearing, and audio descriptions, this directive focuses on enhancing accessibility for television broadcasting (linear services) and video on demand (VOD).
3. **The** eIDAS Regulation**:** This regulation mandates that trust services and end-user products be accessible to persons with disabilities. For instance, it emphasizes accessibility in eSignatures, facilitating the electronic signing of legal documents and emails in a paperless manner.
4. **The** Marrakesh Directive and Regulation (2017): These directives aim to ease access to print works, including e-books, in formats tailored for individuals who are blind, visually impaired, or face reading difficulties.

2 CURRENT ACCESSIBILITY AND INCLUSION REQUIREMENTS OF INDIVIDUALS WITH DISABILITIES

An in-depth understanding of the current personal accessibility and inclusion needs of individuals with disabilities is crucial for painting a detailed picture. This section delves into the urgent need to incorporate accessibility features, supported by data on people with disabilities, the challenges they encounter, and the benefits that web accessibility provides. Through empirical data and anecdotes gathered in focus groups, this introduction directly illustrates the reality, offering a direct and detailed insight into the experiences and perspectives of those living with disabilities.

2.1 NEEDS AND CHALLENGES

In today's digital landscape, ensuring web accessibility has become an imperative aspect of inclusive design, especially in meeting the diverse needs of individuals with disabilities. The evolution of technology has brought unprecedented opportunities for information access and engagement. However, it has also presented challenges for users with disabilities who encounter barriers when navigating online content. Meeting current accessibility and inclusion requirements for individuals with disabilities demands a comprehensive understanding of their diverse needs and the persistent challenges they face in accessing web resources.

The needs of users with disabilities vary significantly, encompassing visual, auditory, motor, and cognitive impairments. Individuals with visual impairments may rely on screen readers or assistive technologies that interpret web content audibly, emphasizing the necessity for proper structuring of text, descriptive alt text for images, and seamless navigation through web pages. Likewise, those with auditory impairments may require closed captions, transcripts, or visual alternatives for audio content to ensure information parity. Motor impairments might necessitate keyboard-friendly interfaces and alternatives to mouse-driven actions for easier navigation.

Our exploration now turns to a detailed examination of the specific needs and challenges encountered by individuals with disabilities in the realm of web accessibility.

Understanding the needs of people with disabilities in the context of web accessibility is fundamental to creating an inclusive digital environment. “There are four main categories of disabilities that affect a person's ability to use the web: mobility, including inability to operate a keyboard/mouse; deaf including diminished hearing; blind, including partial vision; and disability associated with cognition and learning” (Beer, 2003).

- **Visual Impairments**
  - **Require screen readers:** Software that vocalizes text and descriptions of visual elements.
  - **Alternative text:** Descriptive text accompanying images for screen readers to convey visual content.
- **Auditory Impairments:** No specific digital features are commonly needed, but captions or transcriptions can aid in content understanding.
- **Motor Disabilities**

- **Keyboard shortcuts:** Quick command sequences replacing complex actions for users with limited dexterity.
- **Voice commands:** Hands-free navigation and interaction options for those with motor impairments.

- **Cognitive Impairments**
  - **Simplified interfaces:** Clear layouts and reduced distractions aiding users with cognitive difficulties.
  - **Predictable navigation:** Consistent structures and intuitive design to assist in content comprehension.

Simultaneously, various challenges hinder the seamless integration of people with disabilities into the digital sphere.

- **Inaccessible Websites and Applications:**
  - Barriers like inaccessible websites and non-compliant applications present substantial challenges.
  - "Visually disabled users encounter difficulties in perceiving, understanding, navigating, and interacting with the Web" (Sandhya et al., 2011).
- **Lack of Standardized Accessibility Features:** This lack of standardization perpetuates disparities in opportunities and experiences among users.

Figure 1 - **Too many links:** "the time that is actually spent on the website to get the required content is more and this does not augur well for the visually disabled users" (Sandhya et al., 2011)

The challenges in meeting these accessibility requirements often stem from misconceptions, inadequate awareness, and insufficient implementation of guidelines such as the Web Content Accessibility Guidelines (WCAG) - explained in section 3.1. Designing interfaces that accommodate diverse needs without compromising aesthetics or functionality remains a persistent challenge. Additionally, the rapid evolution of web technologies poses ongoing challenges in maintaining accessibility compliance across various platforms, devices, and emerging web trends.

To address these challenges effectively, organizations must prioritize accessibility as an integral part of their design and development processes. This involves fostering a culture of inclusivity, raising

awareness among designers and developers, integrating accessibility considerations from the project's inception, and conducting regular audits to ensure compliance with evolving standards. Collaboration with individuals with disabilities through user testing and feedback mechanisms is also pivotal in understanding their needs and refining accessibility features.

In conclusion, the current accessibility and inclusion requirements for individuals with disabilities underscore the necessity of a proactive approach in addressing diverse user needs and overcoming persistent challenges in web accessibility. Embracing inclusivity as a guiding principle in web design not only promotes equal access to information and services but also contributes to a more equitable and user-friendly online environment for all individuals, regardless of their abilities.

2.2 BENEFITS WEB ACCESSIBILITY PROVIDES

It is essential to delve into the substantial benefits that arise from implementing accessible features on the web.

- **Inclusive Digital Experience:** Web accessibility ensures that the digital landscape is inclusive, allowing individuals with diverse abilities and disabilities to navigate, perceive, and interact with online content seamlessly. This inclusivity fosters a sense of belonging and equal participation in the digital sphere.
- **Expanded Audience Reach:** By incorporating web accessibility features, websites and digital platforms broaden their reach to a larger audience. This not only includes individuals with disabilities but also encompasses users facing temporary limitations, such as those using a broken mouse or a slow internet connection. Ultimately, it enhances user engagement and satisfaction across a diverse user base.
- **Legal Compliance:** Many regions and countries have regulations and laws mandating web accessibility, as in this case, Web Accessibility Directive (WAD) and the European Accessibility Act (EAA). “Making websites accessible to people with disabilities increases readership and allows them to take advantage of new technologies, while also meeting legal requirements and promoting accessibility efforts” (Beer, 2003). Ensuring compliance demonstrates also a commitment to social responsibility and equal access.
- **Improved Search Engine Optimization (SEO):** Accessible websites tend to have better SEO performance. Search engines value accessibility, and by adhering to accessibility standards, websites can enhance their visibility in search engine results. This benefits not only users with disabilities but also the website's overall online presence.
- **Enhanced Usability for All:** Web accessibility features often lead to improved overall usability for all users. Clear navigation, well-organized content, and consistent design principles benefit everyone, creating a positive and efficient user experience.
- **Economic and Social Inclusion:** Accessible websites play a crucial role in promoting economic and social inclusion. By providing equal access to information, services, and opportunities, web accessibility contributes to a more equitable society, empowering individuals with disabilities to participate more actively in various aspects of life.

To sum up, the implementation of accessible features on the web yields multifaceted advantages. From fostering an inclusive digital environment to expanding audience reach and ensuring legal compliance, web accessibility stands as a pivotal cornerstone for enhancing user experience and societal inclusivity. Beyond the technical aspects, the integration of accessibility features not only improves SEO performance but also bolsters usability for all users, promoting a more equitable digital sphere. As we transition to the anecdotal and empirical exploration in the following section, it becomes crucial to substantiate these benefits through firsthand experiences and empirical evidence garnered from focus groups. These narratives and data-driven insights will further illuminate the tangible impact of web accessibility, solidifying its importance in fostering a truly inclusive online landscape.

2.3 ANECDOTAL AND EMPIRICAL DATA GATHERED THROUGH THE FOCUS GROUPS

Within the scope of the WEAVE project, two focus groups were conducted to explore and comprehend participants' experiences, challenges, and perspectives regarding web accessibility in the European Union. Specifically, it centered on the Web Accessibility Directive (WAD) and the European Accessibility Act (EAA). The insights gleaned from these discussions inform the development of the WEAVE best practices report. Throughout these interactions, significant revelations emerged concerning limited awareness of web accessibility legislation, alongside highlighting both positive examples and persistent challenges. This underscores the need for heightened focus on accessibility for all users.

Both JOIST and INERCIA DIGITAL conducted data collections to understand the experiences, challenges, and insights regarding EU web accessibility, focusing on the Web Accessibility Directive (WAD) and the European Accessibility Act (EAA).

The following summarized information has been derived from in-depth discussions. Ethical and representative diversity was a priority, although logistical limitations restricted the variety of disabilities represented. There was a knowledge gap regarding EU regulations, emphasizing the need for specific education. Participants highlighted challenges in online experiences, ranging from lack of screen reader support to inconsistent standards and device-related issues. Good practices and examples of accessible websites were identified, along with recommendations, including education, user-centered design, and continuous monitoring. The need for uniform accessibility standards across streaming platforms was emphasized. The primary goal was to bridge the gap between regulatory frameworks and practical implementation, underscoring the importance of collective actions for genuine digital inclusion of individuals with disabilities.

JOIST began with an overview of the WEAVE project, engaging participants in theoretical discussions and uncovering a lack of awareness about key EU laws addressing web accessibility. Participants shared positive and negative experiences, emphasizing the importance of accessible design, reliable captions for videos, and addressing visual and auditory impairments. They highlighted the significant progress made but acknowledged existing gaps in web accessibility implementation.

INERCIA DIGITAL conducted an online event, choosing Google Meet for its accessibility features. The discussion engaged stakeholders with hearing disabilities or proximity to individuals with such disabilities, along with public sector experts. The group shared experiences on website accessibility, revealing challenges faced due to lacking accessibility features, especially for videos without captions. Participants were unfamiliar with WAD and EAA, prompting an informative session. The exploration

questions delved into how accessibility principles impact online experiences, highlighting the gap between theoretical principles and real-world implementation. They stressed the need for better application of accessibility principles across websites, emphasizing the importance of inclusive design practices.

Claro, aquí tienes la integración de la información:

Both JOIST and INERCIA DIGITAL expressed hope for improved web accessibility but noted the challenges in achieving inclusive websites. For more specific information regarding these focus groups, they can be found in the annexes.

Conclusion

As the discussions unfolded, they uncovered a tapestry of challenges, but also glimpses of exemplary practices. Bridging the gap between regulatory frameworks and practical implementation emerged as a pivotal goal. The recommendations outlined a multi-faceted approach, spotlighting the significance of collective actions—education, user-centered design, and governmental intervention—to pave the way for genuine digital inclusion for individuals with disabilities.

3 SPECIFIC DESIGNS AND FEATURES PROMOTING WEB ACCESSIBILITY FOR STUDENTS TO FOLLOW

In the field of web development education, the integration of accessible design is not just a principle, but an imperative. This section focuses on the development of a catalog - a tangible resource explicitly designed for VET students. The aim is to compile a comprehensive range of specific designs and features that exemplify the principles of web accessibility. This catalog acts as an educational tool, providing VET students with the opportunity to gain insight and inspiration from pragmatic, real-world examples.

Within this catalog unfolds a range of specific designs and features that have been carefully curated to illustrate the essence of web accessibility. It is not a static compilation, but a dynamic resource that provides VET students with a practical reference for their upcoming projects. From intuitive navigation structures to alternative text implementations, each design element embodies the core principles of accessibility.

There is a need for a guide to best practice for designers. This exploration systematically delves into criteria tailored to meet the unique challenges faced by users of all abilities. With a focus on vocational students, the aim is to provide practical insights that go beyond theoretical concepts. Through tangible examples and interactive learning formats, the aim is to equip the next generation of web developers with the skills and knowledge necessary to actively promote web accessibility in their projects.

3.1 SPECIFIC DESIGNS COMPILATION

Web accessibility is not just a technical requirement; it is a fundamental aspect of promoting an inclusive digital environment (Global Accessibility Awareness Day,n.d) . By accommodating different user needs, it ensures that people of all abilities can effectively navigate, understand, and interact with online content. This inclusivity extends to people with visual, hearing, physical and cognitive impairments, reinforcing the importance of designing digital spaces that transcend physical and cognitive limitations(What is Accessibility,n.d).

