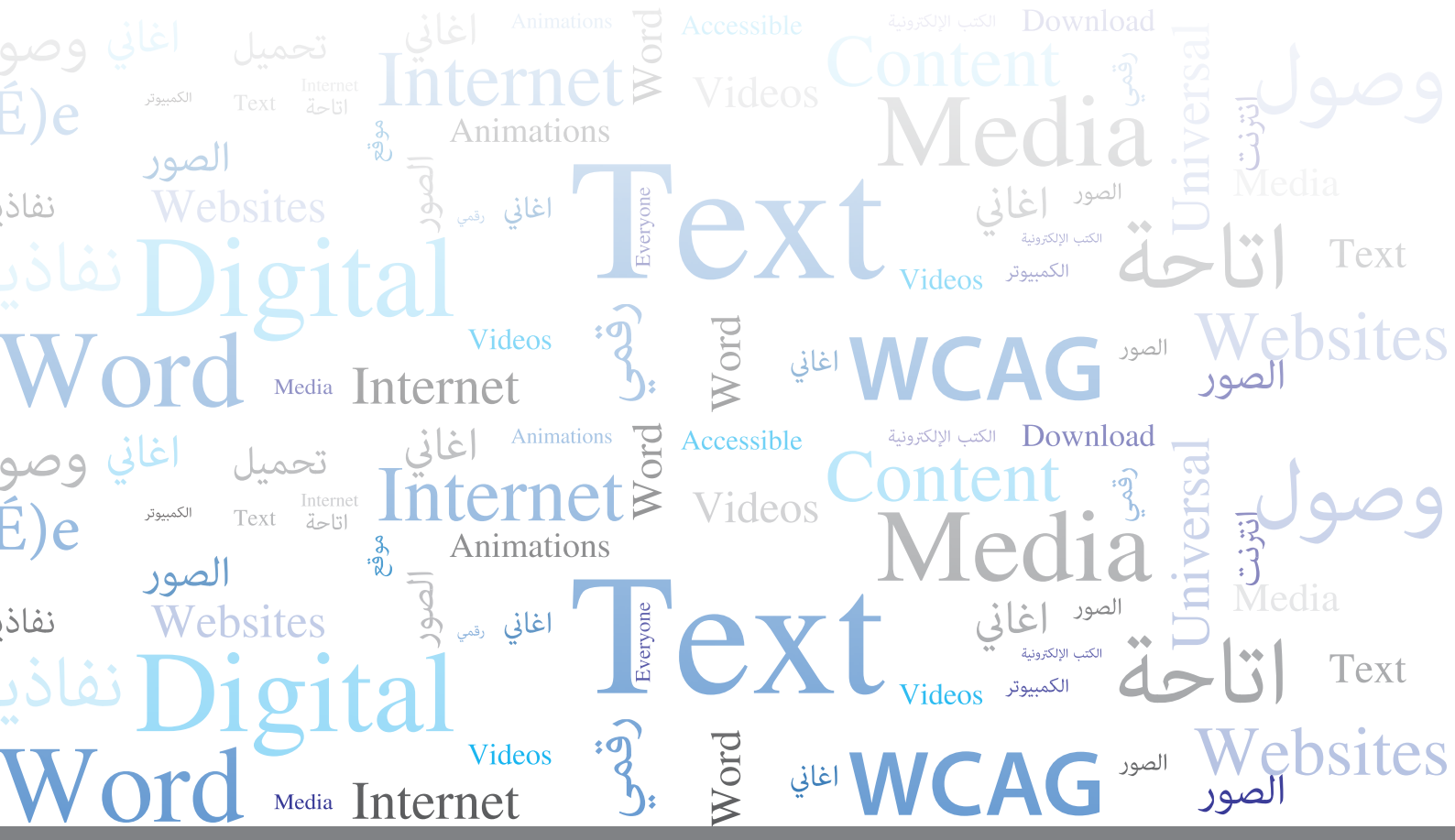

Kuwait National Framework for Digital Accessibility

2018

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Acknowledgements

This Framework has been developed under “Achievement of the Kuwait 2035 vision towards people with disability” project supported by the United Nations Development Programme (UNDP) and implemented by the Public Authority for Disabled Affairs (PADA) in cooperation with General Secretariat of the Supreme Council for Planning and Development (GSSCPD).

The Kuwait National Framework for Digital Accessibility has been completed in accordance with the codes of the State of Kuwait, and in consultation with various stakeholders (CAIT, CITRA, KISR, MOE, KU and the GSSCPD) under technical guidance of Dr. Vivienne Conway UNDP international consultant and director of Web Key IT Pty Ltd .

Kuwait National Framework for Digital Accessibility

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Executive Summary

Digital accessibility can be defined as ensuring accessibility to digital materials, such as websites, digital documents, mobile technology etc., for people with disabilities. In brief, accessibility means usability for people with disabilities.

Kuwait has embraced the concept of 'Universal Design' for the physical world and built environment. Introducing the concept of digital accessibility into the requirements for universal design will ensure people with disabilities have access to information such as the new e-government services.

Clearly Kuwait recognises the rights of the individual within Kuwait to be able to participate in society, not just physically, but digitally as well. There are some laws in place, as referenced in this Framework, which address these needs, however evidence shows that further guidance is required in development guidelines, standards and methods for ensuring that the rights of people with disabilities are equitably represented in legal requirements for digital developments. Currently the legal framework lacks reference to digital inclusion, having concentrated mainly upon the physical to this point in time.

The "Achieving Kuwait 2035 Vision" recognises the need to adopt the new guidelines and standards in this Framework. The end result is Kuwait serves its citizens ensuring that everyone, regardless of ability, is able to access the information they require.

Kuwait has embarked upon an ambitious plan with the "Achieving Kuwait 2035 Vision Towards Persons with Disability Project". This Project has the potential to change the lives of many people in Kuwait, including both those with disabilities and those who support their integration more fully in Kuwait society.

The Kuwait National Framework for Digital Accessibility (the Framework) is a document which describes the requirements for digital accessibility in Kuwait, for both public and private organisations. The Framework is built upon an underlying Policy and laws for Kuwait which ensures the inclusion and rights of persons with disabilities. Upon this foundation, the Kuwait National Framework for Digital Accessibility outlines the level of compliance required, the procedure of how to ensure compliance with the Standard, and additional guidance and resources to assist in reaching compliance.

This Framework contains the following sections:

- Introduction
- Situation Analysis and International Good Practice
- Kuwait National Standards for Digital Accessibility
- Procedure
- Guidelines
- Conducting Digital Accessibility Evaluations

- Conclusion including recommendations for the future

The Kuwait National Framework for Digital Accessibility embraces International best practice for accessibility requirements and will ensure that Kuwait meets its commitments under the United Nations Convention for the Right of Persons with Disabilities (UNCRPD). By adopting this Standard, Kuwait will fulfill its international obligations, build its internal technical capacity and provide digital access to persons with disabilities.

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect." (Sir Tim Berners-Lee, Director of W3C and Founder of the Web).

1. Introduction

1.1. Rationale

This document outlines the new 'Kuwait National Framework for Digital Accessibility', describing what it is, how it will be implemented and the requirements for digital development in Kuwait, for both public and private organisations.

Kuwait has embarked upon an ambitious plan with the "Achieving Kuwait 2035 Vision Towards Persons with Disability Project". This Project has the potential change the lives of many people in Kuwait, including both those with disabilities and those involved with their support and integration more fully into Kuwait society.

The Kuwait National Framework for Digital Accessibility embraces International best practice for accessibility requirements and will ensure that Kuwait meets its commitments under the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) which has been ratified by Kuwait in August, 2013. By adopting this Standard, Kuwait will fulfill its international obligations, build its internal technical capacity and provide digital access to persons with disabilities to ensure that no one is left behind in achieving the Sustainable Development Goals (SDGs) by adopting national accessibility and Universal Design policies and standards as prerequisites to achieve nearly all the 17 SDGs and specifically in parts related to education (goal 4), growth and employment (goal 8), inequality (goal 10) and accessibility of human settlements (goal 11).

For Kuwait to achieve the mandate of the "Achieving Kuwait 2035 Vision" and serve the needs of people with disabilities in Kuwait, there is a need for:

- Clear guidelines and standards that adopt current International requirements that will ensure that Kuwait meets its obligations under the United Nations Charter for the Rights of People with Disabilities – these need to be based upon accepted International standards including those developed by World Wide Web Consortium (W3C) and the European Standards.

- An understanding that while compliance with accepted standards is a critical baseline, people need usable and functional websites and other digital material such as mobile devices, internal systems, content management systems that support accessible design.

- In order for an organisation to understand whether their website is both accessible and usable, methods for testing must be clearly outlined, and must include testing by people with disabilities and seniors.

- There must be a national policy, supported by law that can be monitored and enforced, supported by adequate legal mandate to ensure compliance, including a transition strategy to enable progression from the current situation of little understanding of the requirement, need or purpose of digital accessibility towards full adoption and enforcement of recognized standards across Kuwait including both public and private organisation.

- Up-skilling in both education and technical knowledge for people involved with digital development both from initial development through to maintenance of developed systems.

- An involvement of all stakeholders in ensuring cooperation between all parties to facilities distribution of information and knowledge of the new requirements.

1.2. Definitions and Scope

This document will use the following definitions and scope to avoid any confusion with terms. Figure 1 illustrates the different purpose of each of the terms in relation to this Standard.

1.2.1. Website or Digital

In terms of accessibility, The Kuwait National Framework for Digital Accessibility uses the term ‘digital’ rather than ‘website’ except where it forms part of a quotation. While not wanting to confuse the issue, the term ‘website’ tends to limit the concept to a full website that is viewed on a desktop or laptop computer. The broader term ‘digital’ refers to all content that requires an Internet connection to operate and includes:

- Websites including social media websites and applications
- documents that can be downloaded from a website or application
- applications (native and web)
- mobile device display of digital content
- email applications
- internal Intranet and Extranet services

1.2.1.1. Guidelines, Procedures, Standards and Policies – Understanding the Difference

In this Standard, four specific terms are used – policy, standard, procedure and guideline. The following section outlines the purpose of each of these stages, and how these related to this document.

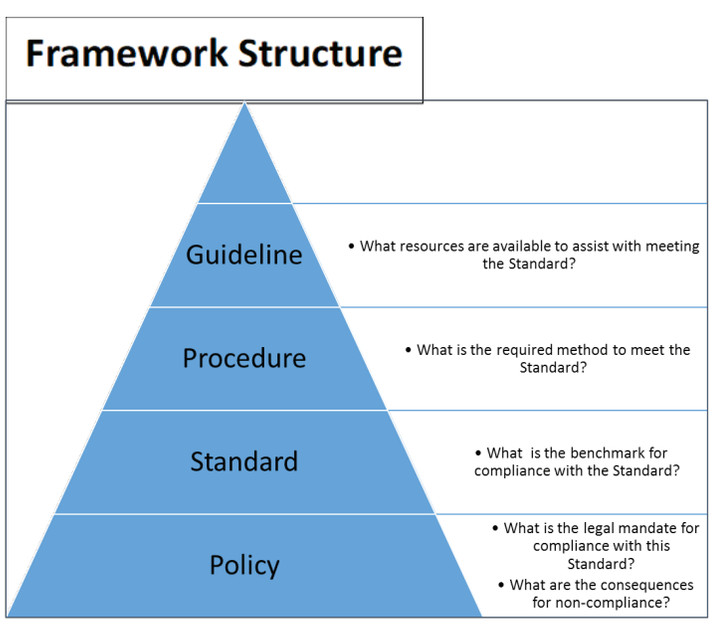


Figure 1: Difference between Policies, Standards, Procedures and Guidelines

1.2.1.2. Policy

The term ‘policy’ refers to the base or groundwork upon which the Kuwait National Standards for Digital Accessibility rests. It answers the question “What is the legal mandate for compliance with this standard?” Another question that can be added to this is “What are the consequences for non-compliance?”

Currently in Kuwait as in several countries, there is no specific legal document that addresses the need for digital accessibility. However, there are general rules that the Kuwait Government has instituted that protect the rights of people with disabilities. For instance, the foundation document Disability Law Kuwait refers to Law Number 8 of 2010 for the Rights of Persons with Disabilities.

The legal/policy element of this Standard and its applicability is not within the scope of this document and there will need to be discussions as to a possible transition time to implement the Standard, and implications for those organisations who choose not to comply for whatever reasons.

1.2.1.3. Standard

From Figure 1, a ‘Standard’ assigns quantifiable (countable) measures and asks, “What is required?”. Another way of phrasing this might be “What are the specific requirements that need to be met?” It is much easier to start and successfully complete a task, when the user is told exactly what to do. Until that understanding is reached, a task can seldom be completed satisfactorily.

A quantifiable measure is something that is capable of being measured or counted. In the specific context of this work, the accessibility of a website or any digital material can be measured against specific metrics.

1.2.1.4. Procedure

Again, using Figure 1 as a guide, the term ‘Procedure’ means establishing the proper steps to take and answers the question ‘What is the required method to meet the Standard?’

The answer to this question requires clear steps that an organisation can make sure their digital assets are accessible by persons with disabilities and seniors. Guideline.

1.2.1.5. Guideline

Guidelines provide additional recommended guidance. In other words, “What resources are available to assist with meeting the Standard?” There are often numerous methods to accomplish a task, and an organisation has the opportunity here to state the method they would like people to take. Useful Acronym Explanations.

1.2.1.6. Terms and Acronyms Used in this Standard

Several acronyms have been used in this Standard for convenience, however they have been stated in full in their first occurrence.

Accessibility Usability for persons with disabilities**.**

> “Accessibility addresses discriminatory aspects related to equivalent user experience for people with disabilities, including people with age-related impairments. For the web, accessibility means that people with disabilities can perceive, understand, navigate, and interact with websites and tools, and that they can contribute equally without barriers” (W3C WAI, 2016).

Ally Common abbreviation for ‘Accessibility’ .

Assistive Technology A device or system has helps a person perform an everyday task which might have been difficult for them without that device or system.

CRPD United Nations Convention on the Rights of Persons with Disability.

D.A.M.M. Digital Accessibility Maturity Model.

EOWG Education and Outreach Working Group, part of the Web Accessibility Initiative (WAI).

Inclusion Designing for the needs of the widest group of users possible.

> “Inclusive design, universal design, and design for all involves designing products, such as websites, to be usable by everyone to the greatest extent possible, without the need for adaptation. Inclusion addresses a broad range of issues including access to and quality of hardware, software, and Internet connectivity; computer literacy and skills; economic situation; education; geographic location; and language — as well as age and disability.” (W3C WAI, 2016).

PWD Common abbreviation for “People or Persons with Disability”.

SC Success Criteria (WCAG 2.0 is comprised of 65 Success Criteria such as SC 1.1.1) .

Usability Using International ‘best practice’ methods to ensure the structure is logical and intuitive and incorporates issues beyond strict technical WCAG compliance.

> “Usability and user experience design is about designing products to be effective, efficient, and satisfying”. (W3C WAI, 2016) .

W3C World Wide Web Consortium (Director is Sir Tim Berners-Lee, Inventor of the Web).

WAI Web Accessibility Initiative, a division of the W3C.

WCAG Web Content Accessibility Guidelines.

WCAG-EM WCAG-Evaluation Methodology.

2. Situation Analysis and International Good Practices:

2.1. Current Kuwait Policy

Disability Law Kuwait refers to Law Number 8 of 2010 for the Rights of Persons with Disabilities. Specific chapters of this law that would seem applicable to the policy on the rights of people with disability to access digital resources would include: Of pertinence in this word under this Law:

- Chapter 1: Scope of the Law's Application where Article 6 Refers to the design of physical facilities for people with disabilities, there is no specific reference to the ability of the individual to interact with digital or virtual facilities.

- Chapter 3: Rights of Persons with Disabilities, Article 5 State "The government shall take all effective administrative procedures and provide the necessary equipment to ensure that persons with disabilities enjoy their civil and political rights. "As it can be considered a civil right to be able to access available e-government services, there could be a valid argument that this article could be taken to include access to digital services.

- Chapter 8: The General Authority for People with Disabilities Affairs would also seem to have applicability as it states, "Ensuring equality of chances and indiscrimination of rights on the basis of disability and using other countries experiences in the fields of caring for people with disabilities, securing their rights, cooperating with the bodies concerned with the rights of people with disabilities to provide support ways for them, caring for, habilitating and rehabilitating them."

Kuwait has signed the United Nations Convention on the Rights of Person with Disabilities, where in the 8 Guiding Principles, accessibility is clearly included.

The 'Commonly Asked Questions' of the Convention, affirms the need for all States in the Convention to ensure that they address the essential rights of persons with disabilities to be able to participate in all aspects of society, including access to information.

"The Convention identifies general and specific obligations on States parties in relation to the rights of persons with disabilities. In terms of general obligations, States have to:

- adopt legislation and administrative measures to promote the human rights of persons with disabilities;
- adopt legislative and other measures to abolish discrimination;
- protect and promote the rights of persons with disabilities in all policies and programmes;
- stop any practice that breaches the rights of persons with disabilities;
- ensure that the public sector respects the rights of persons with disabilities;
- ensure that the private sector and individuals respect the rights of persons with disabilities;

- undertake research and development of accessible goods, services and technology for persons with disabilities and encourage others to undertake such research;
- provide accessible information about assistive technology to persons with disabilities;
- promote training on the rights of the Convention to professionals and staff who work with persons with disabilities;
- consult with and involve persons with disabilities in developing and implementing legislation and policies and in decision-making processes that concern them.

In 2006, the United Nations commissioned NOMENSA to conduct an audit of 100 websites from around the world, which include the websites of 20 countries. The audit was conducted on the home page of the websites against the current standard at the time, the Web Content Accessibility Guidelines (Version 1.0). In that audit, the only country representing the GCC region was the United Arab Emirates. It is interesting to note that the result of the audit shows that only 3 websites of the 100 obtained even single A level of the prevailing guidelines, and these were those of the German Chancellor, the British Prime Minister and the Spanish Government main website. From the Masters' thesis of Muhammad Saleem in 2016 on "Accessibility of e-Government Websites in the Gulf States", it would seem that little has changed.