Web Content Accessibility Guidelines (WCAG) offers a broad spectrum of recommendations aimed at improving the accessibility of web content. Adhering to these guidelines enhances access for individuals with disabilities such as blindness, low vision, deafness, hearing loss, limited movement, speech disabilities, photosensitivity, and various combinations thereof (Initiative, n.d). Some consideration is given to learning disabilities and cognitive limitations, although these guidelines may not cover every aspect of user needs for individuals with these disabilities. The recommendations target web content accessibility across different devices like desktops, laptops, tablets, and mobile devices. Following WCAG guidelines not only benefits users with disabilities but often improves the overall usability of web content for a broader audience(Initiative, n.d). This collaborative effort involves global participation from individuals and organizations, striving to establish a universally applicable standard for web content accessibility through the W3C process. The WCAG documentation serves as a comprehensive resource, offering guidance on optimizing web content accessibility for diverse users, covering textual information, images, sounds, and the underlying code or markup shaping the content's structure and presentation.

WCAG is designed as a technical standard and is not an introductory guide to accessibility. The primary audience for WCAG includes web content developers, such as page authors and site designers, as well as developers of web authoring tools and web accessibility evaluation tools. The standard also caters to those requiring guidelines for web accessibility, particularly in the context of mobile accessibility. Beyond the technical audience, various WAI Resources are available to address the needs of policymakers, managers, researchers, and others interested in different aspects of web accessibility.

WCAG 2.2 comprises 13 guidelines categorized under four principles: perceivable, operable, understandable, and robust(What is accessibility,n.d). Each guideline is accompanied by testable success criteria, which are classified into three levels: A, AA, and AAA (Initiative, n.d) . Conformance to WCAG is based on meeting these success criteria, meaning that content needs to adhere to these criteria to be considered in compliance with the guidelines.

Different components of web development and interaction need to work together effectively. These components include the content within a web page or application, which includes natural information such as text, images and sound, as well as the underlying code or markup that defines its structure and presentation. It also includes web browsers, media players and other user agents, as well as assistive technologies such as screen readers, alternative keyboards, switches and scanning software. Users' knowledge, experience and adaptive strategies for using the Web are also integral. In addition, developers, including those with disabilities, authoring tools that create websites, and evaluation tools, such as web accessibility evaluation tools, HTML validators and CSS validators, play a crucial role in ensuring accessibility.

Web Accessibility Evaluation Tools List Web accessibility evaluation tools are software programs or online services that help you determine if web content meets accessibility guidelines. This page provides a list of evaluation tools that you can filter to find ones that match your particular needs. To

determine what kind of tools you need and how they can assist you, see Selecting Web Accessibility Evaluation Tools. Recommended tool https://wave.webaim.org/

USERWAY Accessibility Widget User Way is a web accessibility solution and platform designed to help website owners and developers make their websites more accessible to people with disabilities. User Way offers a range of tools and features that can enhance the accessibility of websites, making it easier for individuals with various disabilities to navigate and interact with web content.

For each principle, we have a closer look at the design and key features.

1. Perceivable

This principle focuses on making information and user interface components presented on a website understandable to all users, especially those with disabilities. It includes guidelines related to providing text alternatives, time-based media, adaptable content, and distinguishable content.

- **Guideline 1.1: Text Alternatives**

The primary purpose of this Success Criterion is to ensure accessibility by providing text alternatives for non-text content, making it perceptible through different modalities such as visual, auditory or tactile means. Text alternatives provide flexibility for users with different needs, allowing them to access information in a way that best suits them. The criterion addresses several scenarios, including the provision of short and long text alternatives, descriptions of controls or user input elements, and accessibility considerations for time-based media(Maxability Training & Consulting Services, n.d).

In terms of benefits, it highlights the positive impact on users who have difficulty perceiving visual content, including those who may have difficulty understanding images, graphics or audio information. It emphasizes support for people with a range of disabilities, such as those who are deaf, hard of hearing or deaf-blind, and the potential for text alternatives to facilitate searchability and content reuse.

- **Guideline 1.2: Time-based Media**

The feature highlighted here addresses the accessibility of prerecorded audio-only and prerecorded video-only content by emphasizing the provision of text-based alternatives(Initiative, n.d). The primary intent is to ensure that information presented through time-based media is made accessible to all users. Text-based alternatives offer a versatile solution as they can be presented through different sensory modalities to meet the diverse needs of users, including those with visual, auditory or tactile preferences.

This feature becomes crucial for individuals who may rely on alternative modes of perception, such as users with vision impairments who can benefit from text-based alternatives that provide an equivalent experience to the visual content. Moreover, it anticipates future advancements where text could be translated into symbols, sign language, or simplified language, further expanding accessibility possibilities.

- **Guideline 1.3: Adaptable**

Emphasizes maintaining the integrity of information and relationships conveyed through visual or auditory formatting during changes in presentation format, ensuring accessibility for all users. Features contributing to comprehension include visual cues (e.g., font variations, spacing, color) and auditory signals, like changes in pitch or speech rate(Initiative, n.d). These structures need to be programmatically determinable or presented in text to enable universal understanding. For instance, if visual links are utilized, screen readers should convey their link nature to ensure accessibility. Where programmatic determination is not feasible, clear text descriptions near the relevant information become crucial for accessibility. Prioritizing programmatic determination over text descriptions, when feasible, enhances accessibility by making information universally perceivable.

This guideline is beneficial for users with various disabilities, particularly those using screen readers or braille displays. Blind users, relying on screen readers, benefit from the information presented through color being also available in text, including text alternatives for images using colour.

- **Guideline 1.4: Distinguishable**

The features highlighted for this guideline includes the Use of Color: Ensuring information is not conveyed solely through colour, benefiting users, such as those with visual impairments, who may not perceive color. Audio Control: Providing users with the ability to control audio, benefiting individuals who may have hearing impairments or prefer customizable audio settings. Contrast (Minimum): Ensuring sufficient contrast between text and background, benefiting users with low vision or other visual impairments. Resize Text: Allowing users to resize text according to their preferences, benefiting those with visual impairments who may require larger text for readability. Images of Text: Avoiding the use of images for conveying essential text information, benefiting users who rely on text-to-speech technology or those with difficulty perceiving images he beneficiaries of these features are diverse, including individuals with visual impairments, hearing impairments, and those who benefit from customizable text sizes for improved readability(Initiative, n.d).

2. Operable

This principle is about ensuring that all users can interact with and navigate the website. It includes guidelines related to keyboard accessibility, providing users enough time to read and complete tasks, avoiding content that may cause seizures, and making navigation predictable((Deshpande & Digita, 2023).

- **Guideline 2.1: Keyboard Accessible**

This success criterion aims to enhance web accessibility by preventing the "trapping" of keyboard focus within specific subsections of content, particularly when various formats, such as plug-ins or embedded applications, are utilized on a web page. The primary objective is to ensure that users who rely on keyboards or keyboard interfaces can navigate freely throughout the entire web page without being confined to specific sections. The feature emphasizes avoiding unintentional focus restrictions, except in cases where confinement is intentional, and users are provided with clear instructions on how to exit or "untrap" the focus (Initiative, n.d). By implementing this criterion, web developers contribute to a more inclusive online experience, benefiting individuals with visual impairments and those with physical disabilities who rely on keyboard-based interactions for seamless navigation. Also, to enhance web accessibility by addressing the issue of accidental activation of single-key shortcuts, which can be problematic for speech input users and keyboard users prone to unintentional key presses. By

implementing this feature, web developers contribute to a more user-friendly experience, benefiting individuals who rely on speech input and keyboard interactions for efficient navigation and command execution.

- **Guideline 2.2: Enough Time**

This success criterion ensures that users with disabilities, such as blindness, low vision, dexterity impairments, and cognitive limitations, have sufficient time to interact with web content. To achieve this, content creators must implement features that allow users to turn off, adjust, or extend time limits. The objective is to accommodate users who may require more time due to various disabilities, providing options that cater to different needs. The intent is to prevent time-dependent functions from becoming barriers, making web services accessible to a broader range of users. Features include the ability to disable time limits, customize their duration, or request additional time before a limit expires. The beneficiaries encompass people with physical, visual, cognitive, or language disabilities, ensuring they have the time needed to read, understand, and complete tasks on the web.

This guideline aims to cater to a diverse user base, benefiting individuals with various disabilities. For those with physical challenges, it provides extra time for typing or interaction. Users with visual impairments, including low vision or blindness, gain additional time to read and understand content. Individuals with cognitive limitations receive the necessary time to process information, while those facing language challenges are granted extra time for comprehending text (Maxability Training & Consulting Services,n.d)

Guideline 2.3: Seizures and Physical Reactions

This focuses on mitigating content that could induce seizures or physical discomfort. The features include avoiding content that flashes more than three times per second, ensuring blinking content stops after five seconds, and providing mechanisms for users to control or pause moving, blinking, or scrolling content. Beneficiaries of these features include individuals prone to seizures, particularly triggered by flashing content, as well as those who might experience discomfort or distraction due to excessive blinking or scrolling. This guideline aims to create a safer and more comfortable digital experience for users vulnerable to seizure-related issues or physical reactions (Juviler, 2023).

- **Guideline 2.4: Navigable**

Navigable is designed to improve keyboard navigation and sequential access to content on web pages. It includes features such as the ability to skip repeated content, ensuring meaningful page titles, and establishing a logical order for keyboard navigation. These features cater for different user groups by improving accessibility. For example, allowing users to skip repetitive elements helps those who navigate sequentially, which is particularly useful for keyboard users. Ensuring that each web page has a descriptive title helps users to find and understand content quickly, particularly benefiting those with visual impairments, cognitive limitations and those using screen readers. Establishing a logical order for keyboard navigation contributes to a consistent and meaningful experience, particularly beneficial for users with mobility and visual impairments, as well as those with reading difficulties.

These features also benefit people with physical disabilities, who experience easier keyboard navigation and less physical strain. Visually impaired users benefit from clear titles and logical focus in order to assist those with low vision or blindness (Initiative, n.d). People with cognitive disabilities will find clear navigation and organization reduces confusion. Those with speech impairments, including deaf users

who rely on sign language interpreters, benefit from organized content for improved comprehension. In addition, users with reading and learning disabilities experience reduced barriers through skip options and logical focus sequencing, accommodating their need for additional time to read or comprehend information.

3. Understandable

This principle emphasizes the importance of making content and navigation clear and straightforward. It includes guidelines related to readable text, predictable navigation and operation, and input assistance.

- **Guideline 3.1: Readable**

This guideline is to enable assistive technology to accurately determine the language of a web page, enhancing the presentation of text and linguistic content for users. Content developers should indicate the predominant language on a page, allowing screen readers and other user agents to apply appropriate pronunciation rules, display characters correctly, and ensure accurate rendering of captions in media players (Initiative, n.d). This is particularly beneficial for users with disabilities, as it improves their understanding of web content. The default human language is determined by the default text-processing language, with preference given to the language used most when multiple languages are present on a page. This criterion is crucial for individuals using screen readers, those facing challenges in reading written material, and people with cognitive, language, and learning disabilities relying on text-to-speech software or captions in synchronized media.

- **Guideline 3.2: Predictable**

The purpose of this Success Criterion is to ensure that website functionality remains predictable for users as they navigate through content. It emphasizes that triggering events or changing the context should not occur automatically when a user interface component receives focus, unless users have been informed of this behavior beforehand. Examples of undesired context changes include forms being submitted or new windows launching when a component gained focus. This guideline aims to benefit individuals with visual disabilities, cognitive limitations, and motor impairments by minimizing unexpected changes in context (Initiative, n.d). Another related Success Criterion emphasizes warning users if their input will lead to a change in context, ensuring that altering the setting of a user interface component does not cause confusion. These measures make interactive content more predictable, particularly benefiting users with disabilities who may struggle with detecting or understanding abrupt changes in the user interface.