Unless a specific requirement is clearly stipulated in a country's laws (policy), there is little chance of enforcing compliance with a specific standard. Therefore, it can be concluded that the policy aspect of ensuring the rights of people with disabilities to access digital information should be specifically enshrined in Kuwait law. Under the structure shown in Figure 1, this policy will for the foundation for any following standards, procedures and guidelines. The answer of the question in Figure 1 of "What is the legal mandate for compliance with this Standard" should be because it is a basic human right enshrined in this country's laws and covered under the United Nations Convention on the Rights of Persons with Disabilities, to which this country is a signatory. In order for this to be the case, this needs to be addressed specifically in law. However, creating national policy and law is obviously out of scope for this document.

The term 'policy' as mentioned, answers the question "What is the legal mandate for compliance with this Standard?

The answer to that question should include all the following:

Mandated by law:

The laws that are applicable form the policy of the Government of Kuwait, and the Policy of PADA. Note though the discussion above which demonstrates the need to refine the scope of the law to specifically include the right of citizens to access information, no matter what their ability or disability.

Part of Kuwait's International Commitment:

Kuwait is signatory to the United Nations Convention on the Rights of Persons with Disabilities, so there is an Internationally-binding agreement that Kuwait will implement measures to prove this commitment to this.

Achieve Best interest:

It is in the best interests of the citizens and residents of Kuwait that the rights of persons with disabilities are protected

Contribute to overall progress:

- People can be independent and fulfil their own information needs – consider issues such as renewing a license or obtaining a passport.
- Organisations do not need to serve everyone individually if people can do things themselves online, this reduces cost to the organisation.
- It protects the privacy and security of the individual –consider the issue of someone having to allow someone else to obtain money from a bank machine because the terminal is inaccessible.
- It shows that Kuwait values the lives and involvement of people with disabilities and demonstrates the country's commitment to its people, to the rest of the world.

The other question referred to in the introduction to this section is "What are the consequences for non-compliance with this Standard?" This will be discussed at the end of this document and in recommendations for future work. The legal/policy element of this Standard and its applicability is not within the scope of this document, and there will need to be discussions as to a possible transition time to implement the Standard, and implications for those organisations who choose not to comply for whatever reasons. As stated previously, a policy or law with no mandated compliance has little chance of being successfully implemented. This has been demonstrated clearly in our background study for this project.

2.2. International Standards for Accessible Websites

The accepted International Standard against which most countries in the world are working is the World Wide Web Consortium's (W3C) Web Content Accessibility Guidelines (known commonly as WCAG), Version 2.0 (migrating to 2.1) and most are looking for at least Level AA of these Guidelines. This doesn't mean that every website that meets WCAG 2.0 to level AA is completely accessible to everyone with a disability, but this is considered the baseline or beginning compliance required to ensure that it meets the needs of most users. WCAG is currently undergoing some changes, introducing in Version 2.1 additional Success Criteria that better represent the needs of persons with disabilities which did not receive sufficient attention in the previous version.

Many countries have laws or mandatory policies covering the treatment and rights of persons with disabilities. These laws or policies often do not stipulate their applicability for digital accessibility conformance requirements. They are in the form of 'disability discrimination' laws and infer rather than stipulate their applicability. Countries such as Australia, the United Kingdom, and the United States have either tested these laws with litigation and/or produced amendments to stipulate the applicability of the law. Some countries, when determining that the law is not specific enough, have enacted entirely

new laws stipulating applicability to the availability and accessibility of digital information and services for all users, drawing attention specifically to the needs of persons with disabilities.

In different languages and cultures, the terms ‘policy’ and ‘standard’ are used interchangeably. Thus, they link the questions mentioned previously of “What is the legal mandate for compliance with this Standards?” and “What is the benchmark for compliance with this Standards?” To maintain clarity, this Framework separates these terms in the manner of the pyramid in Figure 1.

In countries with clear standards for digital accessibility, it is generally accepted that compliance with WCAG 2.0 to Level AA is required. The Kuwait National Standards for Digital Accessibility needs to incorporate these future iterations of the Web Content Accessibility Guidelines as they are finalised.

2.2.1. Incorporating Future Developments of W3C Resources and The Effect on International Standards

For some time, the W3C have been working on the next iteration of the **WCAG** from 2.0 to 2.1 which will leave in place the existing Success Criteria but add an additional 17 Success Criteria. There are indications that numerous countries are moving to adopt WCAG 2.1 which is currently in a ‘Candidate Recommendation’ status within W3C and final adoption is expected around June of this year.

This document includes the roll-forward statement provided in Standard 1 above to ensure that the final product is a ‘state of the art’ for digital accessibility guideline adoption.

2.2.1.1. Adoption of WCAG 2.1 Internationally

Currently Europe is underway to adopt WCAG 2.1 for public websites and mobile applications through the “Web Accessibility Directive”, and the associated update of EN 301 549. A link for the latest draft of the Accessibility of ICT Products and Services (EN301549) is available in the list of references for your review.

Apparently, there is also progress in China towards harmonization. Senior W3C Staff are trying to put together an Authorized Translation right when **WCAG 2.1** comes out, to maximize the impact on that process. There is some doubt over whether they will get 100% adoption this time around, but potentially some uptake. Australia may also be revising their adoption of EN 301 549 to coincide with the revisions mentioned above. I will be in contact with them to get confirmation. New Zealand have also announced they will have some sort of roll-forward mechanism to incorporate **WCAG 2.1** additions, which is not yet confirmed.

2.3. Understanding Web Accessibility Standards

Web accessibility relies on several components that work together. Some of these include:

Web content - refers to any part of a website, including text, images, forms, and multimedia, as well as any mark-up code, scripts, applications, and such.

User agents - software that people use to access web content, including desktop graphical browsers, voice browsers, mobile phone browsers, multimedia players, plug-ins, and some assistive technologies.

Authoring tools - software or services that people use to produce web content, including code editors, document conversion tools, content management systems, blogs, database scripts, and other tools.

These components inter-relate and support each other. For instance, web content needs to include text alternatives for images. This information needs to be processed by web browsers and then conveyed to assistive technologies, such as screen readers. To create such text alternatives, authors need authoring tools that support them to do so. More background is provided in Essential Components of Web Accessibility.

Standards play a vital role in defining accessibility requirements for each of these components. Some accessibility requirements are easy to meet yet understanding the basics of how people with disabilities use the Web, help the practitioner implement them more effectively and efficiently. Some aspects of accessibility require more technical skills or advanced knowledge of how people use the Web. In all cases, involving users early and throughout your web projects will make your work better and easier.

The W3C Web Accessibility Initiative (WAI) provides a set of guidelines that are internationally recognized as the standard for web accessibility. These include:

- Web Content Accessibility Guidelines (WCAG)
- User Agent Accessibility Guidelines (UAAG)
- Authoring Tool Accessibility Guidelines (ATAG)

There is also a WAI specification for Accessible Rich Internet Applications (WAI-ARIA), which include dynamic content and advanced user interface controls developed with Ajax, JavaScript, and related web technologies. (W3C WAI. Accessibility Principles).

Kuwait National Standards for Digital Accessibility

3. Kuwait National Standards for Digital Accessibility

3.1. Introduction

3.2. Compliance Requirements

The Kuwait National Standards for Digital Accessibility includes three aspects, two of which are ‘required’ and one of which is a ‘best practice recommendation’.

Requirement 1: Technical compliance with established International standards – Web Content Accessibility Guidelines in compliance with the most recent version of or successor standards to the Web Content Accessibility Guidelines (“WCAG”) 2.0 Level AA, as published by the Web Accessibility Initiative of the World Wide Web Consortium (W3C WAI).

Requirement 2: Embedding International Standards for Procurement of ICT Products and Services in all future tender documentation for all levels of Government websites. Development of accessible digital material is embedded in all government procurement documents used in the tendering process with a statement of compliance to be completed by the developer. This Procurement Standard will be EN 301549 and its future iterations incorporating later versions of WCAG 2.0.

Best Practice Recommendation: Usability testing by persons with disabilities and seniors. In all aspects of digital development, it is recommended that testing be conducted by persons with disabilities and seniors to ensure that even if technical accessibility requirements are met, usability concerns are not overlooked. This is itemized here as a recommendation rather than a requirement, as sourcing a sufficiently trained team of people with disabilities may not always be possible for an organisation.

3.3. Objectives

The compliance requirements shall have the following objectives:

1. To enable the Government of Kuwait to ensure that access to information is provided for its citizens, both with and without disability.
2. To support the information needs of people with disabilities and seniors.

3.4. Scope

The Kuwait National Standards for Digital Accessibility shall apply to all digital services within Kuwait, whether public or private, and which provide services to the public. Services outside of this requirement are also encouraged to adopt the Kuwait National Standards for Digital Accessibility.

These Compliance Requirements shall be implemented within specific period from the adoption of the Kuwait National Standards for Digital Accessibility.

3.5. Definition of Terms

A full list of definitions and acronyms used through this document is provided in Section 1.3.

Guidelines	Resources available to assist with meeting the Standard
Government	The Government of Kuwait
Legacy Content	Older content that exists prior to the integration into the Kuwait National Standards for Digital Accessibility and which needs to be remediated to comply with the Standard
Policy	The legal mandate for the Kuwait National Standards for Digital Accessibility (hereinafter referred to as the 'Standards'
Procedure	The required method to meet the Standards
Procurement	(info on EN 301549)
Standards	The Compliance Requirement for the Standards

Web Content Accessibility Guidelines **(WCAG)** Currently at Version 2.0, referred to as WCAG 2.0

This is the standard developed by the W3C which has been adopted by the International Organization for Standardization (ISO) as ISO 40500. This refers to an international set of guidelines on digital accessibility.

World Wide Web Consortium **(W3C)**

The international organisation who have developed the Web Content

Accessibility Guidelines **(WCAG)** which form the basis of this Standards.

3.6. Effectivity

The Kuwait National Standards for Digital Accessibility shall take effect from its signing as bylaws .

3.7. Requirement 1 – Technical Accessibility

3.7.1. Key Principles

In accordance with the most recent version of or successor standards to the Web Content Accessibility Guidelines (“WCAG”) 2.0 Level AA, as published by the Web Accessibility Initiative of the World Wide Web Consortium (W3C WAI), the Kuwait National Standards for Digital Accessibility recognizes the key principles which are that content must be Perceivable, Operable, Understandable and Robust (POUR). If any of these is not true, users with disabilities will not be able to use the digital content.

Perceivable

Web accessibility is based upon the assumption that people need to be able to perceive web content (see, hear, transform, touch).

- Provide text alternatives for non-text content.
- Provide captions and alternatives for audio and video content.
- Make content adaptable; and make it available to assistive technologies.
- Use sufficient contrast to make things easy to see and hear.

Operable

Users must be able to operate the interface (the interface cannot require interaction that a user cannot perform)

- Make all functionality keyboard accessible.
- Give users enough time to read and use content.
- Do not use content that causes seizures.
- Help users navigate and find content.

Understandable

Users must be able to understand the information as well as the operation of the user interface (the content or operation cannot be beyond their understanding).

- Make text readable and understandable.
- Make content appear and operate in predictable ways.
- Help users avoid and correct mistakes.

Robust

Users must be able to access the content as technologies advance (as technologies and user agents evolve, the content should remain accessible).

- Using technologies according to specification.
- Users should be allowed to choose their own technologies to access web content.
- This allows the users to customize their technologies to meet their needs, including accessibility needs.

3.7.2. Level of Conformance

The Kuwait National Standards for Digital Accessibility aims to make all digital content available in Kuwait, whether private or public and which provides a service to the public, compliant with at least Level AA Conformance with a time frame to be decided upon by the Government of Kuwait.

All WCAG 2.0 Success Criteria are written as testable criteria. There are three levels of conformance, A, AA, and AAA.

In order for a Web page to conform to a specific level of WCAG 2.0, all of the following conformance requirements must be satisfied:

Level A: (the easiest to implement and the minimum level of conformance).

The Web page satisfies all the Level A Success Criteria, or a conforming alternate version is provided.

Level AA: (the international standard and conformance standard for the majority of countries).

The Web page satisfies all the Level A and Level AA Success Criteria, or a Level AA conforming alternate version is provided. Level AA is the minimum acceptable level to comply with the Kuwait National Standards for Digital Accessibility.

Level AAA: (the hardest to implement).

The Web page satisfies all the Level A, Level AA and Level AAA Success Criteria, or a Level AAA conforming alternate version is provided.

3.7.3. Roles and Responsibilities

3.7.3.1. The Government of Kuwait shall:

1. Prepare the guidelines, implementing the rules and regulations, and other policy issuances necessary to affect the accessibility standards in this Framework.

2. Organize guidance on implementing WCAG 2.0 to Level AA for the Government of Kuwait.

3. Organize training, materials and support relating to digital accessibility to Government of Kuwait agencies who come within the jurisdiction of this Standards.

3.7.3.2. All website owners offering services to the public shall:

1. Prepare all digital content to conform with the most recent version of or successor standards to the Web Content Accessibility Guidelines **("WCAG")** 2.0 Level AA, as published by the Web Accessibility Initiative of the World Wide Web Consortium **(W3C WAI)**.
2. Review and update legacy content to comply with the Standards within the stipulated time frame.
3. Comply with the Government of Kuwait's transition plan to the Kuwait National Standards for Digital Accessibility.
4. Follow the Kuwait National Standards for Digital Accessibility not only when releasing digital content to the public, but also when sharing data with other agencies within the Government of Kuwait.
5. Attend training sessions relating to digital accessibility and the implementation of the Kuwait National Framework for Digital Accessibility.
6. Submit to monitoring and compliance testing with the Kuwait National Standards for Digital Accessibility, and provide progress reports when required.

3.7.4. Transition Phase

All agencies within the Government of Kuwait shall follow the timeline set by the Government of Kuwait for transition to compliance with the Kuwait National Standards and Framework for Digital Accessibility. This transition period shall incorporate the following phases:

Audit phase:	Each agency shall conduct a preliminary audit of their digital material to determine their current levels of compliance
Transition Training:	Agencies will be provided with training relating to the Web Content Accessibility Guidelines and compliance requirements
Migration Phase:	During this period, agencies will work towards Level A Compliance with **WCAG 2.0** or its successor. Agencies are expected to submit monthly progress reports to the nominated Government of Kuwait agency during the Migration Phase.
Finalization	During this phase, agencies will formally complete their migration into the Kuwait National Standards for Digital Accessibility and shall begin migrating from Level A to Level AA compliance. Agencies shall submit progress reports to the nominated Government of Kuwait agency twice a year in this phase.

3.7.5. Conformance Testing

Beginning from the Migration Phase, the Government of Kuwait shall require quarterly conformance testing to ensure that content in agencies covered by the Kuwait National Standards for Digital Accessibility conform to the prescribed conformance level. The conformance testing shall be in accordance with the success criteria defined in WCAG 2.0 or subsequent the most recent version of or successor standards to the Web Content Accessibility Guidelines **("WCAG")** 2.0 Level AA, as published by the Web Accessibility Initiative of the World Wide Web Consortium **(W3C WAI)**.

3.7.6. Reporting

Starting from the Migration Phase, agencies shall submit progress reports to the nominated Government of Kuwait agency, which contain information on the current state of the agency's content, a summary of the changes made, updates on compliance with the Standards and the transition plan:

Agencies in Migration Phase shall submit quarter progress reports to the nominated Government of Kuwait Agency

Agencies in Finalisation Phase shall submit bi-annual progress reports to the nominated Government of Kuwait agency.

3.7.7. Accreditation

After the Migration Phase and upon compliance with at least Level AA with WCAG 2.0 or subsequent versions, agencies will apply for the agreed upon external accreditation within the Kuwait National Standards for Digital Accessibility.

3.8. Requirement 2 – Procurement of IC Products and Services

3.8.1. Key Principles

This Standard requires that Kuwait adopt the European Standard for Procurement for ICT Products and Services, (EN 301549: "Accessibility requirements suitable for public procurement of ICT products and services in Europe") which uses the standard of WCAG 2.0 to Level AA. This Standard is currently being considered for updating to the next iteration of that standard for all Kuwait Government websites.

The Accessible ICT Procurement Toolkit which accompanies EN 301549 provides examples of vendor attestations, needs analysis and conformity assessment. The introduction to this Toolkit states:

By "buying accessible" public authorities can ensure that already disadvantaged groups can be more fully included in everyday life. By incorporating clear and achievable accessibility requirements that are harmonised among Member States, public procurers have the opportunity to increase the demand for accessible ICT products and services

and also deliver good social outcomes. Accessible ICT procurement is an organisational strategy and therefore about setting an example and influencing the market-place. (Cenelec, n.d.)

The following are 3 key principles for accessible procurement. They should form the basis of any public procurement process.

- ICT accessibility is a matter of human rights.
- Accessibility should be considered at the earliest stage of the procurement process.
- Accessible Design for ICTs maximises the number of potential users who can readily use a product or service.

3.8.2. Level of Conformance

Various methods are available for vendor attestation of compliance with EN 301549, ranging from a simple yes/no answer to a full third-party validation of services. This Standard requires that providers of ICT products and services provide a 'Supplier's Declaration of Conformity (SDoC)', which is a first party declaration with details compliant with the standard EN ISO/IEC 17050. A Supplier's Declaration of Conformity can be substantiated by supporting documentation for which the supplier is responsible. Anyone should be able to repeat the verification and arrive at the same result using this information.

Section 9 of the Accessible ICT Procurement Toolkit reiterates that the standard for digital accessibility is WCA 2.0 to level AA which is slated to include any successors to that standard. Further information on this standard is available from http://mandate376.standards.eu/standard/technical-requirements/#9.

3.8.3. Scope

This Standards applies to all ICT products and services being procured by agencies. The toolkit describes a web page as:

Requirements in clause 9 apply to web pages (as defined in clause 3.1) including:

- documents that are web pages;
- documents that are embedded in web pages and that are used in the rendering or that are intended to be rendered together with the web page in which they are embedded;
- software that is a web page;
- software that is embedded in web pages and that is used in the rendering or that is intended to be rendered together with the web page in which it is embedded.
- Requirements for other documents and software are provided in clauses 10 and 11 respectively.

3.8.4. Roles and Responsibilities

All organisations within Kuwait which provide a service to the public shall:

- include requirements for accessibility to be placed within all Request for Tender (RFT) documents outlining conformance with EN 301549.
- require a Suppliers Declaration of Conformity (SDoC) for all future procurement of any ICT product or service.
- evaluate that the requirement for deliverables has been met by the provider.

All providers of ICT products or services who wish to supply these products or services within Kuwait shall:

- Complete the above SDoC, (see example in The Kuwait National Framework for Digital Accessibility Section 3.8.5.1).
- Include all required proof of capability and experience required in the RFT.

3.8.5. Conformance Requirement

This standard shall take effect as of (date)from its signing as bylaws.

3.8.5.1. Supplier's Declaration of Conformity with EN 301 549

Each supplier responding to a RFT shall complete a SDoC which includes the following minimum requirements conformant to EN ISO/IEC 17050-1:

- The unique identification of the SDoC as provided in the RFT.
- The name and contact address of the issuer (supplier of services) of the SDoC.
- The object (name of service/product) of the SDoC as provided in the RFT.
- A 'Conformity Statement' describing the level of conformance to EN 301 549 of the product or service being provided.
- List of clauses and subclauses of EN 301 549, with which conformity is claimed.
- Place and date of issue of the SDoC.
- Name, function and signature of person(s) authorized by issuer of the SDoC.
- Limitations of validity (if any) of the SDoC.
- The SDoC issuer shall provide supporting documentation as requested in the RFT.
- The SDoC issues shall ensure all supporting documentation is conformant to EN ISO/IEC 17050-2.

3.8.5.2. Evaluation of Conformance

The contract documents should have clearly stated the accessibility targets to be achieved.

The Request for Tender should clearly state the level of accessibility compliance required and the method by which this compliance will be tested. It is important that organisations avoid allowing self-evaluation of accessibility by the provider or the organisation requesting the service due to the inherent bias this may involve. There is little validity in an assessment carried out by the provider themselves. Likewise, assessing accessibility of the deliverables by the organisation requesting the service/ product may also not be beneficial, due to the lack of in-house knowledge of accessibility testing and procedures.

In order to select a tenderer who can produce an accessible product or service, it is preferable that the services of a digital accessibility consultant be engaged early in the selection process. If this is the case, then this consultant may be used to assist with the evaluation of the accessibility of the deliverables. In some cases, the organisation offering the RFT may state that it will be using an external accessibility consultant to provide services both to the organisation managing the project and for checking accessibility of deliverables for the supplier at various stages of the project. Incorporating accessibility validation throughout a project ensues that the project timeline is not affected with lengthy delays for remediation at the end.

Organisations should keep in mind that assessing the accessibility capability of suppliers and assessing the accessibility of the final product or service takes some time, and this needs to be factored into the project timeline.

In some cases, the supplier of a service or project may have engaged the services of accessibility professionals during the development process. In this case, the product or service should have a high level of accessibility upon delivery and the length of time for testing upon delivery may be reduced. Provided that the external accessibility service engaged by the supplier is of a sufficient standard, the time for any remediation of the product or service should also be reduced, and the overall accessibility of the product or service meets all requirements.

The following test should be placed as the accessibility requirement in all Request for Tender (RFT):

“Accessibility Target”

The National Disability Authority’s Centre for Excellence in Universal Design, provides the following suggested text to include as the accessibility requirement in a Request for Tender (RFT):

“Accessibility targets”

The website pages, page templates, applications, downloadable documents, mobile devices applications and other digital materials should be designed in compliance with the most recent version of or successor standards to the Web Content Accessibility Guidelines **(“WCAG”)** 2.0 Level AA, as published by the Web Accessibility Initiative of the World

Wide Web Consortium **(W3C WAI)**. Where a supplier considers any Success Criterion to be inappropriate or unachievable for some component of the content or templates, this must be stated explicitly in the RFT, together with an explanatory rationale.

All respondents to the RFT should ensure that they are able to meet these guidelines prior to tendering for the delivery of this service/product. The selected tenderer will be required to provide an accurate Conformance Claim prior to the project completion, that the provided service or product meets the Web Content Accessibility Guidelines in compliance with the most recent version of or successor standards to the Web Content Accessibility Guidelines **("WCAG")** 2.0 Level AA, as published by the Web Accessibility Initiative of the World Wide Web Consortium **(W3C WAI)**.

Procedure

4. Procedure

Ensuring a digital product, such as a website or mobile application is accessible is not a simple one-step task, and not simply a matter of completing a checklist for final analysis. The following steps summarise the Procedure and answer the question “How should this task be performed”, or “What is the process required to meet the Kuwait National Standards for Digital Accessibility?”

4.1. A 12-Step approach to Meeting the Kuwait National Standards for Digital Accessibility

Procedures provide a list of clear steps taken to achieve the requirements. The figure below provides a list 12 of steps which clearly outline the procedure and answer the question ‘What is the required method to achieve the Standards?’

Figure 2: 12 Step approach to meeting the Kuwait National Standards for Digital Accessibility

The Guidelines that follow deal with each of these 12 steps and provide additional information and resources to continue the journey to compliance with the Kuwait National Standards for Digital Accessibility.

4.2. Procedure Discussion: 12 Step Model

4.2.1. Step 1: Understanding the Requirements

Many organisations, including government departments provide lists of resources to assist people in utilising the **WCAG** resources. While some organisations re-state **WCAG** Success Criteria more simply, this is not official **W3C** material and is subject to the interpretation of the organisation providing the simplification. It is an essential

requirement to gain a thorough understanding of the **WCAG** resources. For example, Australia provides the following resource for content editors working with digital accessibility requirements: https://guides.service.gov.au/content-guide/accessibility-inclusivity/#wcag-2-0-for-content-authors. This link directs the user to the **W3C's WCAG** resources, rather than provide with some new information not contained in the **WCAG 2.0** suite of documents.

Within W3C WAI, is a Working Group known as the Education & Outreach Working Group. This group provides resources to assist people to utilise the **W3C WAI** resources. There are W3C Interest Groups and Community Groups whose sole aim is to meet and discuss how best to implement accessibility. While some of these groups are only open to Member Organisations of **W3C**, others are open to anyone who wishes to learn more about how to best implement accessibility. All the **W3C** material is open to public review. WAI is in the process of launching a new re-designed website to easily locate information. **WAI** is assessing the currency of all the materials before they migrate to this new website.

In this document, rather than restate the **WCAG** document, the user is directed to the section of the **WCAG** Standard and its associated informative documents. Illustrations are provided regarding document function and where the most useful information for tasks may be found.

When the informative documents complementing the **WCAG** Standard are used effectively, there is no need to re-state the resources. For instance, if the user is beginning the digital accessibility journey, they begin with the initial Introduction to Website Accessibility provided at the 'Tips for Getting Started' link located at: https://www.w3.org/WAI/gettingstarted/tips/, or at the 'Introduction to Website Accessibility and the **W3C** Standards' video located at https://www.w3.org/WAI/videos/standards-and-benefits .

4.2.2. Step 2: Obtain Training

To ensure the best use of the Kuwait National Standards for Digital Accessibility, it is necessary to undertake training in the correct use of this Standards, as well as participate in specific digital accessibility training. Stakeholders involved with technical requirements and digital development will require further training to ensure understanding of 'best practice' methods and are up to date with new techniques and technology.

Suggestions for further training are proposed in the Conclusion of this Framework. It is not within the scope of this Framework to provide full training for all stakeholders working on digital accessibility. The Framework provides resources and helpful information to assist stakeholders to use the Standards and the **WCAG** documents effectively.

4.2.3. Step 3: Learning 'Best Practice'

As previously stated, technical staff will require further training to implement accessibility requirements, learn how to use the **WCAG** material effectively, and understand how persons with disabilities use digital materials. Unfortunately, in many instances, developers are not required to undertake continuing education once they obtain a technical position. This can result in them being unaware of International standards, country requirements, the needs of persons with disabilities and the types of assistive technology they use.

Techniques to meet the Success Criteria of **WCAG** are developed and tested continually. Technical staff will need to remain vigilant to stay up to date with new developments.

4.2.4. Step 4: Understanding How Persons with Disabilities Use the Web

Not everyone or every organisation, is able to provide a team of persons with disabilities to test newly developed or amended resources. While some organisations offer a user testing team or focus group, it can be difficult to resource and manage. There are organisations who provide these resources on a commercial basis, and some not-for-profit organisations offer this service. It is also possible to work with local groups representing people with specific disabilities and arrange for help with user testing for that particular set of disabilities.

If such a resource is unavailable, there are resources online available to understand how people with disabilities interact with digital content. **WAI** provide videos entitled "Perspectives Videos" to serve this purpose. These videos can be located at the link: https://www.w3.org/WAI/perspectives/ .

There are resources available on the WAI website to assist individuals investigating accessibility learn more about how people with disabilities use the Web.

4.2.5. Step 5: Understanding the Audit Procedure

A full website audit should include both a technical compliance audit against all the **WCAG** Success Criteria and a full usability test by persons with disabilities and seniors. These two components ensure the page selection tested meets the technical compliance standard set as well as usability for people with disabilities. They may appear to be the same however a website can technically meet **WCAG** 2.0 to even AAA compliance, yet still not empower the user. For instance, the placement of links, how the search function operates, if there is an accessibility information page, whether interactive events are labelled logically, and how the navigation structure operates, may all serve to make the website less than optimal for the person with disabilities.

The Digital Accessibility Auditor is a skilled profession requiring training time - usually a minimum of a year under the guidance of a skilled digital accessibility professional, even when they possess technical and/or website development skills. It is not reasonable to assume a novice evaluator will be able to identify all the accessibility issues and recommend the correct remediation for the issues.

W3C developed the **WCAG** Evaluation Methodology **(WCAG-EM)** to define the method for use by accessibility professionals to undertake accessibility audits. Following that, the EOWG developed a reporting structure to be used in conjunction with this methodology. This Methodology is discussed later in this document in more detail. Briefly, it entails auditing a carefully selected set of pages that most closely reflect the overall accessibility of the website against all the **WCAG** Success Criteria. The actual testing method for each SC is not part of the Methodology, it deals with the audit at a higher level.

Testing for most stakeholders of this Kuwait National Standards for Digital Accessibility will

take the form of a preliminary evaluation until these skills are acquired. The resources and explanation for conducting such a preliminary evaluation are all readily available on the **WAI** website as explained later in this document.

4.2.6. Step 6: Conducting Preliminary Evaluations

For most users of the Kuwait National Standards for Digital Accessibility, it will be necessary to learn how to conduct preliminary evaluations of a website or other digital material. This step is required prior to obtaining an external third-party accessibility audit. It is analogous to preparing for an organisation's financial audit. It is necessary to understand the digital asset, repair it within the individual's level of competence, understand the limitations of the individual's ability for more difficult remediation, and know when an external audit is necessary or advisable. A preliminary evaluation may be sufficient to make the decision to fix the existing digital asset or if it is more expedient to develop a new product.

Materials is provided in the section following on Guidelines explaining the many resources that are available to assist in conducting a preliminary evaluation.

4.2.7. Step 7: User Testing by Persons with Disabilities

Itt is considered critical that organisations use the services of trained usability testers, who are people with disabilities to test whether the resource for usability. The organisation can then ensure the usability of their digital material for specific sets of disabilities. It will not be possible to have every possible disability or combination in a testing session, but it should be possible to obtain a reasonably representative set.

W3C provide the following information on the importance of including persons with disabilities in testing the usability of digital resources:

"Testing and testable in the context refer to functional testing, that is verifying that the content functions as expected, or in this case, that it satisfies the Success Criteria. Although content may satisfy all Success Criteria, the content may not always be usable by people with a wide variety of disabilities. Therefore, usability testing is recommended, in addition to the required functional testing. Usability testing aims to determine how well people can use the content for its intended purpose. It is recommended that users with disabilities be included in test groups when performing usability testing." (**W3C**, Understanding **WCAG 2.0**. 2016).

4.2.8. Step 8: Knowing When an External Audit Should Be Conducted

At some point, an organisation will want or need to conduct an external audit of the accessibility of their digital resources. This should be conducted early in the process if the organisation does not have the internal capability to conduct a preliminary evaluation, or after they have completed this evaluation and made changes to their level of competence. Reliance on self-evaluation of accessibility without external validation is analogous to a student creating an examination, sitting the exam, and then marking it themselves – such an evaluation lacks validity, transparency and reliability. It is important for organisations to understand when an external audit is needed, how to decide who is appropriately skilled to conduct the audit, how to prepare for the audit, and how procure it. The credentials, skills and reputation of the external auditor is critical to validate as is the requirement to avoid reliance on self-evaluation.

4.2.9. Step 9: Understanding Audit Results

Once an external audit is complete and the report is available, the next step is to understand the outcome of the audit, decide how to prioritise the remediation of the digital product, and when to retest to verify the improvements are satisfactory. There are a number of methods for prioritising remediation. One method is to fix the Level A issues first, as they are usually the easiest to fix. The website owner can then claim compliance with Level A of **WCAG** once the remediation is verified. Another method is to examine the report and identify issues are the easiest to fix; for instance, assigning alternative text to images. Alternatively, the organisation examines which issues affect one or a few of the pages of the sample and fix them, ensuring the issue is rectified and ensure the website meets the Success Criteria. Each organisation may choose the model suitable to their purposes best, to enable them to make a compliance claim.

4.2.10. Step 10: Maintenance of the Accessible Website

Once the organisation's website or other digital service is tested and all accessibility remediation efforts verified, decisions can be made on how to maintain a website's accessibility. The fact accessibility claim relates to a specific point in time, and as soon as the website owner receives the newly accessible website and starts to add more content or change content, adding and deleting pages – the accessibility claim will no longer be valid. The only way to minimise this issue, is to maintain vigilance regarding changes or additions to the website. This means ensuring staff working on the website are properly training in digital accessibility and that accountability is systematic. Some organisations build security into their content management system requiring the person making website changes complete a checklist to ensure that the amended content is accessible. Thus, if something is discovered to have changed on the website voiding the accessibility claim, the person who made the change is discoverable and may receive extra training to ensure no future recurrence. Other organisations keep accessibility experts, testing random pages on the website on systematically and reporting back to the organisation with the results. If staff are aware this is occurring, they are likely to be more vigilant with compliance requirements.

4.2.11. Step 11: Becoming an Accessibility Champion

As one becomes an Accessibility Champion for an organisation, it will be important to share skills with others. There are many ways this can be done – start an accessibility interest group that meets regularly to share tips and tricks relating to accessibility, write a monthly article for the organisation's Intranet or internal website, continuing training and share lessons learned with colleagues, and conference attendance. Most importantly is to keep in mind that learning is never complete. Techniques and requirements are always changing, especially in a digital environment.

The **W3C WAI** continually work to develop more resources and this material is made available to further understanding, improve employability, and demonstrate to the employer an individual is interested in learning more about how to improve the accessibility and usability of the organisation's digital resources. Professional organisations are available that encourage membership as well as professional examinations for those who choose to pursue certification.

4.2.12. Step12: Using the Digital Accessibility Maturity Model (DAMM)

Use the Digital Accessibility Maturity Model (DAMM) to begin to embed digital accessibility into every aspect of your organisation, and to ensure accessibility becomes an integral part of the life cycle for all digital development.

A D.A.M.M is a method to ensure accessibility is viewed as an organisation-wide endeavour, not something that is added at the end of a project when there is no time left to make the required changes, or when the concept is already set for the project. The best time to investigate product accessibility is at the very first planning meeting and throughout the life cycle of the project; not ending when the project is completed.

Using a D.A.M.M involves steps that work to move your organisation along the maturity continuum approach to accessibility. There are four steps to this process:

Step 1: Identify and repair accessibility issues based on standards compliance

Step 2: Prioritise evaluation and repair activities based on real-world impact

Step 3: Inject accessibility best practices into the design and development process

Step 4: Integrate accessibility best practices into culture and practice

Organisations typically reside somewhere along the continuum from knowing nothing about digital accessibility and therefore doing nothing to improve, to having a sound knowledge of digital accessibility and its requirements and ensure the whole organisation embraces the principles and it is embedded in work-flows.

Stage 1 No conscious design – Accessibility isn't recognised in the design process. Any accessibility happens by chance

Stage 2 Efforts are limited to addition of a few cosmetic accessibility features, with little positive impact on users

Stage 3 Focus is on following accessibility guidelines to achieve technical compliance. Improvements are made, but users are not directly part of the accessible design process

Stage 4 A more strategic process of researching and designing solutions to support accessible task completion, but still within a pre-defined design concept

Stage 5 Accessibility and diversity are integrated into the design process, driving creative thought and sparking innovation

The first task is to determine where on the continuum the organisation currently resides, and then starting a thorough analysis of the organisations policies and procedures to identify opportunities for improvement. One of the key drivers of success will be having a responsible person within the organisation who drives this process and is prepared to support staff as they work to improve the maturity of the organisation's digital accessibility policies.

The Guidelines

5. The Guidelines

This section will answer the question of “What resources are available to assist with meeting the Standards?”

The briefest answer is that you will need to use both the training resources provided as part of this Standards, and the resources of the W3C Web Accessibility Initiative. This website has recently been complete redesigned and can be located at https://www.w3.org/WAI/.

There is a fundamental need for an organizational style guide. Organisations usually have specific brand colours and styles they use, and this is reflected in the website’s accessibility. An organization’s primary colour may be orange, does not necessarily make this a good choice on a white background. In this case, it would fail accessibility due to a lack of colour contrast between the foreground and background. Organisations are seldom willing to change their branding colours, unless they are going through a re-branding exercise. Therefore, the organisation should have a style guide to indicate when and how colours may be used to maintain accessibility. While the branding main colour may be a light orange, it may require all text is in black or dark charcoal to maintain accessibility. The Style Guide in this case, is the ‘guideline’ or standard for the organisation, stating the requirements for colours and font.