- **Guideline 3.3: Input Assistance**

This guideline enhances user experiences by providing web forms with clear instructions, labels, and error feedback. The objective is to ensure that users, including those with cognitive, language, and learning disabilities, know what information to enter. Content authors are tasked with offering concise and unambiguous labels and instructions, facilitating correct information entry. This guideline underscores the importance of not overwhelming users with unnecessary information, aiming for a balanced approach that aids users without causing confusion. Additionally, it emphasizes the need to suggest ways to correct input errors, enhancing the user experience for individuals with various disabilities. By providing descriptive notifications of errors, this guideline ensures that users are not

only aware of errors but also understand what went wrong, benefiting those with visual impairments, cognitive limitations, and learning disabilities.

4. Robust

This principle is about ensuring that content is compliant with various technologies, including assistive technologies. It includes guidelines for correctly parsing content and providing names, roles and values for user interface components.

- **Guideline 4.1 Compatible**

The "Parsing" criterion within the compatibility guideline emphasizes the importance of proper markup language usage, ensuring correct element structuring, absence of duplicate attributes, and uniqueness of IDs, following specifications. The "Name, Role, Value" criterion focuses on user interface elements, requiring clear identification of their names and roles for programmatic understanding. It also stresses the programmable setting of states, properties, and values, with notifications for changes to enhance accessibility (Initiative, n.d). The "Status Messages" criterion highlights the need for programmatically identifiable status messages in markup language content, allowing assistive technologies to present them without requiring focus. These criteria collectively enhance compatibility by promoting well-structured markup, clear identification of interface elements, and accessible status messages. The features include proper element nesting, attribute uniqueness, and programmatically settable properties, benefiting users with disabilities who rely on assistive technologies for navigation and comprehension of web content.

In summary, the compilation of specific designs and features for web accessibility is a testament to the ongoing commitment to inclusivity in the digital space. These guidelines, covering everything from parsing considerations to the clarity of user interfaces and the programmability of status messages, collectively contribute to a more accessible online experience. By adhering to these principles, web developers and designers not only ensure compliance, but also foster an environment where people of all abilities can seamlessly navigate and engage with digital content. Ultimately, these ongoing web accessibility efforts reflect a broader commitment to universal design, promoting an Internet that is truly open and welcoming to users of all backgrounds and abilities.

3.2 WEB ACCESSIBILITY BEST PRACTICES

In this section, we embark on an exploration of web accessibility best practices using the European Accessibility Act (EAA) Criteria as our guiding framework. This set of nine criteria encompasses various dimensions, ranging from accommodating users with limited vision, perception of color, or hearing, to those without vocal capability, limited manipulation/strength, limited reach, limited cognition, and considerations for minimizing the risk of photosensitive triggers, as well as addressing privacy concerns. Our examination and analysis of websites are the result of collaborative efforts from all partners involved in Activity 1, reflecting a shared commitment to enhancing inclusivity and accessibility in the online sphere. Through this evaluation process, we aim to uncover insights into how well these selected websites align with EAA Criteria, fostering a digital environment that is more universally accessible and welcoming for all users.

3.2.1 CRITERION 1: USAGE WITHOUT/LIMITED VISION

This criterion focuses on ensuring that individuals with little to no vision can effectively use and navigate digital content. This criterion addresses the need for web accessibility features that accommodate users who rely on screen readers, braille displays, or other assistive technologies due to visual impairments (Initiative, n.d)

The features associated with this criterion include:

Text Alternatives (Alt Text): Providing alternative text for non-text content such as images, charts, and graphs. This allows screen readers to convey the content to users with visual impairments.

Semantic HTML: Using proper HTML markup to convey the structure and meaning of content. This helps screen readers interpret the content accurately.

Keyboard Navigation: Ensuring that all functionalities can be accessed and operated using a keyboard, as some users with visual impairments rely on keyboard navigation instead of a mouse.

Contrast and Color: Ensuring sufficient color contrast between text and background to make content readable for users with low vision. Avoiding information conveyed solely through color.

Resizable Text: Allowing users to resize text without encountering loss of content or functionality, ensuring readability for those with low vision.

Adaptable Layouts: Designing flexible and responsive layouts that work well with different screen sizes and orientations, accommodating users who may use various devices and screen readers.

Descriptive Headings: Using clear and descriptive headings to outline the structure of content, aiding navigation for users relying on screen readers.

Focus States: Providing visible focus indicators for interactive elements to help users understand where they are on the page when navigating with a keyboard or screen reader.

Accessible Forms: Creating forms with clear instructions, labels, and error messages. Ensuring form controls are programmatically associated with their labels.

Skip to Content Links: Including "skip to content" links that allow users to bypass repetitive content and navigate directly to the main content.

The site of European Association of Service providers for Persons with Disabilities (www.easpd.eu) has clear elements that help the person with visual impairments to navigate the site with ease.

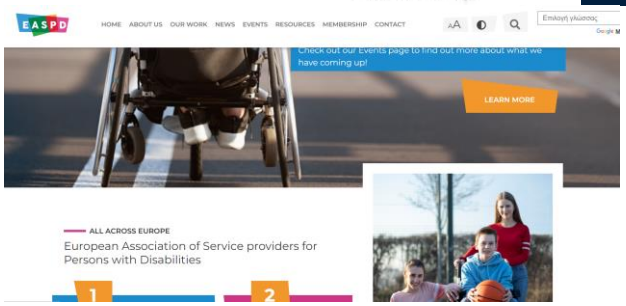

Figure 2: Screenshot of the EASPD website (https://www.easpd.eu/)

Another website that has the necessary features for the visually impaired is CNN. (https://edition.cnn.com/) It is a fact that this website has a 93% accessibility score according to the Accessibility Checker tool.

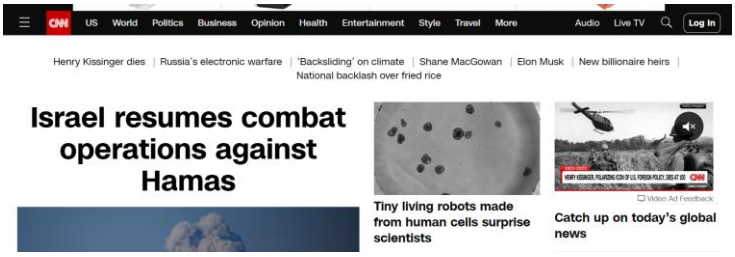

Figure 3: Screenshot of the CNN website (https://edition.cnn.com/)

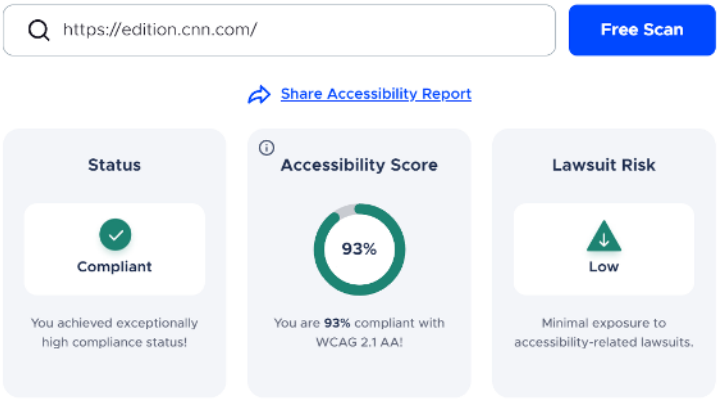

Figure 4 :Screenshot of the accessibility score of the CNN website (https://userway.org/)

One last example of a website who follows this criterion is Thyssem Museum (https://www.museoreinasofia.es/)

Figure 5:Screenshot of the website of the Museo National Reina Sofia(https://www.museoreinasofia.es/)

3.2.2 CRITERION 2: USAGE WITH LIMITED PERCEPTION OF COLOUR

This criterion is intended to ensure that people with limited color perception, including those who are color blind, can effectively use and understand digital content. It recognizes the importance of providing alternatives and additional cues beyond color to convey information, action and content meaning (Initiative, n.d).

Here are the features and considerations for this criterion:

Color Contrast: Provide sufficient color contrast between text and background to make content readable for users with limited color perception. This ensures that information is conveyed effectively regardless of color.

Alternative Cues: Use additional cues, besides color alone, to convey information. For example, instead of relying solely on color to indicate error messages, also include descriptive text or symbols.

Avoid Color as the Sole Means: Ensure that color is not the only method used to convey critical information or distinguish elements. Combining color with other visual indicators, such as icons or labels, helps users with color limitations understand content.

Accessible Charts and Graphs: If your website includes charts or graphs, ensure they are designed with consideration for users with color deficiencies. Use patterns, labels, or other visual elements in addition to color to differentiate data points.

Test with Color Contrast Tools: Use online color contrast checking tools to verify that text and background combinations meet accessibility standards (e.g., WCAG guidelines).

One good example for this criterion is Paypal's website (https://www.paypal.com/gr/home)

The Louvre Museum (https://www.louvre.fr/en) has proper color contrast tools.

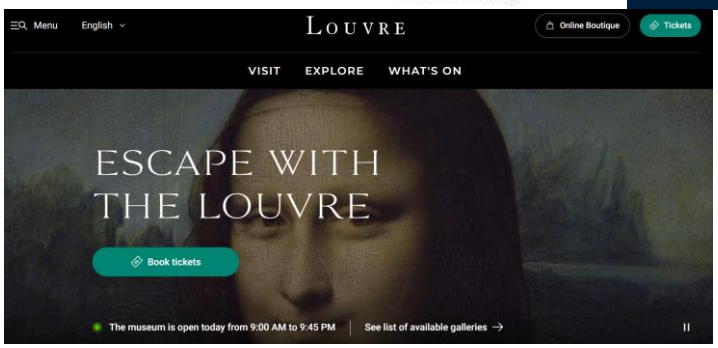

Figure 6:Screenshot of the website of the Louvre Museum (https://www.louvre.fr/en)

One example that doesn't follow this criterion is OPAP Greece, a State Gambling Agency (https://www.opap.gr/) The site does not allow people with limited colour permission to navigate with easy.

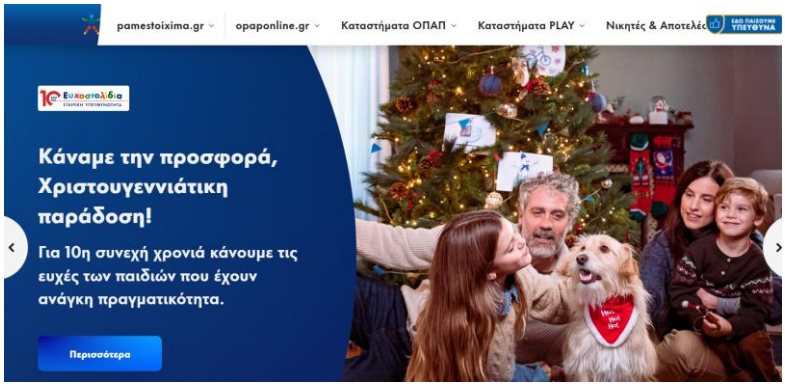

Figure 7:Screenshot of the OPAP's website (https://www.opap.gr/)

3.2.3 CRITERION 3: USAGE WITHOUT/LIMITED HEARING

This criterion focuses on ensuring that people with limited or no hearing can fully engage with and understand digital content. It recognizes the need for alternatives and enhancements beyond auditory information to cater for users who may rely on visual or tactile cues (Initiative, n.d).

The features for this criterion are the following :

Captioning for Multimedia: Provide captions for audio and video content to make the information accessible to users who are deaf or hard of hearing. Captions should include spoken dialogue, relevant sound effects, and other significant audio information.

Transcripts: Alongside captions, offer text transcripts for multimedia content. Transcripts are a text version of the audio content, ensuring that users can access the information in an alternative format.

Sign Language Interpretation: For live events or presentations, consider providing sign language interpretation through video or other means. This accommodates users who rely on sign language for communication.

Volume Control: Include volume controls for multimedia elements so that users can adjust the audio to their preferred level. This benefits users with varying degrees of hearing abilities.

Visual Alerts: Implement visual alerts or notifications for important auditory information. For instance, use visual cues to indicate when an alarm or notification sound is triggered.

Test with Screen Readers: Ensure that your website is compatible with screen readers and other assistive technologies used by individuals with hearing impairments. Test the website's navigation and content consumption using these tools.