Other issues reflecting the usability of a website are often dealt with in similar manner. For instance, should an action button be labelled ‘Go’ ‘or ‘Submit’? This is an organizational choice and not something that is set in the **WCAG** documents. There are many issues relating to development practices to be dealt with in this manner, such as which method a developer uses to accomplish a task for the organisation. While it is recommended developers use industry best practice, there are many methods that can be selected. The **WCAG** documents deal with the end result, and not the method. Each Success Criteria is a fail or a pass, depending on whether it successfully delivers the desired outcome, with the method being left to the developer/website owner.

Often this information is already in place, at least to some extent, within an organisation. During an accessibility maturity analysis of the overall organisation these matters are usually discovered in the SWOT phase (analysis of Strengths, Weaknesses, Opportunities and Threats). It is critical that information be readily available to stakeholders and the information is shared throughout the team.

The current version of the Web Content Accessibility Guidelines (**WCAG 2.0**) will be superseded by **WCAG 2.1** in June of 2018 (anticipated date). However, it is important to note that none of the content of **WCAG 2.0** will be replaced by Version 2.1. Version 2.1 introduces additional success criteria to augment the applicability, new technology emergency, and desire to address the needs of a more diverse group of people with disabilities. In **WCAG 2.1,** here are an additional 17 Success Criteria. However, it is important to note that a website which satisfies **WCAG 2.1** will also satisfy **WCAG 2.0** as the criteria in **WCAG 2.0** have not been altered, therefore allowing backwards compatibility between the two versions.

5.1.1. The Structure of WCAG (Versions 2.0 and 2.1)

While the actual **WCAG 2.0** document is long, detailed and technical, there are many documents which may be used to gain an understanding of the components.

The four principles of **WCAG** are that content must be Perceivable, Operable, Understandable and Robust. Together, this makes up the acronym 'POUR.' If any of these principles are not true, users with disabilities will not be able to effectively use the Web.

The excerpt on the following page has been taken (with permission) from the **W3C WAI WCAG** at a Glance retrieved 2018-04-19 from: http://www.w3.org/WAI/WCAG20/glance/WCAG2-at-a-Glance-a4.pdf and provides a further description of each of these principles.

"Under each of the principles are guidelines and Success Criteria that help to address these principles for people with disabilities. There are many general usability guidelines that make content more usable by all people, including those with disabilities. However, in **WCAG 2.0,** we only include those guidelines that address problems particular to people with disabilities. This includes issues that block access or interfere with access to the Web more severely for people with disabilities." (**W3C WAI**)

Section 1.2.1.3 of this Standards discussed the need for standards to be 'quantifiable'. In the case of the standard of the Web Content Accessibility Guideline (**WCAG 2.0**), of the Success Criteria are all designed to be testable – you either pass or fail each one. In both the work of Conway and Saleem, they measured the accessibility of numerous websites against the Web Content Accessibility Guidelines (**WCAG**) Version 2.0 Success Criteria. This also occurred in the United Nations commissioned audit in 2006. In the case of the United Nations audit, the website home pages were assessed as being accessible or inaccessible according to **WCAG 1.0.** Both Conway and Saleem used a metric to assign a rating to issues relating to the website, which resulted in a score for the website which could then be statistically measured against all others in the research study. Therefore, it can be stated that a website passed 25% of the Level AA Success Criteria of **WCAG 2.0.** That is 'quantifiable' and measuring in this way will enable the website owner to track their progress towards full compliance.

5.1.2. WCAG 2 at a Glance

5.1.2.1. Perceivable

- Provide text alternatives for non-text content.
- Provide captions and other alternatives for multimedia.
- Create content that can be presented in different ways, including by assistive technologies, without losing meaning.
- Make it easier for users to see and hear content.

5.1.2.2. Operable

- Make all functionality available from a keyboard.
- Give users enough time to read and use content.
- Do not use content that causes seizures.
- Help users navigate and find content.

5.1.2.3. Understandable

- Make text readable and understandable.
- Make content appear and operate in predictable ways.
- Help users avoid and correct mistakes.

5.1.2.4. Robust

- Maximize compatibility with browsers and user tools.

This page provides a summary of Web Content Accessibility Guidelines (**WCAG 2.0**); however, it is paraphrased and it is not a definitive version. Please see the following key resources for learning and using **WCAG 2.0**:

- **WCAG** Overview — **www.w3.org/WAI/intro/wcag**
- How to Meet **WCAG 2.0**: A customizable quick
- How to Meet **WCAG 2.0**: A customizable quick reference http://www.w3.org/WAI/WCAG20/quickref/ to **WCAG 2.0** requirements (Success Criteria) and techniques — www.w3.org/WAI/WCAG20/quickref
- Online at www.w3.org/WAI/WCAG20/glancehttp://www.w3.org/WAI/WCAG20/glance/.Copyright © 2008 W3C®(MIT, ERCIM, Keio). ▪ Status: Updated 9 March 2011.

5.1.3. Structure of W3C WAI Guidance Materials

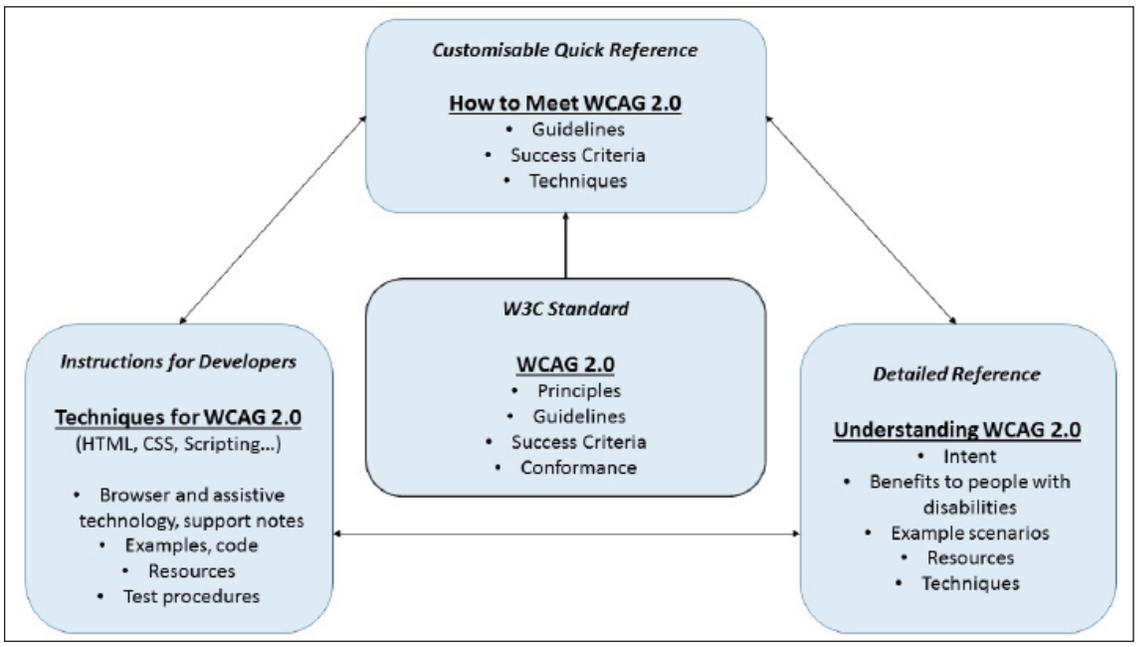


Figure 3: WCAG Documents for Different Purposes: adapted from W3C WAI:

In Figure 3, the actual W3C Standard, **WCAG 2.0** is surrounded by several supporting documents, while **WCAG 2.0** itself is a stable, 'reference-able' technical standard, or in common terms, the technical **WCAG 2.0** document will not change. The surrounding documents are considered supporting and may change as additional techniques are added. For instance, if a new technique is developed, it can be added to the 'Techniques for **WCAG 2.0'** document once it has been approved by the Accessibility Guidelines Working Group (AGWG), which uses a W3C process for all amendments or additions.

As can be seen from Figure 3, the actual Success Criteria for all compliance levels 'A' through 'AAA' are in the actual **WCAG 2.0** document, meaning they cannot be amended or added to. For this reason, to accommodate the changes needed, the AGWG is currently finalising **WCAG 2.1** which adds an additional 17 Success Criteria. This document will elaborate further on this in a later section.

These additional Success Criteria will enable **WCAG 2.1** to include the work required for digital content to meet a wider range of persons with disabilities than its predecessor **WCAG 2.0.** It is important to note that **WCAG 2.1** is 'backwards compatible'. This means that if a website meets compliance with **WCAG 2.1**, it also satisfies **WCAG 2.0.** This does not work in reverse – a website that meets **WCAG 2.0** compliance at any level, it will not necessarily comply with the newer **WCAG 2.1** due to the additional Success Criteria added in that document. For this reason, this Framework recommends the Standard required be referred to as the currently approved version of the Web Content Accessibility Guidelines.

5.1.4. W3C Standard – WCAG 2.0

WCAG 2.0 is the base for the suite of resources and is considered 'normative', meaning it is a stable document that will not change. It is surrounded by 'informative' resources that change as new techniques and resources are developed. The following is an excerpt from **WCAG 2.0** for Principle 1 – Perceivable, Guideline 1.1 Text Alternatives, Success Criteria 1.1.1 Non-Text Content.

"The documents 'Understanding **WCAG 2.0'**, 'How to Meet…' ad 'Techniques' are all classed as 'informative' documents, providing practical advice and information on each of the elements of **WCAG 2.0**. In other words, they provide information as to how best to meet the Success Criteria, understand how the criteria affects users, what would constitute a documented failure, and provide developer assistance on sufficient techniques for meeting the success criteria."

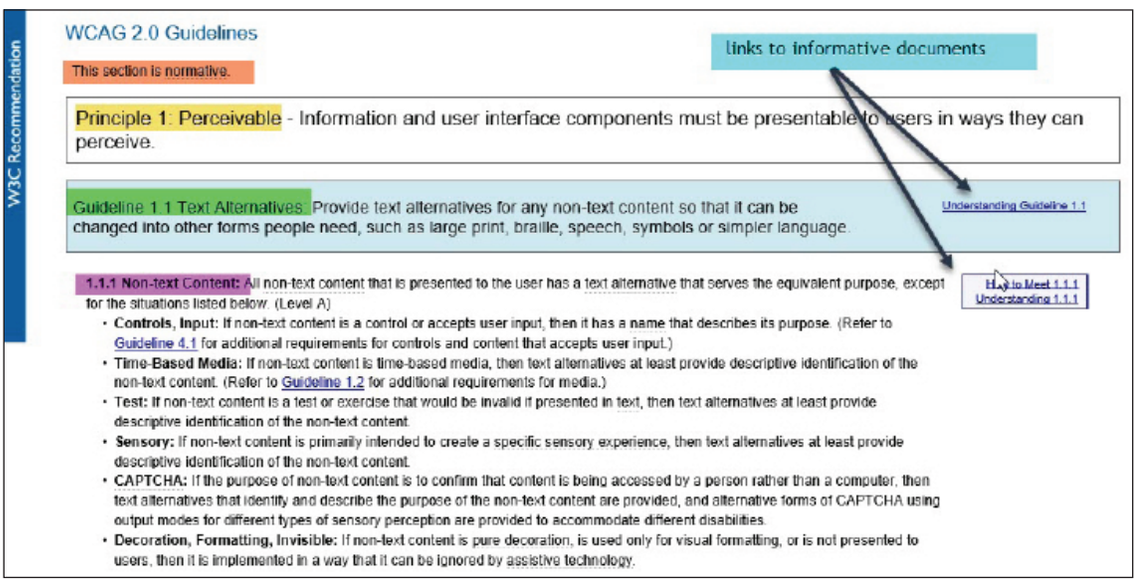


Figure 4: WCAG 2.0 SC 1.1.1

5.1.5. Links between WCAG Documents

As illustrated, all the **WCAG** documents mentioned are linked to make it easier to move from one document to another. The following figure is based upon information on the Introduction to **WCAG 2.0** web page located at http://www.w3.org/WAI/intro/wcag20 .

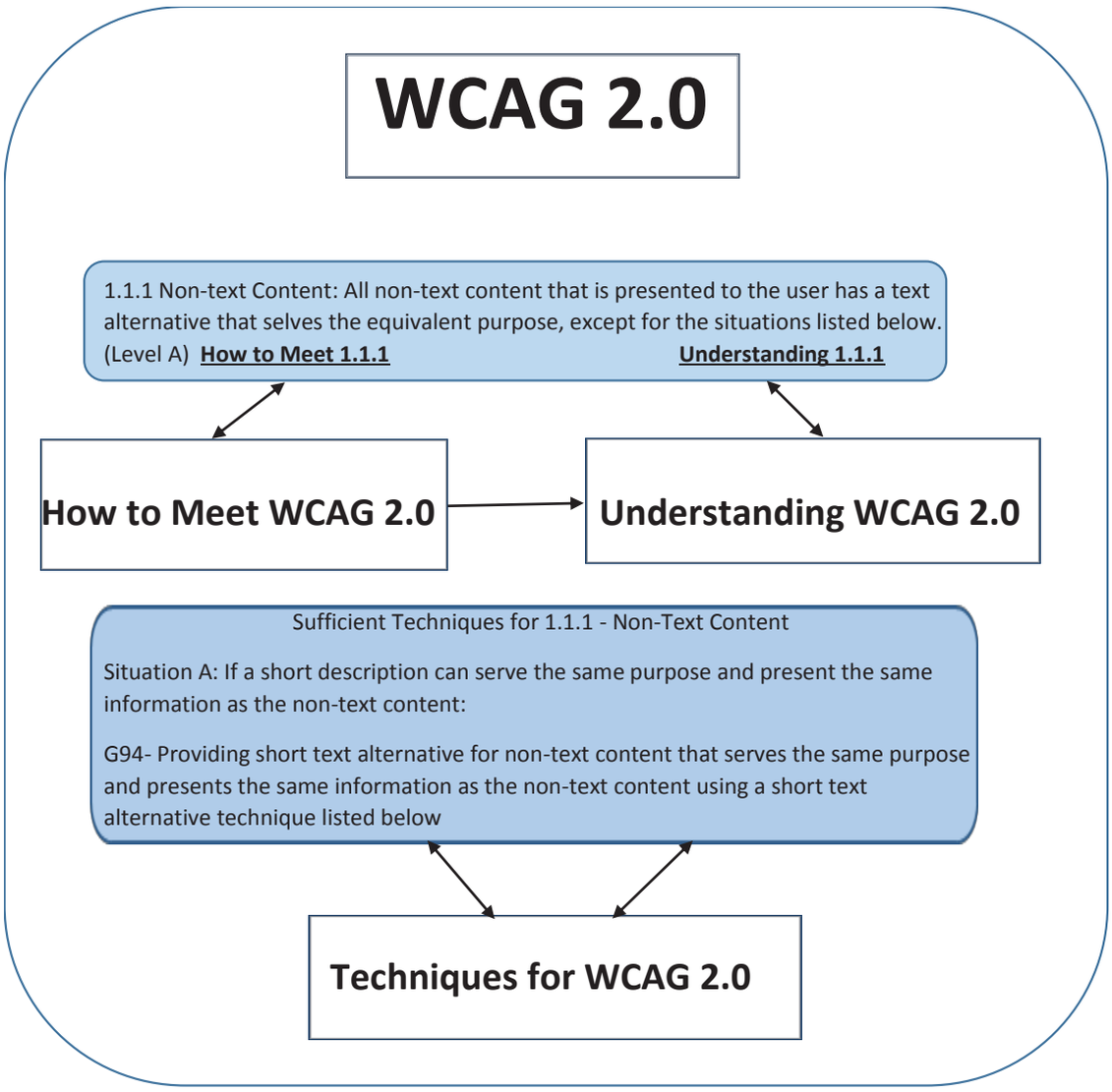


Figure 5: WCAG 2.0 Document Relationships

Success Criteria 1.1.1 refers to the requirement for all non-text content to have a text alternative to serve the equivalent purpose. An example of this Success Criteria would be an image with alternative text to explain the image and its purpose. Figure 5 above demonstrates the interconnection between the **WCAG** document for this Success Criteria and the related documents for the same criteria.

In the **WCAG 2.0** document, the link for "How to Meet 1.1.1" leads to the "How to Meet **WCAG 2.0"** document, and then links to the section within the document. The link for "Understanding 1.1.1" leads to an Understanding **WCAG 2.0** topic page. The user is always able to move to the Contents list of all the Understanding topics from the button labelled 'Contents' at the top of the page.

The user can see all the topics in one large Web page from the "single HTML version" link in the footer of each topic page. In addition, in both the documents 'How to Meet **WCAG 2.0"** and 'Understanding **WCAG 2.0**', there are lists of techniques that are links to a page of 'Techniques for **WCAG 2.0'** topic page. Again, the user can get to the

Contents list of all the Techniques topics from the Contents button at the top of the page. (**W3C WAI, 2008**)

If the user selects the link for 'How to Meet **WCAG 2.0** SC 1.1.1," it will access the **WCAG 2.0** Quick Ref page and provide the ability to refine the search including sufficient techniques, documented failures and advisory techniques, as well as to refine their role, for example 'developer' as well as other filters. The following is an excerpt of that page:

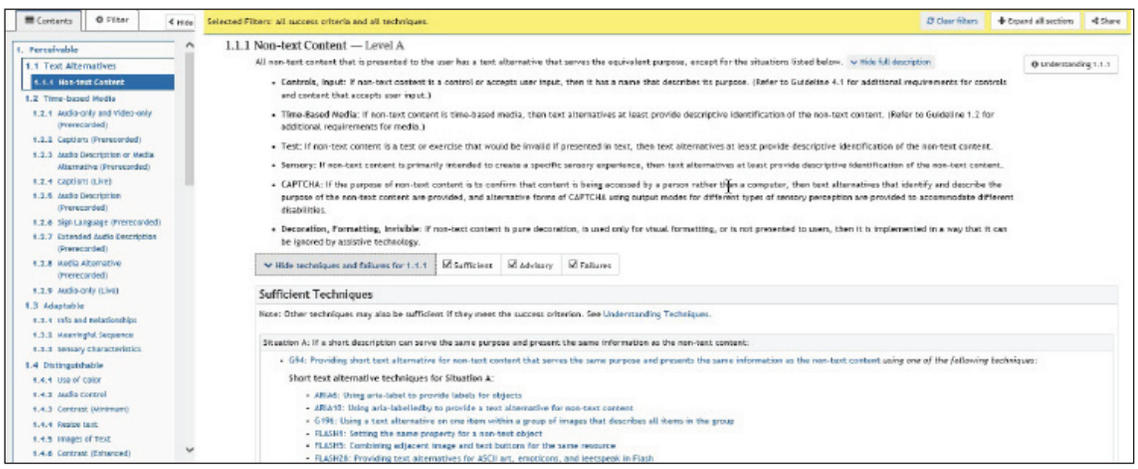


Figure 6: How to Meet - WCAG 2.0 Quick Ref

Notice in Figure 6, there are links to the other **WCAG** resources, along with the filtering options mentioned above.