Best example of a website to meet this criterion are the following

Gmail (https://www.google.com/intl/el/gmail/about/)

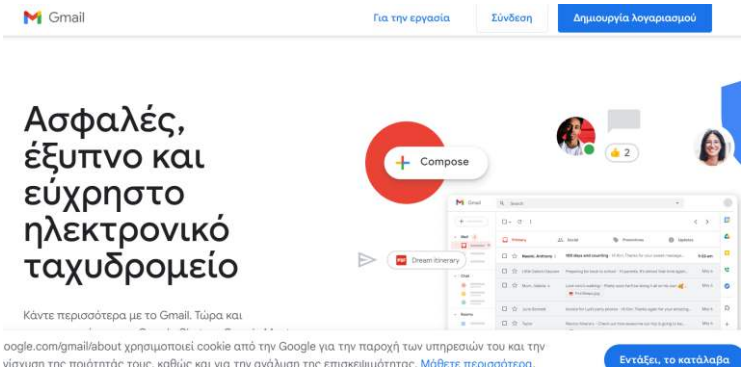

Figure 8:Screenshot of the Gmail website (https://www.google.com/intl/el/gmail/about/)

The website of the Spanish National Police (https://www.policia.es/_es/index.php) meets this criterion. It's really important for Public authority to provide accessibility.

3.2.4 CRITERION 4: USAGE WITHOUT VOCAL CAPABILITY

This criterion addresses the accessibility needs of people who may not have the ability to speak or who may have difficulty using their voice to interact. It emphasizes alternative methods of interacting with digital content beyond vocal input.

The web sites that are in compliance with this criterion should have the following characteristics.

Text-to-Speech Support: Ensure that your website content can be interpreted by text-to-speech screen readers. Users without vocal capability often rely on TTS technology to access and understand written information.

Keyboard Navigation: Design your website to be navigable using a keyboard alone. Users without vocal capability may use alternative input devices, such as keyboards or switches, to interact with web content.

Alternative Input Methods: Support alternative input methods, such as sip-and-puff devices, eye-tracking systems, or other assistive technologies that users without vocal capability may utilize for interaction.

Symbolic Representation: Consider using symbols or icons alongside text to convey information. This can be particularly helpful for users who communicate through symbols due to vocal limitations.

Interactive Elements: Ensure that interactive elements on the website can be activated using various input methods, accommodating users with diverse abilities and limitations.

Alternative Communication Formats: Provide alternative communication channels, such as contact forms or messaging systems, for users without vocal capability to reach out and interact with website administrators or support.

Accessible Forms: Design forms with accessibility in mind, allowing users to input information using different methods and ensuring compatibility with assistive technologies.

A good example of a site that has most of the features is University of Huelva (https://www.uhu.es/)

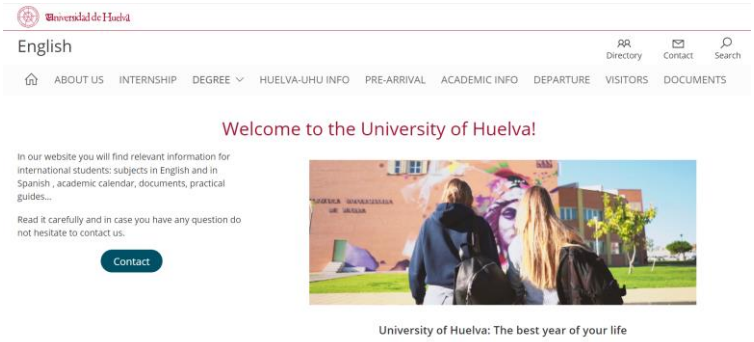

Figure 9:Screenshot of the University of Huelva website (https://www.uhu.es/

The website of the European Union (https://european-union.europa.eu/index_en) is also a good example of this.

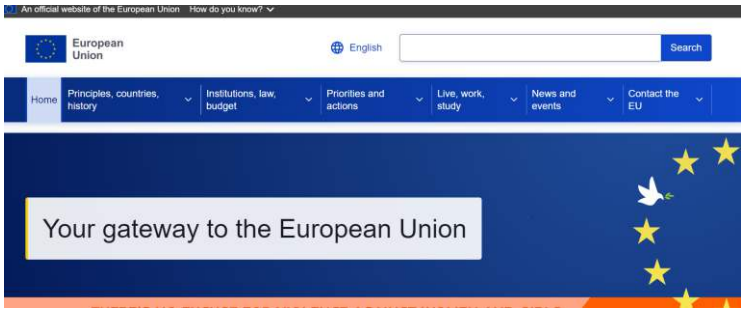

Figure 10: Screenshot of European Union's website (https://european-union.europa.eu/index_en)

This criterion addresses the accessibility requirements for individuals with limited manipulation or strength, emphasizing design considerations that accommodate users facing challenges related to motor control or physical dexterity (Initiative, n.d).

The characteristics required for this criterion are as follows

Keyboard Accessibility: Ensure that all interactive elements, links, and functions on the website can be accessed and operated using keyboard input. This is crucial for users with limited manipulation or strength who may find it challenging to use a mouse or touchpad.

Large Click Areas: Design clickable areas, such as buttons and links, to have a sufficiently large clickable area. This accommodates users with limited precision or strength, making it easier for them to interact with the website.

Reduced Click Requirements: Minimize the number of clicks or interactions required to perform essential tasks on the website. Streamlining processes can benefit users with limited strength, reducing fatigue and effort.

Adjustable Input Settings: Provide options for users to adjust input settings, such as mouse sensitivity or click speed. This allows individuals with limited strength to customize the interface based on their needs.

Voice Commands: Implement voice command functionality to allow users to navigate and interact with the website using voice commands. This feature can be particularly beneficial for those with limited physical strength or dexterity.

Avoid Time Pressure: Design interactive elements, forms, or tasks with consideration for users who may require more time to complete actions due to limited strength. Avoid time limits that could be challenging for these users.

Assistive Technology Compatibility: Ensure compatibility with a range of assistive technologies, including devices designed for users with limited physical strength or manipulation capabilities.

Clear and Consistent Navigation: Maintain a clear and consistent website navigation structure to help users with limited strength easily locate and access different sections or features.

Amazon (https://www.amazon.com/) which is a very large company, has specific features that comply with this criterion.

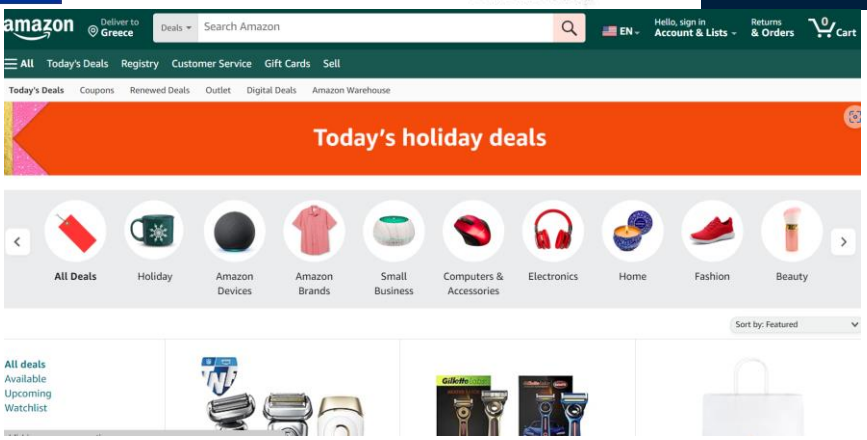

Figure 11:Screenshot of Amzon's website (https://www.amazon.com/)

3.2.6 CRITERION 6: USAGE WITH LIMITED REACH

This criterion focuses on addressing the accessibility needs of individuals with limited reach, emphasizing design considerations that cater to users facing challenges related to the range or extension of their physical movements.

The characteristics and considerations for websites that meet this criterion:

Responsive Design: Websites should employ responsive design principles to ensure that content adapts to various screen sizes and resolutions. This accommodates users with limited reach who may be using devices with smaller screens.

Adjustable Font Sizes: Provide the option for users to adjust font sizes to make text more readable. This is particularly helpful for individuals with limited reach who may benefit from larger text sizes for better visibility.

Clear and Simple Layouts: Maintain a clear and simple layout with well-defined sections and ample white space. This helps users with limited reach focus on and interact with specific content without the risk of accidental clicks.

Accessible Navigation: Implement easily accessible navigation menus and controls, positioning them within reach of users with limited mobility. This ensures that important features are conveniently located on the screen.

Voice Commands and Speech Recognition: Integrate voice command functionalities and speech recognition capabilities, allowing users to interact with the website without relying on manual inputs. This is beneficial for individuals with limited reach.

Avoidance of Crowded Interfaces: Design interfaces with consideration for avoiding crowded or cluttered layouts, which can be challenging for users with limited reach to navigate. Prioritize essential content and minimize visual distractions.

Customizable Interface Elements: Provide options for users to customize the placement of interface elements based on their reach preferences. This allows individuals to arrange controls and buttons within easy access.

Compatibility with Touch Devices: Ensure that the website is compatible with touch devices, enabling users with limited reach to interact with content using touch gestures. This is particularly relevant for users who navigate the web on touchscreen devices.

3.2.7 CRITERION 7: USAGE WITH LIMITED COGNITION

This criterion focuses on addressing the accessibility needs of people with cognitive impairments, emphasizing design considerations that enhance the usability of web content for users with cognitive challenges.

When designing websites with a focus on usability for people with limited cognitive abilities, it's important to implement features that improve accessibility and user experience. Here are some features that can help users with limited cognitive abilities:

Clear and simple language: Use plain language and avoid complex jargon to ensure content is easy to understand.

Consistent and predictable navigation: Maintain a consistent layout and navigation structure throughout the site to reduce cognitive load and increase predictability.

Simplified layout: Streamline the design by minimizing clutter, using simple and clear graphics, and avoiding unnecessary distractions.

Readable text: Use easy-to-read fonts and provide options to adjust text size and contrast for improved readability.

Visual cues and icons: Use visual cues, icons, and images to aid comprehension and provide context for content.

Consistent design elements: Maintain consistency in design elements, such as colours and buttons, to facilitate recognition and understanding.

Font Choice: Select readable, web-safe fonts for your website. Some fonts are more legible than others. Common web-safe fonts that are often recommended for accessibility include Arial, Helvetica, Calibri, and Times New Roman. Sans-serif fonts (e.g., Arial) are generally preferred for on-screen text, as they tend to be more readable.

A good example of a website with this criterion is Pinterest (https://www.pinterest.com/)

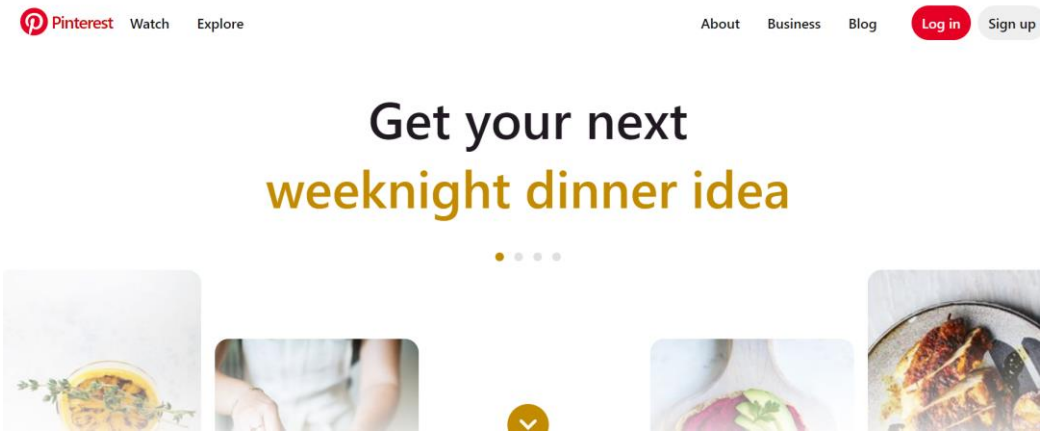

Figure 12:Screenshot of the Pinterest website (https://www.pinterest.com/)

3.2.8 CRITERION 8: USAGE MINIMIZING THE RISK OF PHOTOSENSITIVE TRIGGERS

This criterion is designed to reduce the risk of triggering seizures or discomfort for users who are photosensitive. Designing web content with this in mind helps create a safer and more inclusive online experience for people who may be susceptible to adverse reactions related to flashing or flickering content (Initiative, n.d).