5.1.6. Understanding the Contents of the Informative Documents

The "Understanding **WCAG 2.0"** document provides more in-depth understanding of the Success Criteria, how it affects users, the intent of the criteria, and more. The Understanding Document is part of a series of documents published by the W3C Web Accessibility Initiative (**WAI**) to support **WCAG 2.0**.

For example, The Understanding Guidelines X.X section is then followed by an Understanding Success Criterion X.X.X section for each Success Criterion of that guideline. These sections each contain:

- The Success Criterion as it appears in **WCAG 2.0.**
- Intent of the Success Criterion.
- Benefits (how the Success Criterion helps people with disabilities).
- Examples.
- Related Resources.
- Techniques or combinations of techniques that are sufficient to meet the guidelines.
- Common failures of this Success Criterion.

- Additional advisory techniques that go beyond what is required to meet the Success Criterion but can be used to make some or all types of content more accessible. Use of advisory techniques does not impact the level of conformance claimed.

- Key terms for this Success Criterion (taken from the **WCAG 2.0** Glossary).

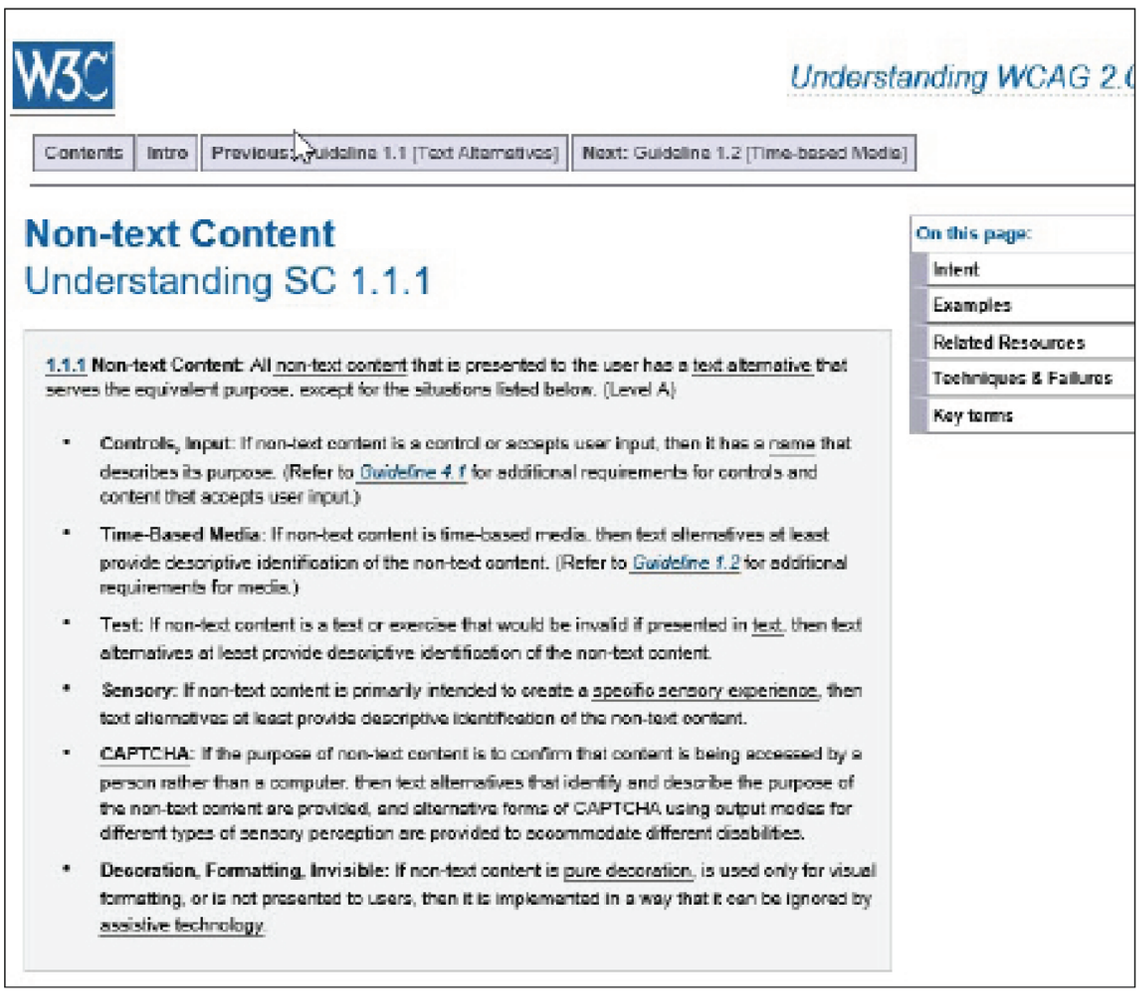
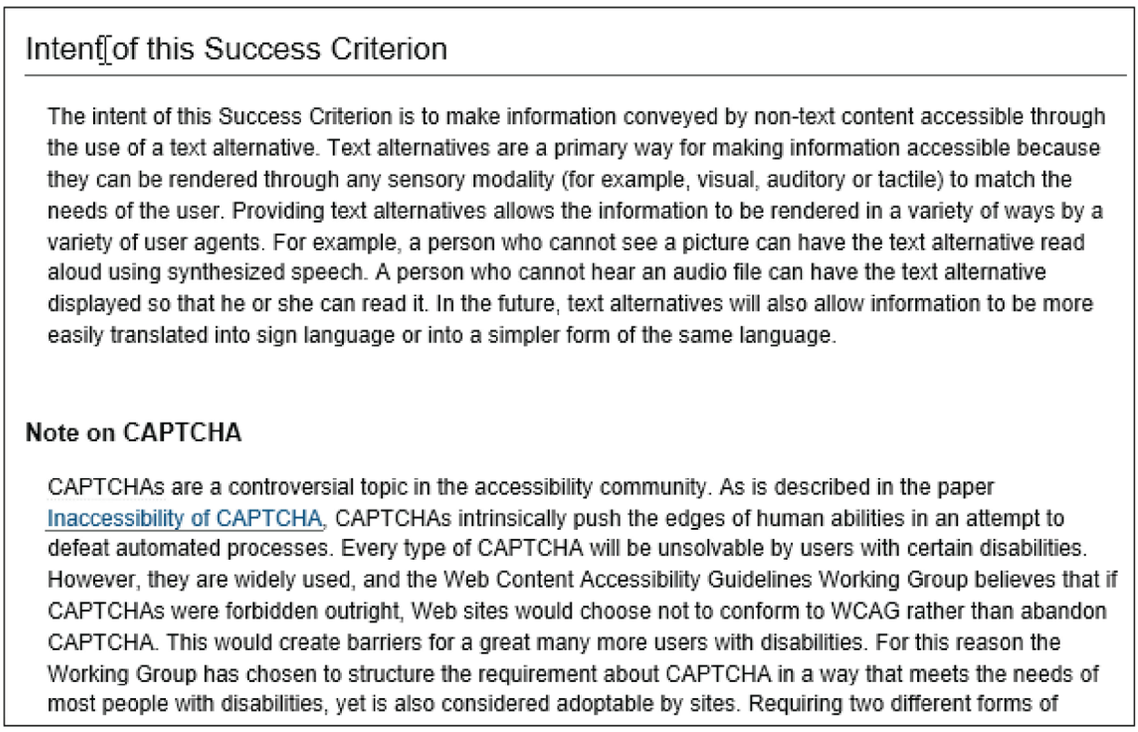


Figure 7: Understanding SC 1.1.1_part 1

In addition, the 'Understanding...' document provides information regarding the intent, specific notes which are applicable to that criterion, examples, and other relevant information to assist the user understand the importance and how best to implement the criterion.



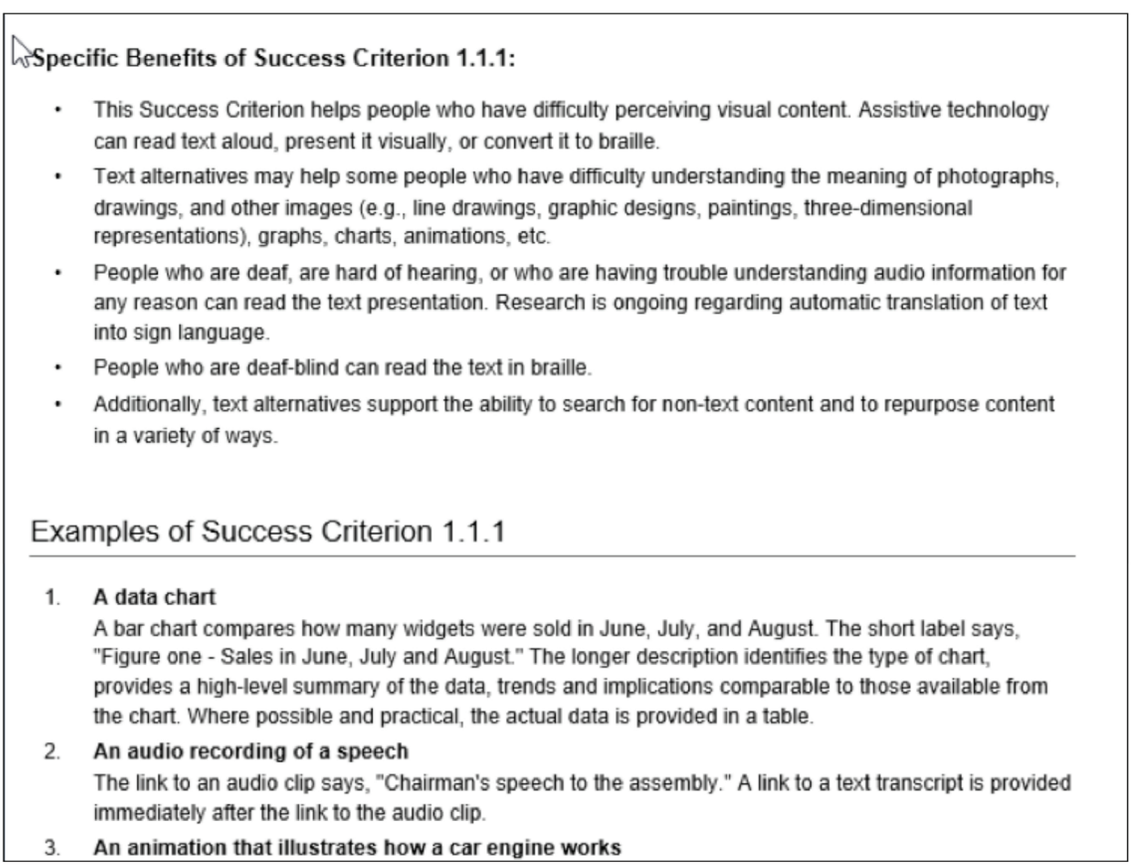
Intent of this Success Criterion

The intent of this Success Criterion is to make information conveyed by non-text content accessible through the use of a text alternative. Text alternatives are a primary way for making information accessible because they can be rendered through any sensory modality (for example, visual, auditory or tactile) to match the needs of the user. Providing text alternatives allows the information to be rendered in a variety of ways by a variety of user agents. For example, a person who cannot see a picture can have the text alternative read aloud using synthesized speech. A person who cannot hear an audio file can have the text alternative displayed so that he or she can read it. In the future, text alternatives will also allow information to be more easily translated into sign language or into a simpler form of the same language.

Note on CAPTCHA

CAPTCHAs are a controversial topic in the accessibility community. As is described in the paper Inaccessibility of CAPTCHA, CAPTCHAs intrinsically push the edges of human abilities in an attempt to defeat automated processes. Every type of CAPTCHA will be unsolvable by users with certain disabilities. However, they are widely used, and the Web Content Accessibility Guidelines Working Group believes that if CAPTCHAs were forbidden outright, Web sites would choose not to conform to WCAG rather than abandon CAPTCHA. This would create barriers for a great many more users with disabilities. For this reason the Working Group has chosen to structure the requirement about CAPTCHA in a way that meets the needs of most people with disabilities, yet is also considered adoptable by sites. Requiring two different forms of

Figure 8: Intent and Notes for SC 1.1.1



Specific Benefits of Success Criterion 1.1.1:

- This Success Criterion helps people who have difficulty perceiving visual content. Assistive technology can read text aloud, present it visually, or convert it to braille.
- Text alternatives may help some people who have difficulty understanding the meaning of photographs, drawings, and other images (e.g., line drawings, graphic designs, paintings, three-dimensional representations), graphs, charts, animations, etc.
- People who are deaf, are hard of hearing, or who are having trouble understanding audio information for any reason can read the text presentation. Research is ongoing regarding automatic translation of text into sign language.
- People who are deaf-blind can read the text in braille.
- Additionally, text alternatives support the ability to search for non-text content and to repurpose content in a variety of ways.

Examples of Success Criterion 1.1.1

1. **A data chart**
   A bar chart compares how many widgets were sold in June, July, and August. The short label says, "Figure one - Sales in June, July and August." The longer description identifies the type of chart, provides a high-level summary of the data, trends and implications comparable to those available from the chart. Where possible and practical, the actual data is provided in a table.
2. **An audio recording of a speech**
   The link to an audio clip says, "Chairman's speech to the assembly." A link to a text transcript is provided immediately after the link to the audio clip.
3. **An animation that illustrates how a car engine works**

Figure 9: Specific Benefits and Examples for SC 1.1.1

and finally, related resources and techniques and failures for that Success Criteria.

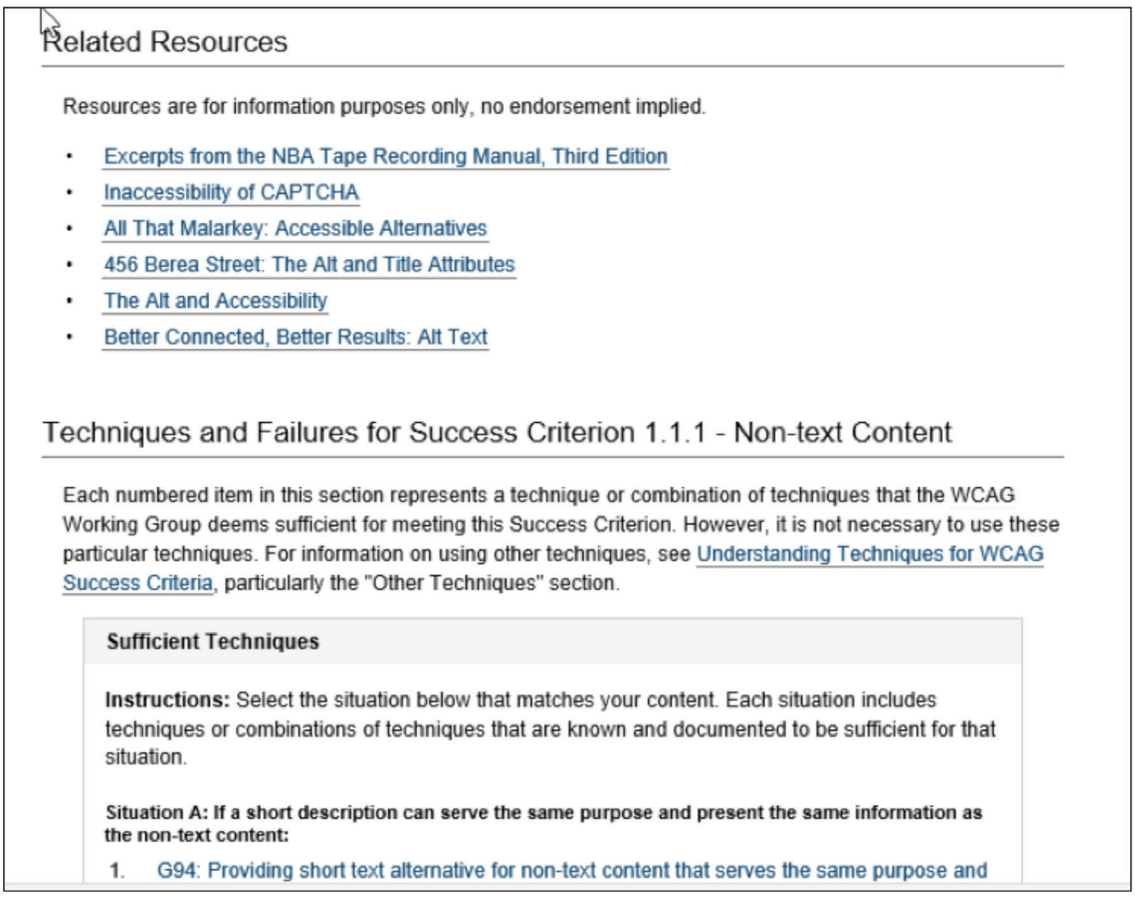


Figure 10: Related Resources, Techniques & Failures for SC 1.1.1

In that same document, the user will find Additional (advisory) techniques, Common Failures and a list of terms used and their definitions. Finally, there are links to the next and previous success criteria and return access to the top of the home document.

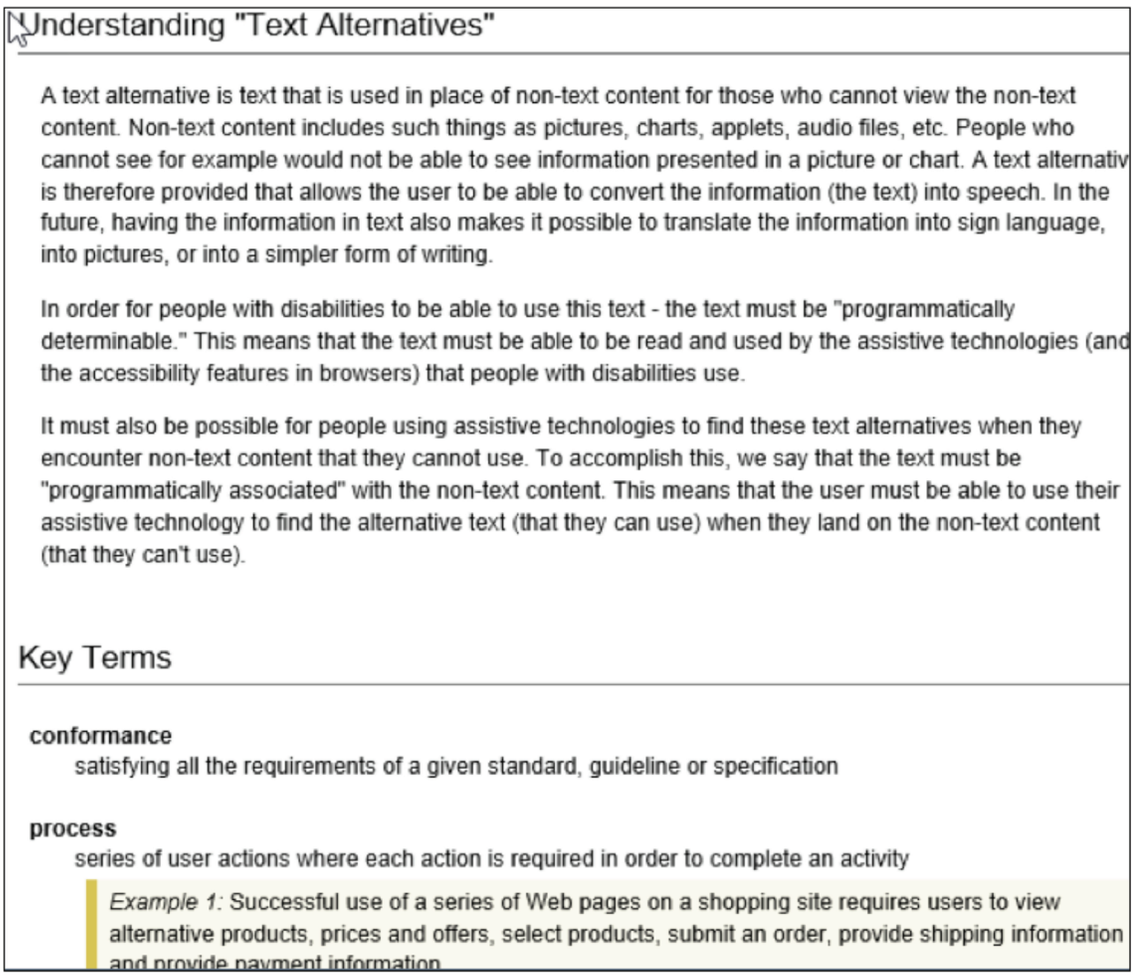


Figure 11: Explanation and Key Terms

5.1.7. Understanding Stakeholder Roles in Developing Accessible Digital Products

Users of the **WCAG** documents often have very different roles and may find some of the documents more helpful than others. For instance, a Developer may want specific examples of successful implementation for SC 1.1.1. They would therefore, head directly to the Techniques document. A website Content Editor may want to know why alternative content for an image is important, and they would be best served by consulting the "Understanding **WCAG 2.0"** document. While there are links between all the documents, each has a specific audience that will most benefit from the information.

As demonstrated previously, the Quick Reference document will assist many users as well as providing links between all the documents.

Figure 12 provides a snapshot of the filter section of the Quick Reference document and illustrates the filters available. As well as being able to use a Table of Contents, the user can select tags, techniques, compliance levels and technologies to customise their searches.

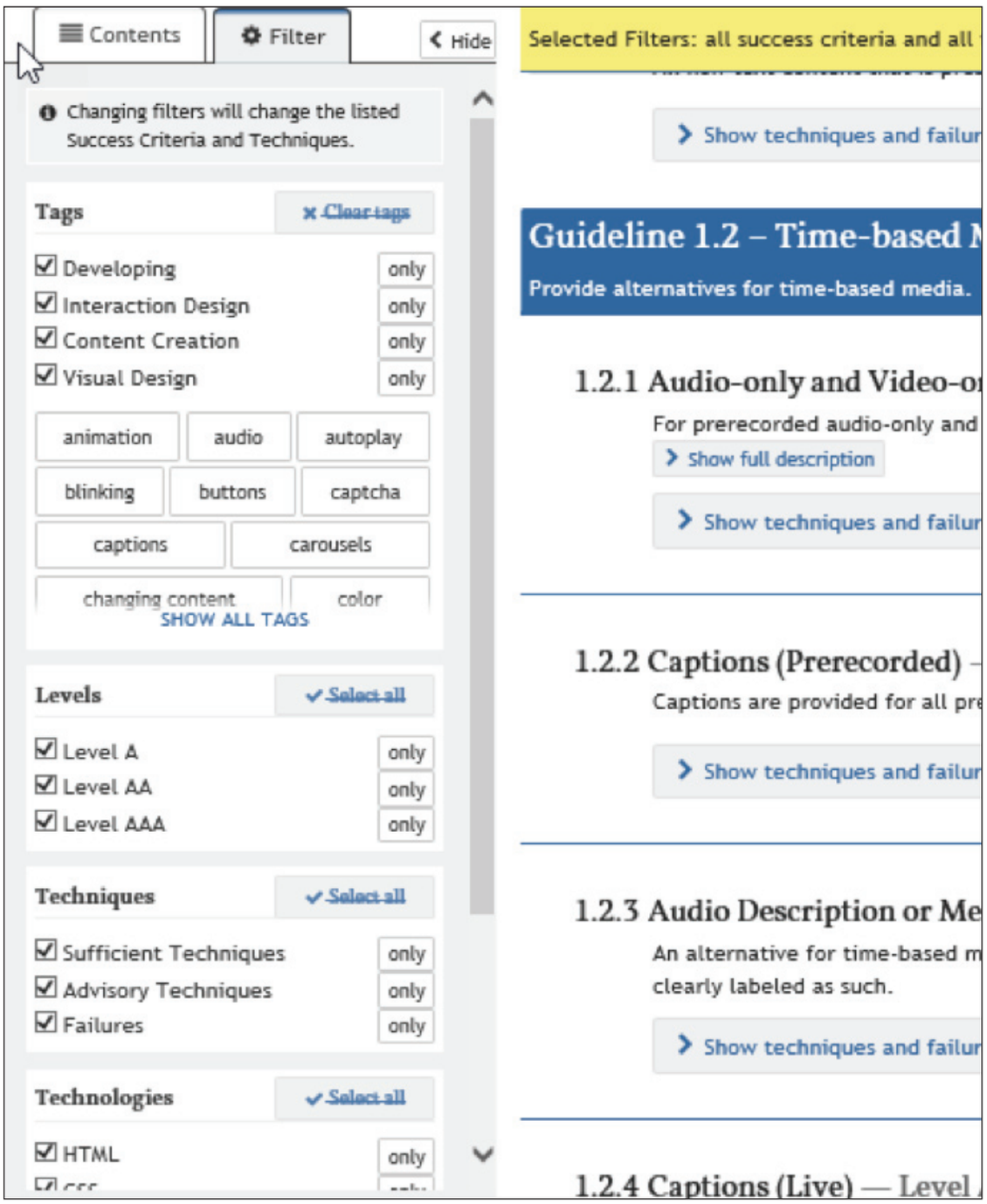


Figure 12: WCAG 2.0 Quick Reference Filters

For example, a content editor may wish to view only HTML sufficient techniques for Levels A and AA. The filter to provide the necessary information would resemble Figure 13 which follows.

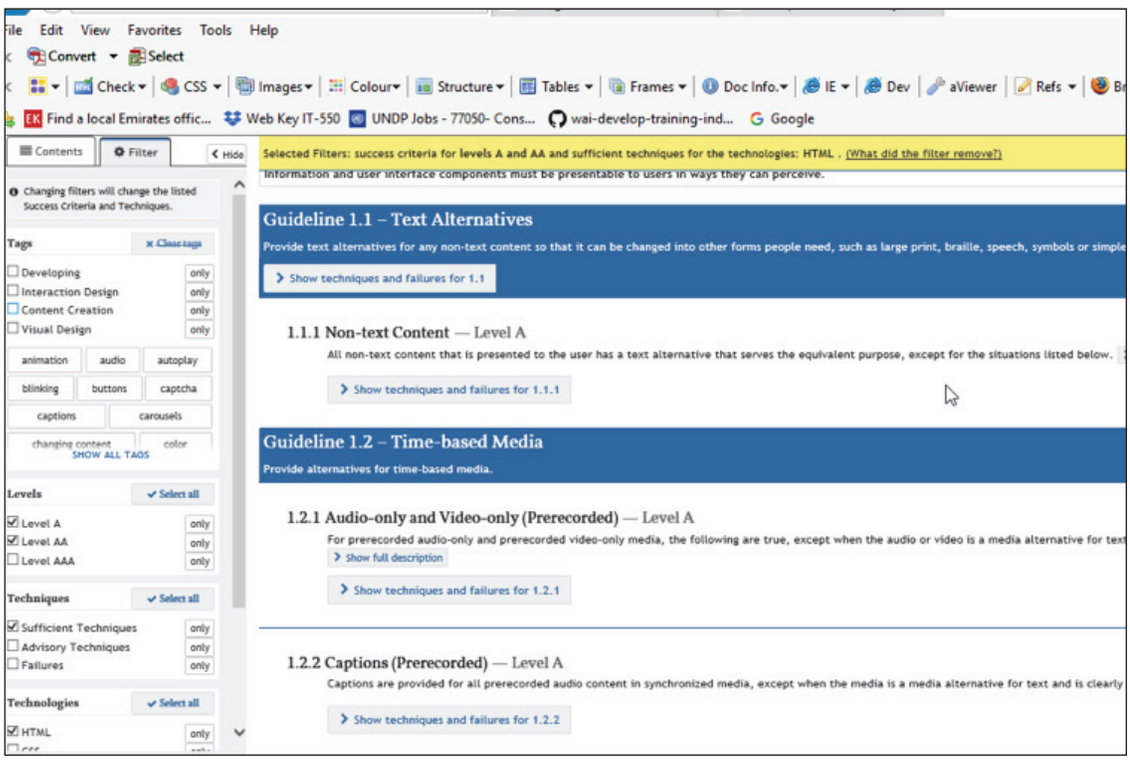
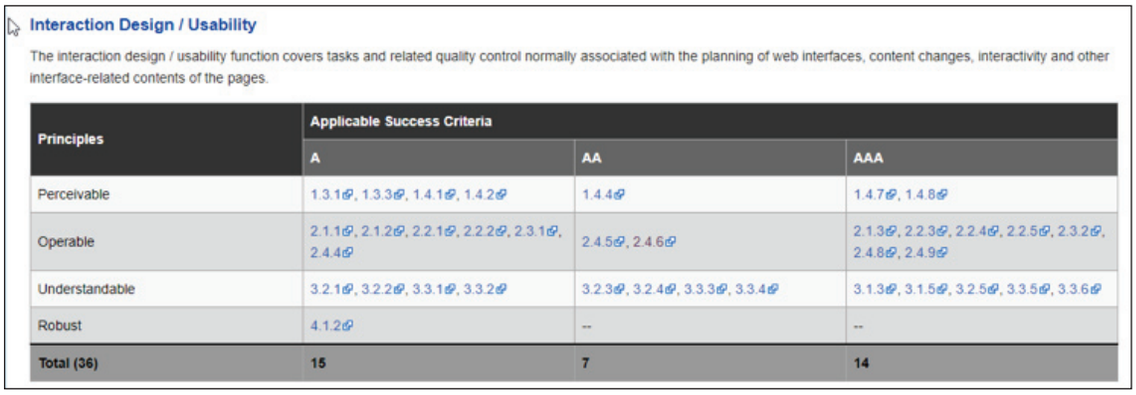


Figure 13: Filtering Quick Reference which form

W3C examined the various roles forming part of project teams to determine common responsibilities for the different success criteria. The purpose of the study was to allow the 61 WCAG Success Criteria to be broken down into smaller lists, allowing stakeholder roles to integrate the responsibilities into their portion of the life cycle.

“Web accessibility, taken into consideration at the end of the production chain, leads to processing too late, issues that should have been dealt with before, without the appropriate means or resources to do so. Understanding how critical this is, is a crucial part of the web accessibility process. Who, then, gets to be responsible for which accessibility requirements, and when in a web production? This project looks at **WCAG 2.0** Success Criteria by roles (e.g., graphics designer, interaction designer, back-end developer, etc.) so web accessibility becomes all about being able to plan the right intervention, by the right person, at the right time within the web development lifecycle.” (W3C WAI Web Accessibility Responsibility Breakdown, 2012)

While this approach may not work for all teams, it would be worth considering who has the responsibility for different aspects of the project development. A full list of the Success Criteria and the stakeholder roles and breakdown can be found at: https://www.w3.org/community/wai-engage/wiki/Accessibility_Responsibility_Breakdown . While there is significant overlap, Figure 14 demonstrates the aspects that may be assigned to the Interaction Designer or Usability Specialist. The criteria are further broken down into the Perceivable, Operable, Understandable and Robust categories.



Interaction Design / Usability

The interaction design / usability function covers tasks and related quality control normally associated with the planning of web interfaces, content changes, interactivity and other interface-related contents of the pages.

Principles	Applicable Success Criteria		
	A	AA	AAA
Perceivable	1.3.1, 1.3.3, 1.4.1, 1.4.2	1.4.4	1.4.7, 1.4.8
Operable	2.1.1, 2.1.2, 2.2.1, 2.2.2, 2.3.1, 2.4.4	2.4.5, 2.4.6	2.1.3, 2.2.3, 2.2.4, 2.2.5, 2.3.2, 2.4.8, 2.4.9
Understandable	3.2.1, 3.2.2, 3.3.1, 3.3.2	3.2.3, 3.2.4, 3.3.3, 3.3.4	3.1.3, 3.1.5, 3.2.5, 3.3.5, 3.3.6
Robust	4.1.2	--	--
Total (36)	**15**	**7**	**14**

Figure 14: Stakeholder roles in accessible design

W3C WAI recognise different stakeholders in projects require different resources for different purposes. They have developed a series of tutorials referred to later in the 'best practice' section. However, the following figure shows how the tutorials may assist different project stakeholder needs.

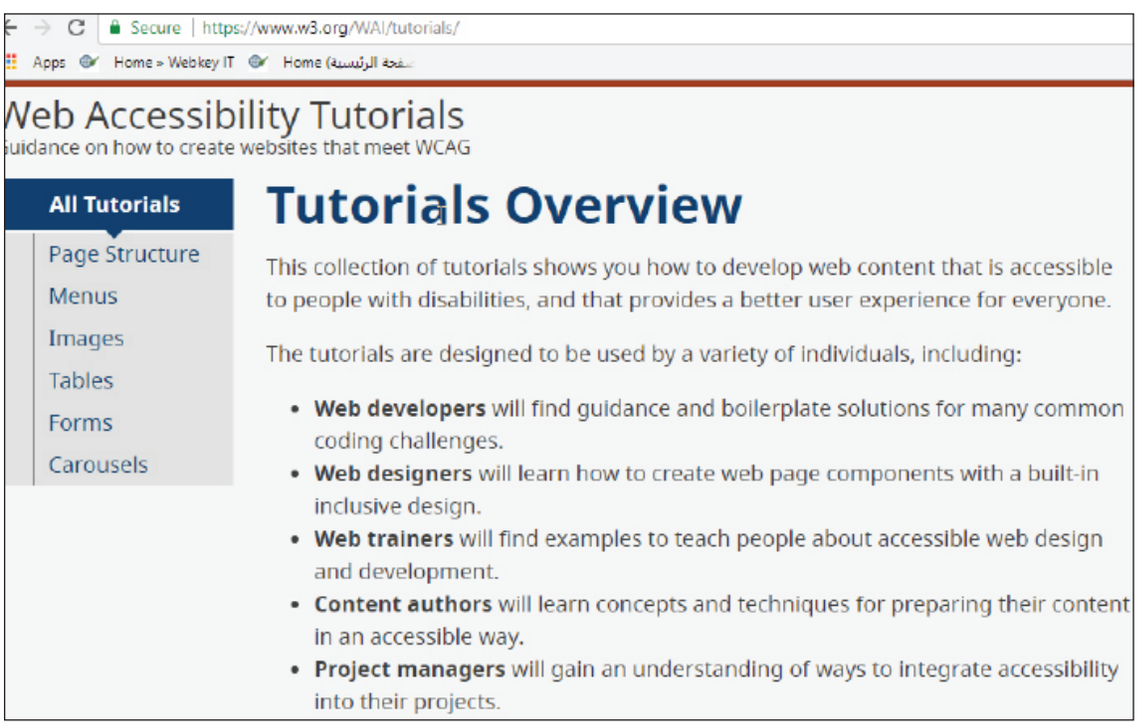


Figure 15: Tutorials Overview for Different Stakeholders

5.1.8. Tips for Getting Started

One of the resources **WAI** have developed is the 'Tips for Getting Started', including resources designed for different stakeholder responsibilities. https://www.w3.org/WAI/gettingstarted/tips/

Figure 16: Tips for Getting Started with Web Accessibility

The developer new to digital accessibility will find resources relating to their role at the 'Developing…' link in Figure 16. Figure 17 demonstrates there are specific resources for developers which when followed provide detailed advice on how best to implement techniques to enable compliance with the Success Criteria.