The following features are essential for this criterion:

No Flashing or Rapidly Changing Content: Avoid the use of flashing or rapidly changing content, as this can trigger photosensitive seizures. Ensure that all visual elements on the website have a smooth transition and do not include strobe-like effects.

Stable and Consistent Color Schemes: Maintain stable and consistent color schemes throughout the website to reduce the risk of triggering seizures or discomfort due to sudden changes in color contrast.

Limiting Intense Color Patterns: Minimize the use of intense or high-contrast color patterns that may be discomforting for users with photosensitive conditions.

No Flickering or Rapid Animation: Avoid flickering or rapidly animated elements, as these can be potential triggers. If animation is necessary, ensure it is slow, smooth, and doesn't involve rapid changes.

Clear Warning Messages: If the website contains content that may have potential photosensitive triggers, provide clear warning messages or labels to alert users before they encounter such content.

3.2.9 CRITERION 9: USAGE WITH PRIVACY

This criterion emphasizes the importance of considering and respecting users' privacy when designing and implementing web content. Respecting privacy is an integral part of creating a trustworthy and user-friendly online environment.

The required features that are needed to be present in the web site are the following ones:

Clear Privacy Policy: Provide a transparent and easily accessible privacy policy that clearly outlines how user data is collected, stored, and used.

Explicit Consent Mechanism: Implement clear and user-friendly consent mechanisms for data collection. Users should be informed about what data is collected and have the option to opt in or out.

Secure Data Transmission: Use HTTPS protocol to encrypt data transmission between the user's device and the server, ensuring the privacy and integrity of user information.

Data Minimization: Collect only the necessary data for the intended purpose and avoid unnecessary data collection to minimize the potential impact on user privacy.

User Control over Personal Information: Allow users to easily access, edit, and delete their personal information. Provide user-friendly account settings and privacy controls.

Although we checked at least 100 websites, we could not find any that had the necessary features for this criterion. But H&M (https://www2.hm.com/el_gr/index.html) which is a large company, has these elements on its website.

4 ADDITIONAL RESOURCES FOR FURTHER EXPLORATION

The purpose of this section is to introduce additional tools and resources that will facilitate the implementation of accessibility in web design. Apart from the designs that were presented in this toolkit to educate and inspire educators and students on design options that they can use when developing websites, it is also important to be able to identify where gaps in accessibility exist, in order to know where to intervene and what needs to be improved to ensure that all users have equal access, no matter the disability, as stipulated by the EU legislation, and in the way presented by this project.

Accessibility testing tools are indispensable in the realm of web development for several reasons. Primarily, they serve as a critical bridge in making the web universally accessible, ensuring that digital content is reachable and usable by people with a diverse range of abilities and disabilities. Utilizing these tools, developers can identify and rectify barriers that might prevent people with disabilities, such as visual, auditory, motor, or cognitive impairments, from accessing web content effectively. This alignment with accessibility standards, like the Web Content Accessibility Guidelines (WCAG), is not only a matter of compliance with legal requirements but also a step towards social inclusion, enabling equitable access to information and digital services for all users. Moreover, accessible websites typically offer a better user experience for all visitors, with clear navigation and well-structured content, which can lead to improved satisfaction and engagement rates.

Additionally, accessibility testing tools are instrumental in fostering a culture of inclusivity in web design and development. They provide developers and designers with the means to understand and implement accessibility principles right from the early stages of a project. This proactive approach to accessibility is far more effective and efficient than retrofitting accessibility features into an existing website. It also reflects a commitment to ethical design practices, considering the diverse needs of all potential users from the outset. For businesses and organizations, this inclusivity enhances their brand's reputation and broadens their audience reach. In an increasingly digital world, accessibility is not just a niche requirement but a fundamental aspect of creating user-friendly, universal web experiences that cater to the needs of a diverse and global online community.

The present deliverable aims to be as inclusive as possible, presenting and offering such tools to VET educators, students and web developers that are free to use or that offer certain features for free or through free trial.

Free web accessibility testing tools play a crucial role in democratizing the process of creating inclusive digital environments. They are particularly important because they ensure that individuals and organizations, regardless of their financial resources, have the means to evaluate and improve the accessibility of their web content. This is vital in a digital landscape where equitable access to information and services is increasingly recognized as a fundamental right. By offering these tools at no cost, developers, small businesses, non-profit organizations, and educational institutions can all participate in building a more inclusive internet. This inclusivity not only benefits users with disabilities but also enhances the overall user experience, contributing to a more universally accessible web.

Furthermore, free accessibility tools serve as essential educational resources. They provide a practical, hands-on way for students, developers, and digital content creators to learn about and implement web accessibility standards. In the context of VET, these tools are invaluable for integrating accessibility into the curriculum, thereby fostering a new generation of web professionals who are cognizant of and skilled in accessibility practices from the onset of their careers. This early integration of accessibility principles helps in nurturing a mindset that prioritizes inclusivity in all aspects of web design and development, ultimately leading to a more accessible digital world for everyone.

It is important to note that these accessibility tools do not check directly the compliance with the criteria stipulated by EU legislation. They monitor for compliance with the Web Content Accessibility Guidelines (WCAG) which is described in section 3.1. Each principle of the WCAG contains guidelines, and each guideline has **testable** success criteria (https://www.w3.org/WAI/fundamentals/accessibility-

principles/). WCAG 2.1 added more criteria focusing on mobile accessibility, people with low vision, and people with cognitive and learning disabilities.

WCAG is centered around the accessibility principles that the EU legislation also follows, as presented in the previous sections. While WCAG criteria and guidelines do not exactly mirror those specified in the European Accessibility Act, there is a significant overlap that can be efficiently leveraged. Through utilizing WCAG testing tools, it becomes straightforward to pinpoint the common elements and discern specific areas requiring enhancement. This process enables the practical application of our project's designs and best practices, ensuring that they not only comply with both WCAG guidelines and EU legislation but also effectively address the specific needs of our target groups.

It is important to note that the WCAG is constantly evolving, in order to adapt to new developments and best encompass the needs in web accessibility. As of October 5, 2023, the latest version of the WCAG is WCAG 2.2. This version was officially published by the World Wide Web Consortium (W3C) and represents a step toward a more accessible and inclusive Web, especially for people with disabilities, including those with learning disorders.

WCAG 2.2 includes nine new criteria that make their debut in this version of the standard. These new sections detail aspects of the specification that may impact privacy and security. Meanwhile, WCAG 3.0 is still under development and is not yet a formal standard.

As such, it is imperative for users of this toolkit to be conscious of this fact and regularly verify the current version of WCAG prior to utilizing the presented tools. This ensures that their accessibility testing is aligned with the most recent standards and guidelines. Given that WCAG 2.2 was released only recently, on October 5, 2023, it is reasonable to anticipate that many accessibility testing tools are in the process of updating their features to encompass these new standards. This evolving nature of WCAG necessitates a proactive approach from VET educators, students, and web developers. They should continuously monitor for updates in these tools to ensure their compliance checks include the latest criteria, especially those pertaining to privacy and security introduced in WCAG 2.2. Additionally, with WCAG 3.0 on the horizon, although not yet a formal standard, it's important for users to stay informed about its development. Staying updated ensures that the tools they use are not only current but also future-ready, thereby maintaining the highest level of accessibility compliance and effectiveness in their web projects. This proactive stance for WCAG developments is crucial for ensuring web designs are not only compliant but also inclusive, reflective of the latest advancements in web accessibility.

Finally, we have compiled additional resources in the form of EU funded projects in the field of web accessibility, the results of which offer tools and options for better understanding web accessibility implementation and testing.

Therefore, the following subsection 4.1 presents tools that practitioners can use for accessibility testing. Subsection 4.2 provides an overview of relevant projects and their results that can be utilized.

The tools presented in the subsection have been tried by the consortium and are currently in operation. Indicative screenshots are provided for certain tools, as examples showcasing different environments and manners of presenting the accessibility test results to the user.

Accessibility Checker

https://www.accessibilitychecker.org/

Accessibility Checker offers a user-friendly interface for identifying web accessibility issues, with compliance up to WCAG 2.1. Its limitation to two free scans per day makes it ideal for smaller projects or for initial assessments of a website's accessibility.

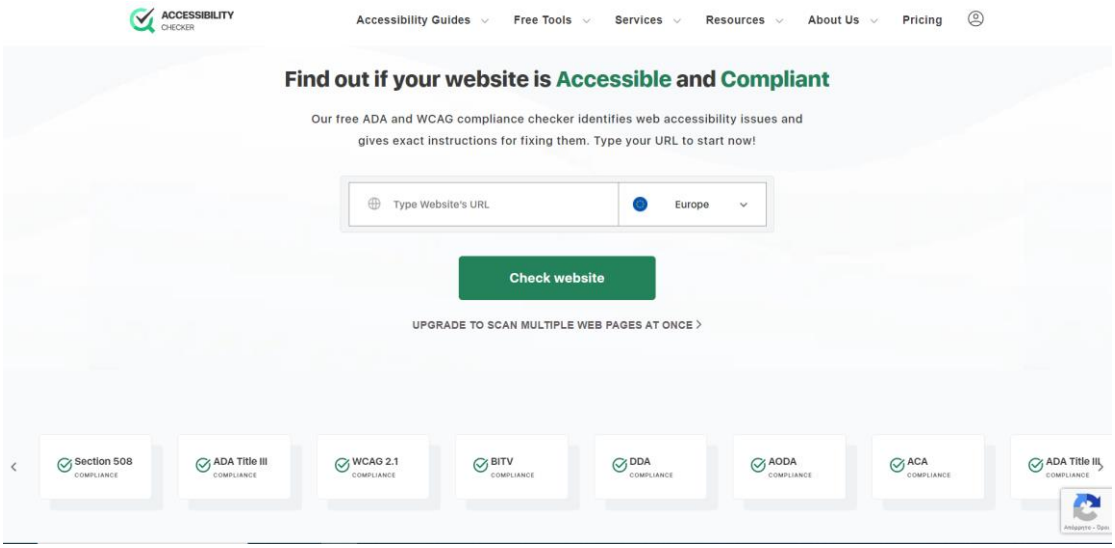

Figure 13: Accessibility Checker homepage (Accessibility Checker, 2023)

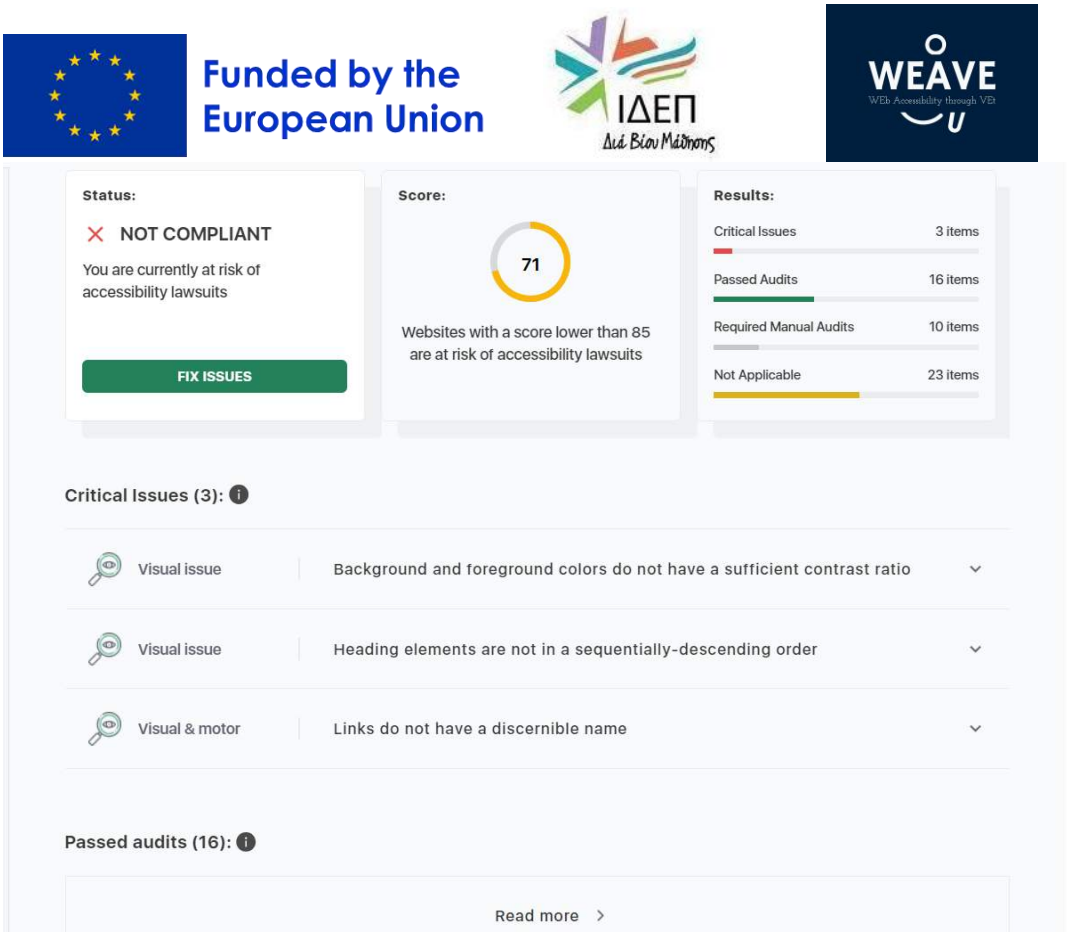

Figure 14: Accessibility Checker results (Accessibility Checker, 2023)

AChecker

https://achecks.org/achecker/

It is a versatile tool that highlights the importance of combining automatic detection with manual testing. While automatic detection is efficient for identifying a subset of issues, manual testing ensures a more comprehensive accessibility evaluation. It offers the option to select the exact guidelines to check against (e.g. WCAG 1.0 Level A, WCAG 2.0 Level AAA, etc.).

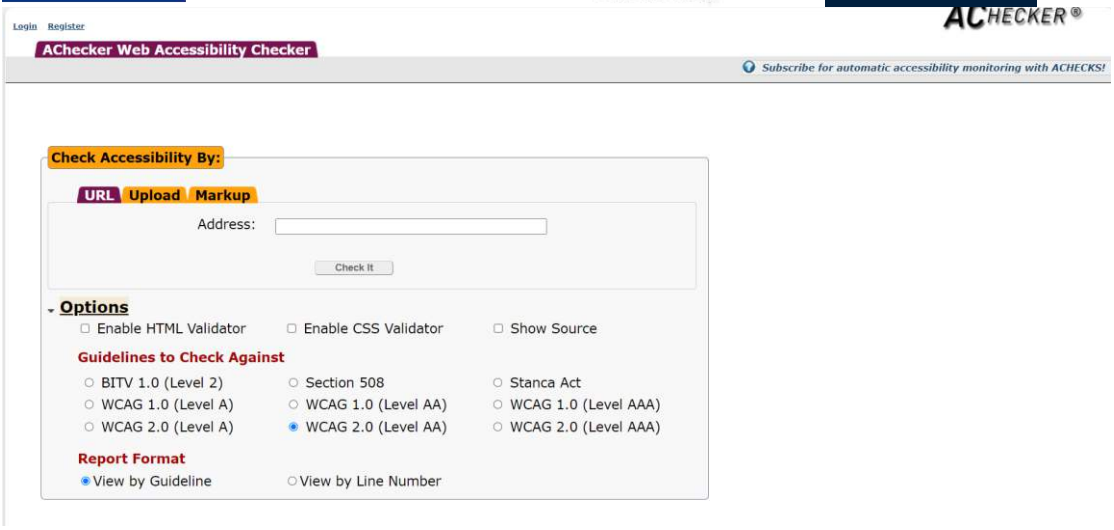

Figure 15: AChecker options (Achecker, 2023)

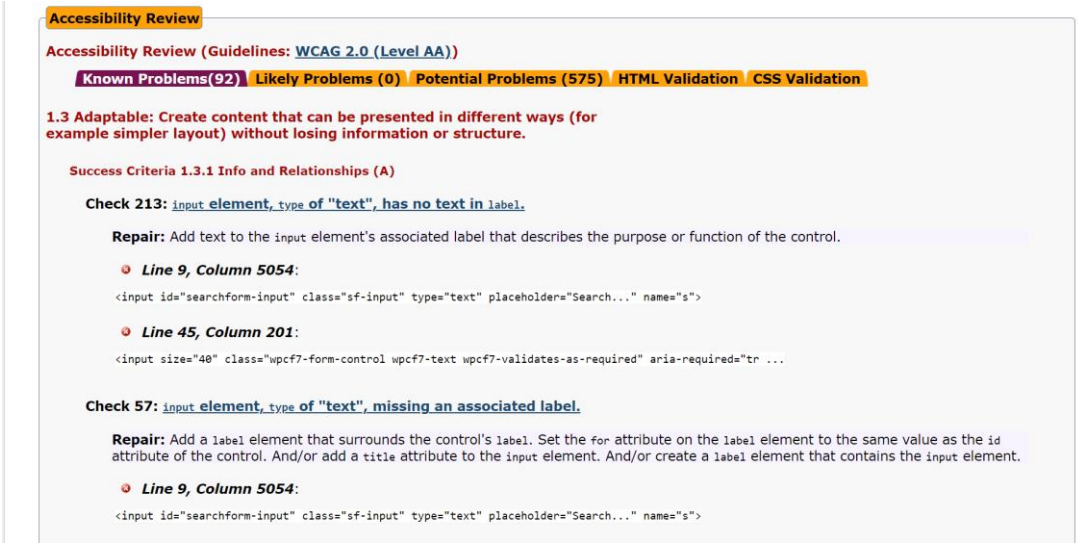

Figure 16: Achecker results (Achecker, 2023)

UseableNet

https://usablenet.com/automated-accessibility-testing-tool

UsableNet's AQA (Accessibility Quality Assurance) tool's free version provides a solid foundation for identifying automatically detectable WCAG issues and offers a manual review panel for deeper analysis. This tool is particularly beneficial for educators and students learning about accessibility in web development, as it allows them to test and understand real-world applications of WCAG guidelines. The premium version expands these capabilities, allowing for comprehensive testing across multiple pages

and filtering common elements, like headers and footers, which is crucial for large-scale web projects. The user receives the accessibility check results via email.

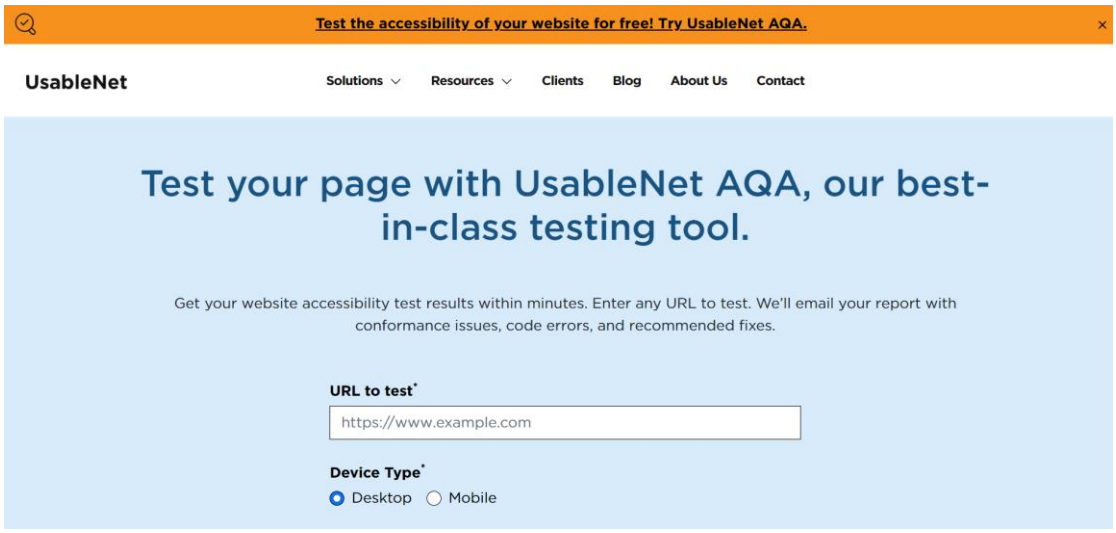

Figure 17: UsableNets AQA testing tool (UsableNet, 2023)

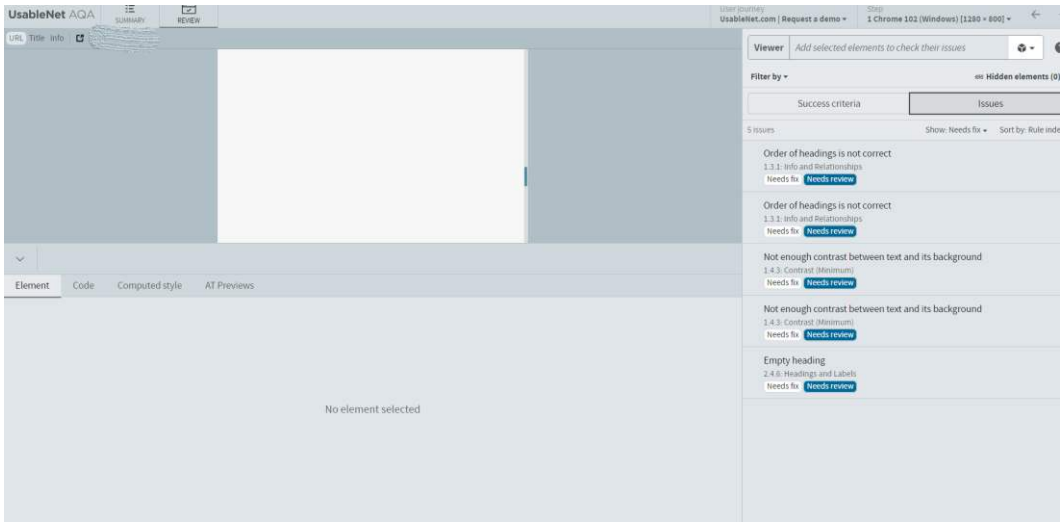

Figure 18: UsableNets AQA results (UsableNet, 2023)

Axe DevTools

https://www.deque.com/axe/devtools/

This tool is renowned for its comprehensive browser extension and user-friendly interface. The free trial version allows users to experiment with its features, making it an excellent educational tool for

understanding and identifying accessibility issues. Its popularity stems from its effectiveness in identifying accessibility issues that are often overlooked during the development process.

Equally AI

https://equally.ai/

Equally AI offers a unique no-code solution to web accessibility, making it an ideal tool for users with limited technical expertise. This tool democratizes the process of making web content accessible, allowing a broader range of users to contribute to creating an inclusive digital environment.

Siteimprove

https://www.siteimprove.com/

While accessibility is not the primary focus of Siteimprove, nevertheless it offers an accessibility tool, with a free site audit. This feature is particularly beneficial for assessing the overall quality of a website, including its accessibility, thereby providing a comprehensive understanding of a site's strengths and areas for improvement.

EqualWeb

https://www.equalweb.com/

EqualWeb Checker stands out as a real-time accessibility testing tool, validating ADA and WCAG 2.2 compliance. Its integration as a Google Chrome extension makes it readily accessible and easy to use. The tool's immediate feedback on accessibility issues, including contrast errors, aria attributes, and role attributes, makes it an excellent resource for quick assessments and for understanding the finer nuances of web accessibility.

Color Oracle

https://colororacle.org/

Color Oracle is a versatile and free color blindness simulator available for Windows, Mac, and Linux. It simplifies designing for color blindness by applying a full-screen color filter to your work in real-time, showcasing how individuals with common color vision impairments perceive visuals. Though its functionality is more focused compared to broader accessibility tools, it's highly effective in ensuring

that websites are accessible to the population with color vision impairment, while also fostering empathy among developers and users with typical color vision.