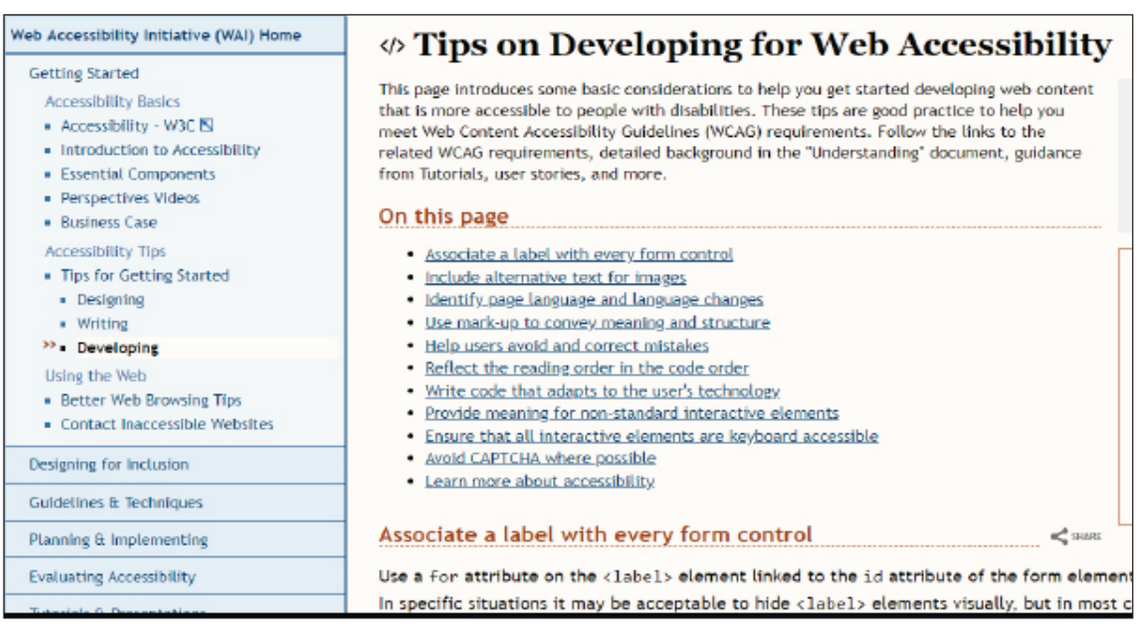


Figure 17: Tips for Developing Links

Figure 17 displays an instruction on the importance of associating a label with form control. When implemented correctly, the screen reader user will move the form label read and understand what should be entered into the form field. The voice-activation software user will be able to ask for the form field to be active and be able to enter the required information. Most of these techniques relate back to 'best practice.' Using these techniques will enable all users to more effectively use the content.

The Interface Designer will find specific advice related to their tasks by following the ‘Designing…’ link shown in Figure 18.

Figure 18: Tips for Designers

5.1.9. Understanding Best Practice, Inclusive Design and Universal Design

Accessibility and Usability go hand in hand. When you design digital content to be usable by people with disabilities, it provides a better user experience for everyone. Microsoft work with the concept of ‘Solve for one, extend for many’. In their Toolkit Manual, Microsoft states:

“We get many questions about the difference between accessibility and inclusive design. An important distinction is that accessibility is an attribute, while inclusive design is a method. And while practicing inclusive design should make your products more accessible, it’s not a process for meeting all accessibility standards. Ideally, accessibility and inclusive design work together to make experiences that are not only compliant with standards, but truly usable and open to all.” (Microsoft Inclusive Design Toolkit Manual, 2018).

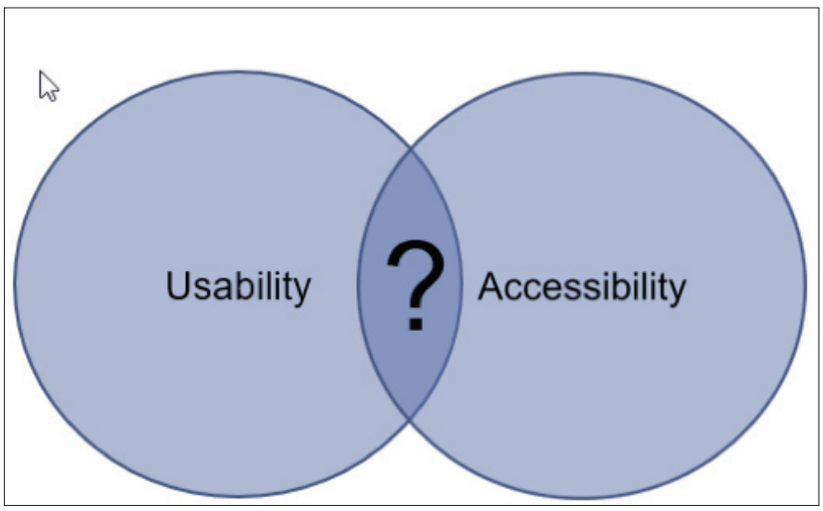


Figure 19:Usability vs Accessibility

In Figure 20 below, when digital material is designed for inclusivity, everyone benefits. In this illustration, deigning a product that works for a person with one arm, would also work for someone in a temporary situation where they only had the use of one arm, and for the person who is unable because of circumstances to use both arms, such as carrying an infant. Designing for inclusivity, improves the user experience for many.

Figure 20: Solve for one extend for many - Microsoft

Universal design means considering people's diverse needs in the initial design phase of a product. The main goals of universal design are to eliminate barriers and improve access for all.

Web products that follow the principle of universal design are:

- Flexible and adaptable to different users' needs or preferences.
- Accessible through a variety of different technologies, including mobile devices or assistive technologies.
- More cost effective than designing a product that needs to be retrofitted for accessibility later. Re-designs are expensive! (Web Accessibility Toolkit, 2014).

The USA Department of Health and Human Services links accessibility, best practice, universal design and business benefits, showing that not only do persons with disabilities and all other users benefit, but so does the website owner:

"By making your website accessible, you are ensuring that all your potential users, including people with disabilities, have a decent user experience and are able to easily access your information. By implementing accessibility best practices, you are also improving the usability of the site for all users.

W3C notes that, "accessibility overlaps with other best practices such as mobile web design, device independence, multi-modal interaction, usability, design for older users, and search engine optimization (SEO). Case studies show that accessible websites have better search results, reduced maintenance costs, and increased audience reach, among other benefits." (Accessibility Basics, 2018).

5.2.10.1. Tutorials

The WAI suite of resources includes a set of tutorials designed to assist the project team ensure that they are employing best practice. The methods shown in the tutorials are, if implemented correctly, assurance the content passes accessibility testing. However, it is important to note it is entirely possible to use the techniques in the wrong way or in the wrong place, resulting in failure.

The list of tutorials includes some of the aspects of digital development resulting in the most accessibility violations:

- Page structure
- Menus
- Images
- Tables
- Forms
- Carousels

As an example of the content found in the **WAI** Tutorials, the Page Structure tutorial contains a section on how to correctly format headings, demonstrated in Figure 21 below.

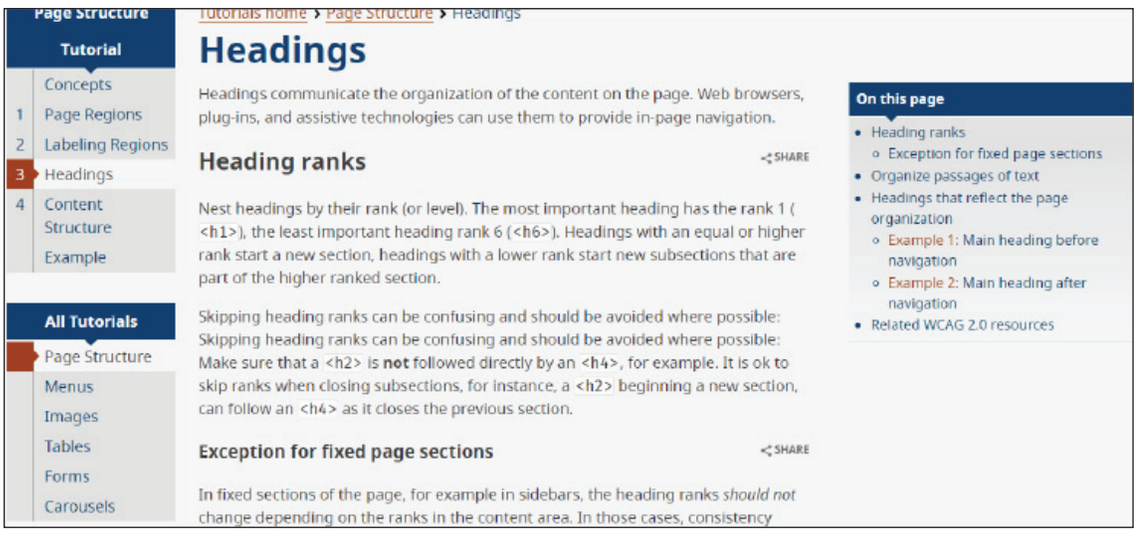


Figure 21: Tutorials>Page Structure>Headings

The material in the tutorials is clear and concise and often includes code snippets to further assist as well as logical instructions for implementation.

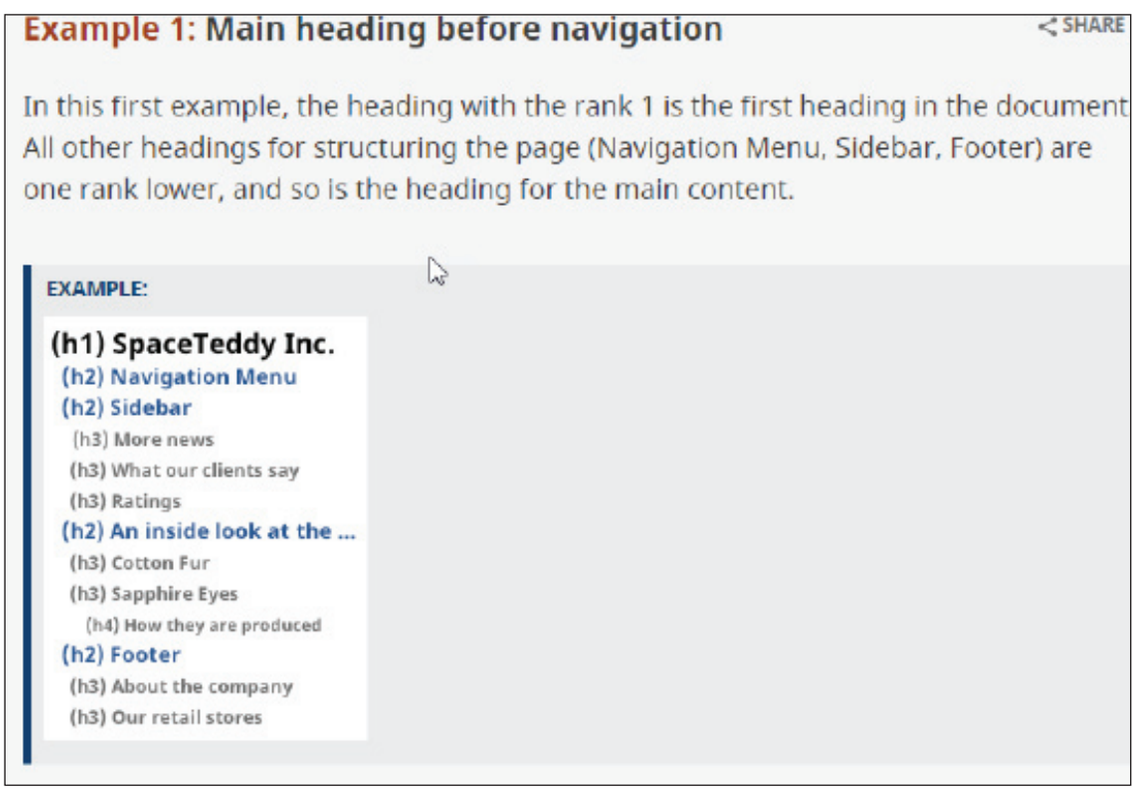


Figure 22: Code snippet for heading structure

Many of the tutorials include the added option of a full code example showing the implementation of the technique as provided in Figure 22. This provision is particularly helpful to the developer new to digital accessibility.

CODE SNIPPET:

```
…
<body>
  <header>
    <h1>Space Teddy Inc.</h1>
  </header>
  <nav aria-labelledby="mainnavheader">
    <h2 id="mainnavheader">Navigation Menu</h2>
    …
  </nav>
  <main>
    <article>
      <h2>An inside look at the new Space Teddy 6</h2>
      <nav aria-labelledby="tocheader">
        <h3 id="tocheader">Table of Contents</h3>
        …
      </nav>
      <p>…</p>
      <p>Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore
eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in
culpa qui officia deserunt mollit anim id est laborum.</p>
      <p>…</p>
      <ul>
        <li>Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
tempor incididunt ut labore et dolore magna aliqua.</li>
        <li>Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut
aliquip ex ea commodo consequat.</li>
        <li>Duis aute irure dolor in reprehenderit in voluptate velit esse cillum
dolore eu fugiat nulla pariatur.</li>
      </ul>
      <h3>Cotton Fur</h3>
      <p>Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
tempor incididunt ut labore et dolore magna aliqua.</p>
      <p>…</p>
      <aside aria-labelledby="relatedheader">
        <h3 id="relatedheader">Related Articles</h3>
        <ul>
          <li><a href="#">Related Article Title 1</a></li>
          <li><a href="#">Related Article Title 2</a></li>
          <li><a href="#">Related Article Title 3</a></li>
        </ul>
      </aside>
    </article>
    <aside aria-labelledby="latestheader">
      <h3 id="latestheader">Latest Articles</h3>
```

Figure 23: Heading complete code example

5.2.10.2. Understanding the Needs of People with Disabilities

The purpose of designing for inclusivity is designing for users with a wide range of abilities and situations to make full use of all digital information. It is vital that designers, developers, user experience professionals and others understand how persons with disabilities use digital materials. This necessitates understanding their needs, how they use web content, how they use assistive technology, as well as what constitutes 'best practice' or the best usability suggestions suitable for that resource. It is important to understand not everything that comes under the term 'usability' or 'user experience' is an accessibility issue.

5.2.10.3. Video Resources

WAI have produced several video resources to help people understand the W3 Standards as well as gain an understanding into the needs of persons with disabilities. As mentioned in the Introduction to the Kuwait National Standards for Digital Accessibility, there is an Introduction to Web Accessibility and W3C standards video, located at: https://www.w3.org/WAI/videos/standards-and-benefits .

WAI have produced several videos to help people understand the “impact of accessibility and the benefits for everyone in a variety of situations”. The topics of the perspectives videos include:

- Keyboard
- Contrast
- Layout
- Speech
- Controls
- Captions
- Customizable
- Voice
- Understandable
- Notifications

Conducting Digital Accessibility Evaluations

6. Conducting Digital Accessibility Evaluations

Assessing the accessibility of a website or other digital material such as an application or downloadable document, involves not only technically checking against the **WCAG** Success Criteria, but also including people with disabilities. Usability by persons with disabilities is critical to assuring their needs have been considered. Also, not everything that causes users difficulty is covered by the guidelines. Consider the issue of information location – this could make it easy or difficult for users to navigate the website. Therefore, testing by users with disabilities is considered critical.

The following section provides information on conducting accessibility evaluations both with preliminary internal evaluations and more formal external third-party accessibility audits. It also examines the role of usability testing by persons with disabilities and seniors.

6.1. WCAG – Evaluation Methodology (WCAG-EM)

A Methodology was produced through the W3C Process to document the procedures for conducting thorough accessibility evaluations of digital content. This methodology, known as **WCAG-EM** is not meant for those new to **WCAG** or accessibility evaluation. Please note the emphasis in the following quotation from the Abstract of **WCAG-EM** is the consultant's own, for clarification.

"This document provides guidance on evaluating how well websites conform to the Web Content Accessibility Guidelines (**WCAG**) 2.0. It describes a procedure to evaluate websites and includes considerations to guide evaluators and to promote good practice. It does not provide instructions for evaluating web content feature by feature, which is addressed by **WCAG 2.0** success criteria. This document is one of a series of informative **W3C/WAI** resources about Evaluating Websites for Accessibility that complement the **WCAG 2.0** Documents. It does not define additional **WCAG 2.0** requirements nor does it replace or supersede them in any way.

The methodology described in this document is **intended for people who are experienced in evaluating accessibility using WCAG 2.0 and its supporting resources.** It provides guidance on good practice in defining the evaluation scope, exploring the target website, selecting representative samples from websites where it is not feasible to evaluate all content, auditing the selected samples, and reporting the evaluation findings. It is primarily designed for evaluating existing websites, for example, to learn about them and to monitor their level of accessibility. It can also be useful during earlier design and development stages of websites. It applies to static and dynamically generated websites, mobile websites and applications, and other types of websites. It does not specify particular web technologies, evaluation tools, web browsers, assistive technologies, or other software to use for evaluation. It is suitable for use in different evaluation contexts, including self-assessment and third-party evaluation." (**WCAG-EM, 2014**).

This does not mean that those new to the field of digital accessibility cannot use and read this document, but that there is a level of expertise required to use it effectively. WAI have produced many resources for the new entrant into the field, in particular 'Easy

Checks', that serves as an introduction.

WCAG-EM further clarifies the purpose of the resource and the use of other resources:

"Using this Methodology"

This methodology is used for thorough evaluation of websites using **WCAG 2.0.** Before evaluating an entire website, it is usually good to do a preliminary evaluation of different web pages from the target website to identify obvious accessibility barriers and develop an overall understanding of the accessibility of the website. Easy Checks - A First Review of Web Accessibility describes such an approach for preliminary evaluation that is complementary to this methodology.

"Required Expertise"

Users of this methodology are assumed to have solid understanding of how to evaluate web content using **WCAG 2.0,** accessible web design, assistive technologies, and of how people with different disabilities use the Web. This includes an understanding of web technologies; accessibility barriers that people with disabilities experience; assistive technologies and adaptive approaches that people with disabilities use; and evaluation techniques, tools, and methods to identify barriers for people with disabilities. In particular, it is assumed that users of this methodology are deeply familiar with all the resources listed in Background Reading." (**WCAG-EM, 2014**).