TAW – Test de Accesibilidad Web

https://www.tawdis.net/index

This tool provides an essential resource for Spanish-speaking VET practitioners. Its interface and reports in Spanish make it more accessible for users who are less proficient in English. By covering up to WCAG 2.0, TAW serves as a valuable tool for ensuring basic compliance with accessibility standards in Spanish-speaking regions.

The provided list features the latest tools that offer free or partially free accessibility solutions. For a broader historical context, the W3C List of Web Accessibility Evaluation Tools (https://www.w3.org/WAI/ER/tools/) serves as a valuable resource. This extensive database includes tools dating back to 2005, providing insights into the evolution of web accessibility practices. Although some entries may be dated, they offer a unique glimpse into the historical development of accessibility tools. As indicated on the website, an update to this list is anticipated shortly, making it a crucial resource for readers to consult regularly. This will ensure they have access to an even wider array of information and tools to enhance their web accessibility efforts.

4.2 PROJECTS OF INTEREST

To promote web accessibility efforts and reinforce the implementation of legislation, the EU has funded relevant projects to raise the capacity of stakeholders. While the projects presented in this subsection precede the adoption of the EAA, nevertheless they offer useful tools and knowledge for accessible web design and especially compliance testing that can be used by VET educators and web developers alike.

WAI-Tools

Advanced Decision Support Tools for Scalable Web Accessibility Assessments (WAI-Tools), was an Innovation Action project, co-funded by the European Commission (EC) under the Horizon 2020 program (Grant Agreement 780057). The project started on 1 November 2017 for a duration of three years. WAI-Tools drove web accessibility evaluation and repair through:

- Building on the on-going W3C efforts on WCAG Accessibility Conformance Testing (ACT);

- Ensuring consistent accuracy across automated, semi-automated, and manual testing;
- Pursuing leading edge technologies testing, including dynamic and mobile applications;
- Leveraging the existing market of commercial, free, and open source evaluation tools;
- Demonstrating large-scale accessibility monitoring built on open standards and tools.

WAI-Tools achieved this by carrying out key efforts in the vendor-neutral environment of the World Wide Web Consortium (W3C). WAI-Tools drew together key expertise from industry, public bodies, and research to develop common understanding of web accessibility requirements.

https://www.w3.org/WAI/about/projects/wai-tools/

WADcher

WADcher (Web Accessibility Directive Decision Support Environment) has developed and tested a large-scale infrastructure supporting the European public sector in their Web Accessibility Directive (WAD) obligations. It integrates an extended and enhanced set of existing tools for automatic and semi-automatic web accessibility assessment and expert review methods. It has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 780206.

The project ended officially in June 2021. WADcher is now available as a validated cloud-based Software as a Service (SaaS) prototype integrated system that greatly reduces the costs of WAD compliance adherence, including designing and testing, assessing and on-going monitoring and maintenance.

https://wadcher.eu/

Certified Digital Accessibility Training

The Certified Digital Accessibility Training project, initiated in September 2018 under the ERASMUS+ program, addresses the critical need for digital accessibility in compliance with the European Directive (EU) 2016/2102. This directive mandates that by 2020, all public sector websites and mobile applications must be accessible to individuals with disabilities. To meet this requirement, the project involves six partnering organizations from Slovenia, Poland, Greece, and Spain. These partners are focused on developing specialized training in digital accessibility, catering to an emerging labor market demand in Europe for professionals skilled in this area. The project targets key job roles such as Digital Accessibility Managers, Testers, Web Developers, and Designers, ensuring they are equipped with the necessary expertise in digital accessibility.

The training encompasses comprehensive modules like Introduction to Digital Accessibility, Managing Digital Accessibility, Web Development and Design for Accessibility, Implementation, and Evaluation. The main outputs of the project include a digital accessibility skills framework, job roles analysis, a training curriculum with a certification methodology, innovative training modules, an accessible learning platform, a Train the Trainer event, three digital accessibility forums, and a final international conference on Digital Accessibility. This initiative, part of the ERASMUS+ Cooperation for innovation

and exchange of good practices, ran from September 1, 2018, to February 28, 2021, under the project ID 2018-1-SI01-KA202-047103.

While a few years have passed since its completion, this project's results are highly complementary with WEAVE and can be used in combination to enhance their overall effectiveness and render them up to date.

https://digital-accessibility.eu/

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6 ANNEX

6.1 FOCUS GROUP REPORT - JOIST

Objective: To explore and understand the participants' experiences, challenges, and insights regarding EU web accessibility, with a focus on the Web Accessibility Directive (WAD) and European Accessibility Act (EAA). The findings will inform the best practices mapping and development of the WEAVE best practices report.

Date and Duration: 12/07/2023, 1:00-4:00 PM, Joist Innovation Park

Participant ID	Age	Gender	Organization (if applicable)
P1	29	F	Association of People with Vision Problems, Larissa
P2	29	F	Association of People with Vision Problems, Larissa
P3	19	F	Greek Sign Language Centre, Thessaloniki
P4	21	F	Municipality of Larissa
P5	29	M	Greek Sign Language Centre, Thessaloniki
P6	23	M	Municipality of Larissa

Agenda:

1:00-1:30 Welcome and Introduction (30 minutes)

- Greet participants and provide a brief overview of the Weave project.
- Introduce the purpose and goals of the focus group discussion.
- Allow participants to introduce themselves and briefly share their backgrounds and expectations.
- Overview of the ground rules
- Reminder of accessibility options and practices

1:30-2:00 Theoretical Background (30 minutes)

- Present the theoretical framework.
- Brief overview of the WAD and EAA principles, and the associated EU legislation
- Introduction of the EAA functional performance criteria
- Questions

2:00-3:45O pen Discussion (approximately 2 hours)

Facilitation Questions:

Engagement Questions

- "Tell me about your experiences interacting with websites, especially those with accessibility features."
- "What are some of the challenges you face with websites that lack accessibility features?"
- "How familiar are you with the WAD and/or the EAA?"

Exploration Questions

- "How do the 4 accessibility principles (perceivability, operability, understandability, robustness) affect your online experiences?"
- "Discuss your experiences related to the EAA functional performance criteria."

- "What, in your view, are the primary gaps in current web accessibility implementations?"

Best Practice and Suggestion Questions

- "Can you recall any positive experiences where websites have exceeded your expectations in terms of accessibility?"
- "What constitutes a 'best practice' for you in web accessibility?"
- "What suggestions would you give to improve the accessibility of websites in line with the WAD and EAA principles?"

Exit Questions

- "Of all the things we've discussed, what is most important to you?"
- "Is there anything else you would like to add or emphasize that we haven't covered?"

3:45-4:00 Closing Remarks (15 minutes)

- Summary of key points raised during the discussion.
- Information about next steps and the WEAVE best practices report
- Appreciation and thank you to participants for their time and input.

Discussion

As soon as the participants arrived, they were welcomed, and the purpose of the focus group was explained. There was a presentation of the WEAVE project, an introduction to the partners and the objectives of the project. Then we set out the rules of the focus group and how we would proceed. The participants had time to introduce themselves and say a little about their organizations. They were also asked about their expectations of the focus group. The participants wanted to learn more about European web accessibility for people with disabilities and how other organizations work. They wanted to learn new information and exchange new ideas and good practices.

During the "Theoretical background" section of the focus group discussion, we presented the fundamental ideas and principles that formed the basis of our topic. We gave a brief explanation of the principles of Web Accessibility Directive (WAD) and the European Accessibility Act (EAA), together with the relevant EU legislation. This helped participants to understand the legal framework and guidelines that influenced accessibility considerations. We also presented the EAA's functional performance criteria, which served as benchmarks for assessing the accessibility of products and services. Participants had the opportunity to ask questions and to request extra clarifications.

After the Theoretical section, an open debate followed, facilitated by the above questions.

Engagement questions:

During the focus group discussion, participants, including those working in organizations supporting individuals with disabilities, expressed a lack of awareness about important European Union laws like the Web Accessibility Directive (WAD) and the European Accessibility Act (EAA) that address web accessibility for people with disabilities. They know the general framework but are not familiar with all the regulations and developments. As regards their personal experiences with web accessibility, they shared both positive and negative experiences. One participant shared his personal experience, mentioning the challenges faced when using websites that include shortcuts without proper

explanations, especially when relying on screen readers. The participants highlighted the importance of designing websites in a way that screen readers can understand the content, as many sites either don't work at all or become inaccessible with the use of screen readers. The participants also noted the difficulties faced by individuals with visual impairments due to inadequate contrast perception. They suggested that web designers should consider this factor while selecting color schemes and avoid using small color gradients. Overall, it was evident that participants valued websites with accessibility features but recognized the need for greater awareness and improvements in web accessibility. Another point that was emphasized is that many video platforms, such as YouTube, are capable of automatically generating captions. However, these automatically generated captions are not always reliable, as speech recognition technology may incorrectly detect words. This makes it difficult for individuals with hearing impairments to have easy access. In the end, the participants agreed that there has certainly been significant progress regarding the web accessibility of people with disabilities. However, they acknowledged that more work and advancements are needed to ensure equal access for all users, just like any other user.

Exploration questions:

The participants agreed that the four accessibility principles (perceivability, operability, understandability, and robustness) have a significant impact on online experiences. They recognized the importance of perceivability, which ensures that content is visible or detectable, particularly for individuals with visual impairments. Participants also emphasized the value of operability, which allows them to navigate and interact with websites using different input methods to meet their specific needs. They appreciated the understandability principle, as it ensures that information and interface elements are clear and easily comprehensible, facilitating effective navigation and usage of websites. Additionally, participants highlighted the significance of robustness, which guarantees that websites are compatible with various technologies and assistive devices, enabling a seamless user experience for individuals with disabilities. These insights from the participants emphasize the essential role of accessibility principles in shaping positive online experiences.

P6, who has hearing difficulties and is familiar with the European Accessibility Act (EAA), shared his experiences regarding the EAA functional performance criteria. He mentioned that these criteria have significantly improved web accessibility. For instance, he was pleased to come across websites that provided alternative text descriptions for images, which helped him understand the visual content despite his visual impairment. Additionally, P6 appreciated websites that had clear headings and well-labeled form elements, as they made it easier for him to navigate and interact with online forms. Nikos's experiences highlighted how the EAA functional performance criteria positively impact web accessibility for individuals with different disabilities.

All the participants in the focus group discussion agreed that there is a significant gap in current web accessibility implementations. They emphasized the lack of awareness and understanding among website developers and designers as a primary issue. Many websites still do not prioritize accessibility, creating barriers for individuals with disabilities. The participants also highlighted the inconsistent enforcement and monitoring of accessibility regulations, leading to varying standards across different websites. To address these gaps, they emphasized the need for increased education and training for developers to integrate web accessibility from the start of the development process. The participants suggested that more emphasis should be placed on user testing and feedback to identify and address accessibility issues effectively. They also mentioned that some e-commerce websites still do not use

tools to make them accessible to people with disabilities, despite the availability of such tools. Overall, the participants stressed the importance of creating more user-friendly and accessible web experiences that response to the diverse needs of individuals with disabilities.

Best Practice and Suggestion Questions:

From the participants' perspective, a best practice in web accessibility involves the implementation of inclusive principles right from the start of website design and development. They agreed that websites should prioritize clear and concise content, ensuring that information is easily understandable. Proper color contrast to enhance readability, along with options for resizing text, were also considered important aspects of web accessibility. The participants emphasized the significance of websites being compatible with assistive technologies, such as screen readers, and having keyboard-friendly navigation to accommodate diverse user needs.

One best practice that P1 shared during the focus group discussion was the website of the Greek governance (https://www.gov.gr/). She found it to be easy to use and inclusive for individuals with disabilities. The website responds to different needs, such as dyslexia and achromatopsia etc. P1 particularly appreciated that the website provided alternative text descriptions for images. This feature allowed her to fully understand and engage with the visual content. Moreover, P1 found the website's navigation to be clear and consistent, with well-structured headings that made it effortless for her to find the information she needed. Overall, the Greek governance website stood out as a positive example of accessibility in terms of its inclusive features and user-friendly design.

Another excellent example that P5 mentioned is the website "AMEA CARE," (https://www.amea-care.gr/) which adheres to the WCAG 2.0 AA (Web Content Accessibility Guidelines) standards. The website provides accessibility for a broader range of individuals with disabilities, including Visual impairments and low vision, Hearing impairments and low hearing, Learning disabilities, Limited mobility etc. The website caught P5’s interest because it utilizes text-to-speech synthesis technology, offering a voice support service. This ensures accessibility for individuals with visual impairments, dyslexia, and limited reading abilities in the Greek language.

The recommendations as participants for improving web accessibility based on the WAD and EAA principles are as follows:

- Websites should provide clear and comprehensive accessibility statements that communicate the available accessibility features and accommodations.
- Educational resources should be readily available for website developers and designers to increase awareness and understanding of accessibility guidelines.
- User feedback and accessibility testing should be integrated throughout the website development process to identify and address barriers effectively.
- Collaboration with individuals with disabilities and advocacy groups is crucial for creating user-centered and inclusive web accessibility practices.
- Government support, including financial resources, can incentivize organizations to prioritize web accessibility and provide benefits to encourage compliance.
- For individuals with visual impairments, we recommend the utilization of screen readers, audio descriptions, and screen magnification tools to enhance website accessibility. It is important for web designers to consider this factor during the color design of a website and avoid using small color gradients, as it can pose difficulties for those with visual challenges.

- It is important to consider the needs of individuals with dyslexia when selecting fonts for websites. Sans Serif fonts, such as Verdana, are generally considered more legible for people with dyslexia. Providing options for users to customize the website's formatting and use their preferred settings can greatly enhance accessibility and accommodate individual preferences.

Afterwards, we concluded the focus group by summarizing the discussions we had above and thanking the participants. The participants expressed that they found the topic of discussion very interesting and valued the exchange of perspectives. It was agreed that there are still steps that need to be taken, but there is hope of evolution.

6.2 Focus group report - Inercia Digital SL

Objective: To explore and understand the participants' experiences, challenges, and insights regarding EU web accessibility, with a focus on the Web Accessibility Directive (WAD) and European Accessibility Act (EAA). The findings will inform the best practices mapping and development of the WEAVE best practices report.

Date and Duration: Tuesday 11/07/2023 from 13:00 to 15:00

Location: Online. We decided to choose Google Meet due to its accessibility features such as audio quality adjustments, live captions and automated transcripts. These will make it easier for the participants with hearing limitations to follow the conversation.

Participants:

We had two different types of participant profiles. To begin with, we had different stakeholders either with documented and recognized hearing disability between 35% and 65%, or with a context nearby in which a relative has a hearing disability. On the other hand, we invited experts with experience in the public sector that would provide us with the needs and challenges they encountered in regard to the implementation of the WAD and the EAA. Since it was a small group, we had a quite high ratio of interaction, all the participants participated very frequently during the whole event.

Participant ID	Age	Gender	Organization (if applicable)
P1	47	F	INERCIA DIGITAL SL
P2	33	M	INERCIA DIGITAL SL
P3	29	M	INERCIA DIGITAL SL
P4	26	F	INERCIA DIGITAL SL
P5	28	F	INERCIA DIGITAL SL
P6	31	M	INERCIA DIGITAL SL

Agenda

0. Gathering of the participants - 12:45

I. Welcome and Introduction - 13:00

- Introduction of the facilitator(s) and participants
- Brief explanation of the project and the purpose of the focus group
- Explanation of the structure and duration of the focus group
- Overview of the ground rules
- Consent confirmation
- Reminder of accessibility options and practices

II. Context Setting - 13:15

- Brief overview of the WAD and EAA principles, and the associated EU legislation
- Introduction of the EAA functional performance criteria

III. Engagement Questions – Indicative List - 13:20

- "Tell me about your experiences interacting with websites, especially those with accessibility
- features."
- "What are some of the challenges you face with websites that lack accessibility features?"
- "How familiar are you with the WAD and/or the EAA?"

IV. Exploration Questions – Indicative List - 13:40

- "How do the 4 accessibility principles (perceivability, operability, understandability,
- robustness) affect your online experiences?"
- "Discuss your experiences related to the EAA functional performance criteria."
- "What, in your view, are the primary gaps in current web accessibility implementations?"

V. Best Practice and Suggestion Questions – Indicative List - 14:10

- "Can you recall any positive experiences where websites have exceeded your expectations in
- terms of accessibility?"
- "What constitutes a 'best practice' for you in web accessibility?"
- "What suggestions would you give to improve the accessibility of websites in line with the
- WAD and EAA principles?"

VI. Exit Questions - 14:40

- "Of all the things we've discussed, what is most important to you?"
- "Is there anything else you would like to add or emphasize that we haven't covered?"

VII. Closing - 14:50

- Summary of key points raised during the discussion
- Information about next steps and the WEAVE best practices report
- Appreciation and thank you to participants for their time and input

DISCUSSION

In this part of the report, we will write down the minutes of the event taking into account the agenda provided and all the topics that have been covered. In spite of the event having been delivered in Spanish due to participants' features, we will provide an English report:

I. Welcome and Introduction

In this very first part of the focus group, we introduced ourselves and the different Google Meet accessibility features for them to turn them on in case they needed to. Moreover, we told them about the structure we were going to follow during the following 2 hours of the event and thanked everyone for sending us the signed informed consent prior to the focus group.

Last but not least, in this section we also introduced WEAVE as a project to the different attendees.

This part was pretty much like a monologue.

II. Context Setting

We missed this step on purpose since we wanted to ask them how familiar are you with the WAD and the EAA before going through the different principles and associated EU legislation. It can be found below.

We decided we would like to know their current knowledge before telling them any information in regard to the same topic so their opinions and comments would not be influenced.

III. Engagement Questions – Indicative List

- "Tell me about your experiences interacting with websites, especially those with accessibility features."

P1 (hearing disability) says that she really appreciates when she navigates through a website with accessibility functions because she really struggles when she tries to watch videos or recorded tutorials without captions. Indeed, she says that the vast majority of the times, the videos she needs to watch for her continuous training in her field of work either they have no captions or the captions cannot be read due to their senseless transcription (has nothing to do with the real conversation or what the speaker is saying).

“By the way, I have to use headphones because it is easier for me to hear what I am watching on the computer. And it is quite annoying because the prosthesis I have to wear, and the headphones are all the time producing feedback and making unbearable noises. But I don't have the option not to use either the prosthesis or the headphones because I could not hear anything”

P2 (expert): he tells us that we cannot afford having videos without captions within websites. That is real, that is happening but we must change that as soon as possible because that is not inclusive at all. Also, regarding blind people, they have worked more than once in adding accessibility features for them, for example, they have added the function that when you put the mouse over any place of the screen when navigating through the website, suddenly a voice-over speaks saying where you are.

Those were the most important comments all over this part of the section, although the rest of the participants agreed on everything due to their own experience.

- "What are some of the challenges you face with websites that lack accessibility features?"

P3 (expert): Also the visual and graphic design of the website is paramount, there has to be a clear differentiation between the different colors that must be used to create the website, otherwise it may

be annoying to navigate through for people with some kind of visual impairment such as color blindness. For example, never use light font colors when using a white or light background.

Other participants agreed that also the size of the font is quite important, although we can always use CTRL+Mousewheel to zoom in or out, the website should be well prepared by itself.

- "How familiar are you with the WAD and/or the EAA?"

Except for the experts, for the rest of the participants with disabilities or involved in a context where they have a relative or a quite close person with any kind of impairment, they never heard of the WAD and the EAA. So we took the opportunity to show them the official website of both and gave them information about which are the different features of each, their principles and the functional performance criteria.

IV. Exploration Questions – Indicative List

- "How do the 4 accessibility principles (perceivability, operability, understandability, robustness) affect your online experiences?"
- "Discuss your experiences related to the EAA functional performance criteria."
- "What, in your view, are the primary gaps in current web accessibility implementations?"

First of all, we wanted to give a brief explanation of each principle, saying that perceivability means that the information and user interface components should be displayed to users in ways they can understand. Operability means that the website must be manageable. Understandability means that the information and user operations must be understandable and robustness means that the content must be robust enough to be well interpreted by a wide variety of user agents, including assistive technologies.

They said that regarding robustness, the theoretical information and what they mean and want by implementing this principle is perfect, but reality is quite different, it is not enough. Sometimes people add simultaneous translators to websites but you realize that half of the information is missing or wrong translated, it also happens that complete sentences are “eaten” or missed. So from the point of view of all the participants, that concrete principle is not being fulfilled. But not only in websites but also in the news on TV, *“it is almost impossible to watch some live news with correct subtitles, they are always wrong. They are not synced, they are sometimes translating the previous news for you when the one presented is already two news ahead. And the same thing happens on websites”* Patricia said.

For that audience that has not any limitation it may be even funny to read those crazy captions or translations, but we must be aware that those captions or translations may be the only resource some people may have to watch or use that resource.

So we concluded that these 4 principles are enough. But the different institutions in charge of it, should put a lot more emphasis on becoming real. They should be applied much more frequently, because the reality is quite different from the theoretical principles and this way, realia is not inclusive at all.

V. Best Practice and Suggestion Questions – Indicative List

Some of them are now being trained through the program KIT DIGITAL which is an initiative from the Ministry of economic affairs and digital transformation of Spain for small and medium enterprises

thanks to the European Union funds. And they said that in this particular website, it is way less frequent what we commented above about the wrong captions, transcription or translations. Maybe it is because it is not live and they previously added the text, but it works very well, they are happy with it.

The experts told us that apart from what has been previously said about accessibility features for people with hearing impairments, they have also experience with blind people. They are aware of a plugin called Sonowebs, which is a very simple system to listen to the texts written in a blog through an audio player. It can be used either by inserting a text to generate an MP3 or as a plugin for WordPress or as a template for Blogger. It automatically converts the text into audio and offers the option of placing a player to listen to it right there.

Also they mentioned an important thing about the keyboards we usually use, there are two dots in the different keys of the keyboard for blind or partially sighted people to be able to know exactly which keys they are pressing.

From their point of view, in order to become a good practice (apart from all the aforementioned issues that should be corrected in reality), a website should have a very well organized menu (and its different categories), as less confusing as possible. Because for us, if we click on the wrong button, we will last 1 second to come back and click the correct button, but for some people with impairments, it may be a huge problem. They remarked that in case you want to add any video to your website, please, take into account that it should have correct captions and transcription that correspond to the content that is being watched.

We also discussed a little bit about the different streaming platforms such as Netflix, HBO, Disney+, Amazon Prime and even Youtube. They told us that their experience using those platforms was excellent except when using Amazon Prime, which is the less accessible one (with more issues in regard to the hearing impairment accessibility features we mentioned before). The rest work almost perfectly.

VI. Exit Questions

- "Of all the things we've discussed, what is most important to you?"
- "Is there anything else you would like to add or emphasize that we haven't covered?"

Everyone agreed that the most important thing is to really apply the 4 principles we talked about at the beginning of this event. They are more than enough to make all the websites accessible, but it really must be applied (not only theory). In conclusion, websites should reach as many people as possible, and to achieve that, all the 4 principles must be applied correctly with the website smoothly running. However, they all recognized how difficult it is to cover all the impairments and types of disability when programming a website (visual, hearing, intellectual, motor disability…), because they are aware that the main purpose of a website is to open that content and reach everyone with it. In spite of this, we cannot omit this in the process of the creation of the website otherwise there will be some people that will always be behind us.

VII. Closing

To sum up, we concluded that we are happy to hear that the European Union is moving forward with the accessibility of the websites, but we are still unsatisfied with the result because there is still a very high percentage of websites which do not fulfill these requirements. If only the institution in charge of pushing in this field put more emphasis on this so we could have a brighter future.

Lastly, we thanked the participants for their attention and told them about WEAVE next steps (Creation of the Accessible Web Design VET Toolkit). Doing these kinds of events, you feel understood and not alone when you find out that some of the reflections you made yourself connect with others'.