6.2. Conducting a Preliminary Accessibility Evaluation

While conducting a formal accessibility audit of a website, application or other digital content is a highly specialized and technical skill, it is possible for the novice evaluator to check several basic aspects of a website or other digital material. Section 8.1.5 of this document contains information on when to use external third-party expert evaluation services. However, in this section, the Framework deals with what is termed 'preliminary accessibility evaluation' activities. **W3C WAI** provide numerous resources to assist the novice or in-house evaluator to conduct tests to see if the content is accessible to people with disabilities.

6.2.1. The Role of Automated Testing Tools

Throughout the WAI materials including in the **WCAG** documents, there are numerous references urging caution regarding reliance on automated tools. There is always a tendency to want to find an automated tool that can do the work quickly, inexpensively and efficiently. The best result possible so far with automated tools is between 18 and 35% of the criteria that may be checked with a reasonable success rate. However, no automated tool can check all the criteria, nor can they replace the need for human reasoning.

For example, an automated tool can check if an image has alternative text, and some more advanced tools can make sure that the text is not in the form of a file name, i.e. does not have a .jpg or similar file extension. However, an automated tool is not able to ensure

the text describes the image or the purpose of the image. Figure 25 shows a woman using a telephone. A similar image was used on a government website which had the alternative text of 'lady on phone'. If you were blind from birth, would you understand the purpose of that text and image? Would you even know what 'on phone' meant? Is she standing on a phone? If English is not your first language, would you know that a 'phone' was the same thing as a 'telephone'?

Figure 24: Image of Lady Using Telephone

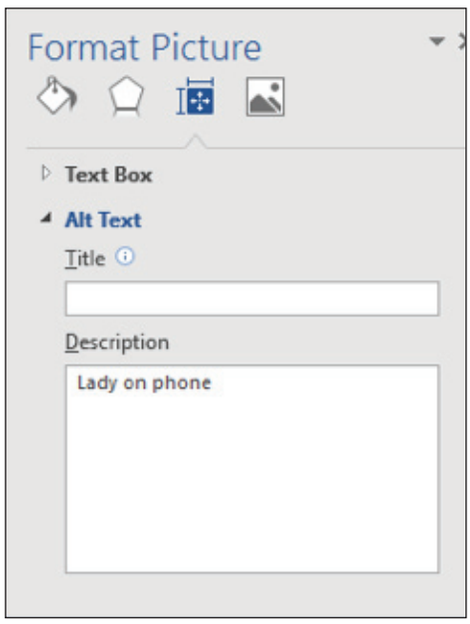


Figure 25: Alt text for Lady on Phone Image

In this case, the image was a link to a 24-hour call centre. If a blind user heard 'image link - lady on phone', would they understand that the image was a link to a help centre? A more correct alternative text would read 'image link - use our new 24-hour call centre.' However, an automatic checking tool would not be able to use this human reasoning and would assume the alternative text was correct.

The concept of alternative text requires that the content author understands the purpose of alternative text is to be provide a textual alternative for the non-textual content – in other words, provides the user with the information portrayed by the image to the sighted user. This requirement is Success Criteria 1.1.1 (Level A) for which the link to the Understanding Success Criteria 1.1.1 may be found at https://www.w3.org/TR/UNDERSTANDING-WCAG20/text-equiv-all.html. The following excerpt is taken from SC 1.1.1:

"Intent of this Success Criterion.

The intent of this Success Criterion is to make information conveyed by non-text content accessible through the use of a text alternative. Text alternatives are a primary way for making information accessible because they can be rendered through any sensory modality (for example, visual, auditory or tactile) to match the needs of the user. Providing text alternatives allows the information to be rendered in a variety of ways by a variety of user agents. For example, a person who cannot see a picture can have the text alternative read aloud using synthesized speech. A person who cannot hear an audio file

can have the text alternative displayed so that he or she can read it. In the future, text alternatives will also allow information to be more easily translated into sign language or into a simpler form of the same language." (**W3C, WAI** Understanding **WCAG 2.0**).

6.2.2. Training Requirements

Attempting to attain compliance with the Kuwait National Standards for Digital Accessibility, without the necessary introductory training will be difficult, if not impossible. Whether that training takes the form of formal education or training courses, or whether the novice evaluator undertakes a period of self-education is at the discretion of the individual organisation. The Standard stated in Section 3.0 of this document, is based upon the requirement to meet **WCAG 2.0** to Level AA (or subsequent iterations), therefore it is critical all training is based upon the **W3C WAI/WCAG** resources. There is a significant amount material available from online sources which deviates from the **WAI / WCAG** materials and will not be helpful to attain to the Standard required.

With training, the novice evaluator can learn to check the following items with reasonable accuracy:

- page title
- heading structure
- keyboard navigation
- keyboard focus
- colour contrast
- use of colour (sensory ability)
- movement control
- alternative for non-text elements
- form labels
- link names

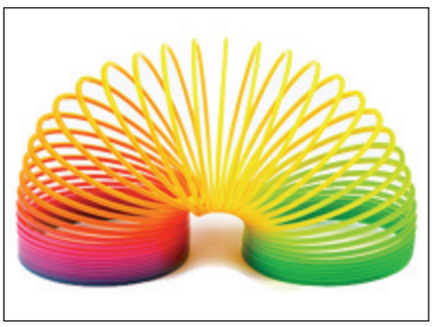
Even from this list, there will be instances where the novice evaluator will need to obtain information from a trusted resource. The information in the **WAI** guidance material provides assistance and suggests further resources.

Training should include at a very minimum, an introduction to digital accessibility, the use of this Framework, how to use the W3C Material, how to conduct a preliminary evaluation, an introduction on how to use assistive technology such as a screen reader, and an understanding of how persons with disabilities use digital material.

6.2.3. Using Assistive Technology to Evaluate Content

Assistive technologies are those devices that help people perform normal life activities that they may have been unable to perform or manage with difficulty without that device.

In other words, this is a tool or system that helps people accomplish everyday tasks. Using assistive technologies promotes independence and security for people with disabilities.



You could think of assistive as another type of device. when a site or app is designed to be flexible, it works better on all devices. This is also covered by **WCAG** under SC 4.1.2 – Robust.

Figure 26: Flexible is Accessible!

The 'Robust' Principle of the **WCAG** 'POUR' means that the digital content meets the following requirements:

- Functionality over current & future technologies
- Using technologies according to specification
- Users should be allowed to choose their own technologies to access web content.
- This allows the users to customize their technologies to meet their needs, including accessibility needs.

At the most basic level, a novice evaluator or content editor should learn how to use a screen reader. The two most popular screen reader for desktop/laptop computers are JAWS® (Freedom Scientific) and NVDA® (NV Access). The links for these are provided in the References Section of this document. Both screen readers provide full navigation and screen reader capabilities for the blind user but are also useful for the accessibility evaluator and content editor wishing to ensure that content is accessible. One of the main differences between the two programs is cost. JAWS® (Job Access with Speech) is available in the home edition for $900 USD, and for the professional edition at $1100 USD. However, there is a free trial of this software available for a limited time. NVDA® is available for no cost (with the option of making a donation) and can also be installed on a USB drive which the user may take with them, making it available on any machine the user has available. NVDA® is also open-source, allowing users to contribute to its development.

For both screen readers, alternate voices may be installed, with the difficulty being lack of free Arabic-language voices, which means Arabic-language speakers must purchase a suitable voice.

Accessibility evaluators and content editors use both software programs to check content for access. For an evaluator, the difference is that NV Access fully supports the use of the software for no cost, while JAWS requires the purchase of a license. JAWS ® has a free trial available, however this is not intended for commercial organisations seeking to test content. Documentation provided prior to downloading the free trial states "You further acknowledge that your use of the information is for informational,

personal, and non-commercial purposes only…" This means that if the evaluator is using the software to test content for a website, it would be in violation of the purposes of the free trial. As NVDA® is free and permits the use of the software for accessibility testing, this Framework recommends using NVDA as the testing screen reader for desktop and laptop uses. For mobile devices there are free screen readers built into devices – iOS devices use VoiceOver, and Android devices use TalkBack.

If the evaluator wishes to learn other assistive technology, this is certainly an option, however the use of sophisticated assistive technology is usually left to users with disabilities who become experts in their particular assistive software programs. They can also be expensive. However, there are other options used by evaluators similar to methods used by people with disabilities. This includes tabbing through a website (which is the method used by people who cannot use a mouse), changing the colour contrast or using a colour blindness simulator to emulate the experience of someone with colour blindness, using a simulator to emulate the experience of a person with dyslexia etc.

These are all methods to help the evaluator understand the experience of a person with disabilities and be able to assess at an introductory level the difficulties people might face.

6.2.4. Easy Checks

W3C WAI have produced 'Easy Checks – A First Review of Web Accessibility' as a starting point for conducting preliminary checks of the accessibility of a web page. This resource is located at https://www.w3.org/WAI/test-evaluate/preliminary/.

To demonstrate the resources provided in 'Easy Checks', the example of SC 1.1.1 referred to previously is used below. The Introduction to this resource states that 'Easy Checks' is designed for anyone to use, not requiring any particular technical skill or background. It further states:

"This page helps you start to assess the accessibility of a web page. With these simple steps, you can get an idea whether accessibility is addressed in even the most basic way.

Scope

These checks cover just a few accessibility issues and are designed to be quick and easy, rather than definitive. A web page could seem to pass these checks, yet still have significant accessibility barriers. More robust assessment is needed to evaluate accessibility comprehensively." (W3C WAI. Easy Checks – A First Review of Web Accessibility, 2018)

This resource is not intended to be a full preliminary assessment of a website's accessibility but serves to act as an entry point into accessibility testing.

From the previous example of checking for text alternatives for non-textual content (SC 1.1.1), this is the information provided by Easy Checks for that issue:

“Image Text Alternatives – ‘Alt Text’

Text alternatives (“alt text”) convey the purpose of an image, including pictures, illustrations, charts, etc. Text alternatives are used by people who do not see the image. (For example, people who are blind and use screen readers can hear the alt text read out; and people who have turned off images to speed download or save bandwidth can see the alt text.)

The text should be functional and provide an equivalent user experience, not necessarily describe the image. (For example, appropriate text alternative for a search button L9 would be “search”, not “magnifying glass”.)

You don’t usually see the alt text on a web page, it is in the web page markup (like this:

<img src=”pointer_to_image.png” alt=”here’s where the alternative text goes”>).

Every image should include alt text in the markup.

- If an image conveys information useful for interacting with or understanding the web page content, then it needs alternative text.

- If an image is just decorative and people don’t need to know about the image, then it should have null alt (alt=”u).

Automated tests can tell you if ‘alt’ is missing. To determine if the alternative text is appropriate, you need to see the image and judge it in context.

What to check for:

Every image has alt with appropriate alternative text.” (W3C WAI, Easy Checks, 2018)

Each of the sections in ‘Easy Checks’ includes tips, suggestions of how to check each issue and additional information sections which can be expanded or collapsed. Below is an example from this same criterion (1.1.1):

Tips

Every image has alt with appropriate alternative text.

Appropriate alternative text is not an exact science. Some people prefer most images to have more detailed description and others prefer much less description.

[+] Appropriate alt text:

[+] What is not needed in the alt text:

[+J alt attribute in HTML (not “alt tag”)

Alt text checks

There are three options to check alt text listed below. The first one is the easiest, if you have the IE WAT toolbar. If you don’t have any toolbars, there is a check at the end for any browser.

[+] To check alt text with IE WAT

[+] To check alt text with Web Dev toolbar

[+] To check alt text with any browser (W3C WAI, Easy Checks 2018)

When dealing with appropriate ‘Alt text checks’, there are references to various methods to check the issue. Specifically, it refers to the IE WAT tool.

In the above example, if the user was to expand the [+] To check alt text with IE WAT, they would see the following:

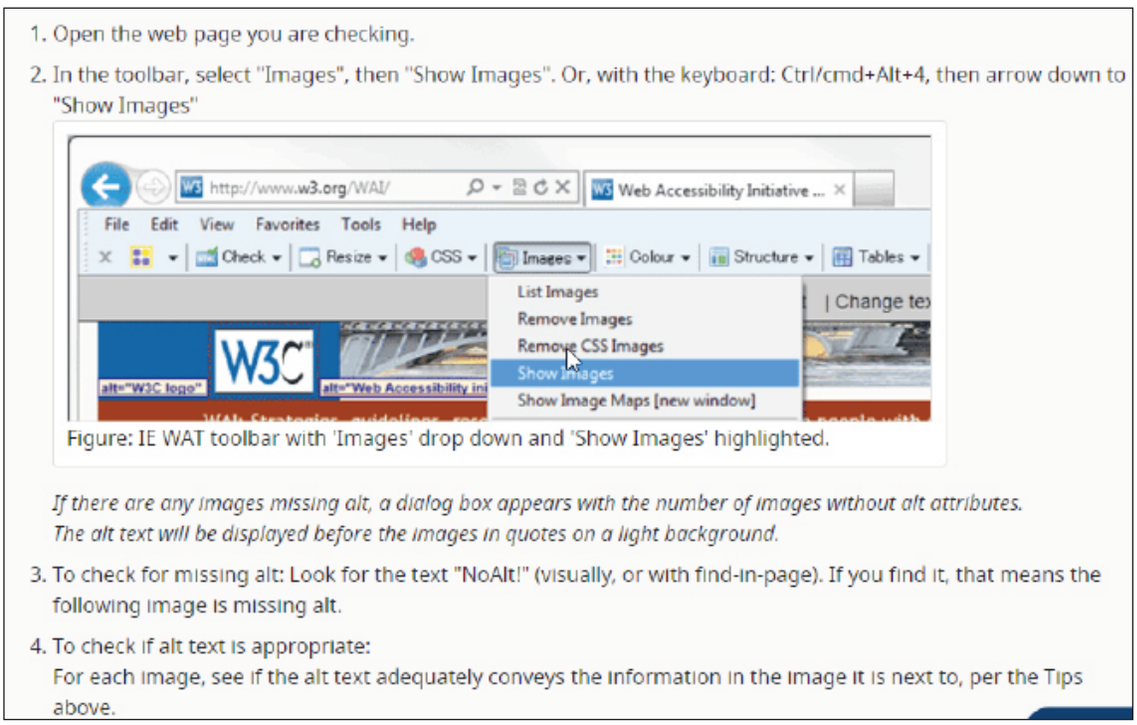


Figure 27: Expansion of Easy Checks Option to Check Alt Text with IE WAT

The ‘Easy Checks’ resource provides information on how to obtain and use each of the methods mentioned. This information is available on the Introduction page of ‘Easy Checks’. For example, if the user wants to know how to use the IE WAT tool and where to find it, they should read the following, expanding each section that has a [+] option.

Using These Easy Checks

Click headings with [+] buttons to get hidden information

Some sections of this page might not apply to your situation, for example, they are for a browser you don’t have, or you only need to read them once. These sections are hidden by default, so they don’t clutter the page. You can expand them to see the information. The headings of hidden sections have a plus button [+] before them. Screen readers will say something like: “graphic, expand this section”. To get the hidden information, click the button or click anywhere on the heading.

The sections below all have hidden information under expandable headings. The first time you read this page, **we recommend that you expand the headings of these five sections and read them.**

[+] Tools: WebDev Toolbar and IE WAT (optional)

[+] WCAG links

[+] Practicing with BAD, the Before-After Demo

[+] Background

[+] Keyboard instructions: Ctrl for Windows, cmd for Mac

For demonstration purposes, the following information would show when the first [+] point above was expanded:

[-] Tools: WebDev Toolbar and IE WAT (optional)

You can do most of these checks with any browser, that is, you do not need to download special tools.

However, some checks are easier if you can download tools. To keep it simple, we've included instructions for just two tools: The Web Developer Toolbar for Chrome, Opera, and Firefox ("WebDev Toolbar") and the Web Accessibility Toolbar for Internet Explorer ("IE WAT"). Both are free extensions/add-ons available in different languages.

- WebDev Toolbar - To do the checks that are indicated "with the WebDev Toolbar", you'll need either.

  o the Chrome browser and the Web Developer extension for Chrome

  o the Opera browser and the Web Developer extension for Opera o the Firefox browser and the Web Developer extension/add-on for Firefox

- IE WAT - To do the checks that are indicated "with IE WAT", you'll need the Internet Explorer (IE) browser version 9 or later and the Web Accessibility Toolbar version 19 July 2013 or later.

Note that we're not endorsing these tools over others. There are many other useful tools to help with evaluation.

(If you can't download these tools, that's OK; you can still do the checks indicated "with any browser".)" (W3c WAI. Easy Checks, 2018).

While the above information related specifically to checks alternative text issues, 'Easy Checks' contains information for preliminary checks of the following accessibility issues:

- Page title
- Image text alternatives ("alt text") (pictures, illustrations, charts, etc.)
- Text:
  - Headings
  - Contrast ratio ("color contrast")
  - Resize Text
- Interaction:
  - Keyboard access and visual focus
  - Forms, labels, and errors (including Search fields)

- General:
  - Moving. Flashing, or Blinking Content
  - Multimedia (video, audio) alternatives
  - Basic Structure Check

The 'Easy Checks' resource is not an exhaustive list of accessibility issues or methods for checks issues but is a resource to assist for learning how to check some basic accessibility issues using freely available methods and tools. The user of the Kuwait National Standards for Digital Accessibility is urged to work through all of the information on the WAI website, beginning with the introduction to accessibility (https://www.w3.org/WAI/fundamentals/accessibility-intro/) and working through all of the 'Easy Checks' material as a starting point to learning how to implement digital accessibility and check for some basic issues that seriously affect the accessibility of a website.

6.2.5. Before and After Demonstration (BAD)

One of the resources provided on the WAI website and referred to in the 'Easy Checks' resource, is the Before and After Demonstration website, known as 'BAD'. This example website presents five pages of a website in both inaccessible and accessible versions, with full annotation available, demonstrating the issue and the method used to fix the issue. The 'BAD' resource is intended to work along with 'Easy Checks'. 'BAD' provides a practice area to use the 'Easy Checks' methods.

The following figures demonstrate this tool, which can be located at https://www.w3.org/WAI/demos/bad/. The BAD example, along with the other W3C WI resources is currently being updated to migrate to the new website which will replace the existing website by June 2018. (W3C WAI BAD, 2012).

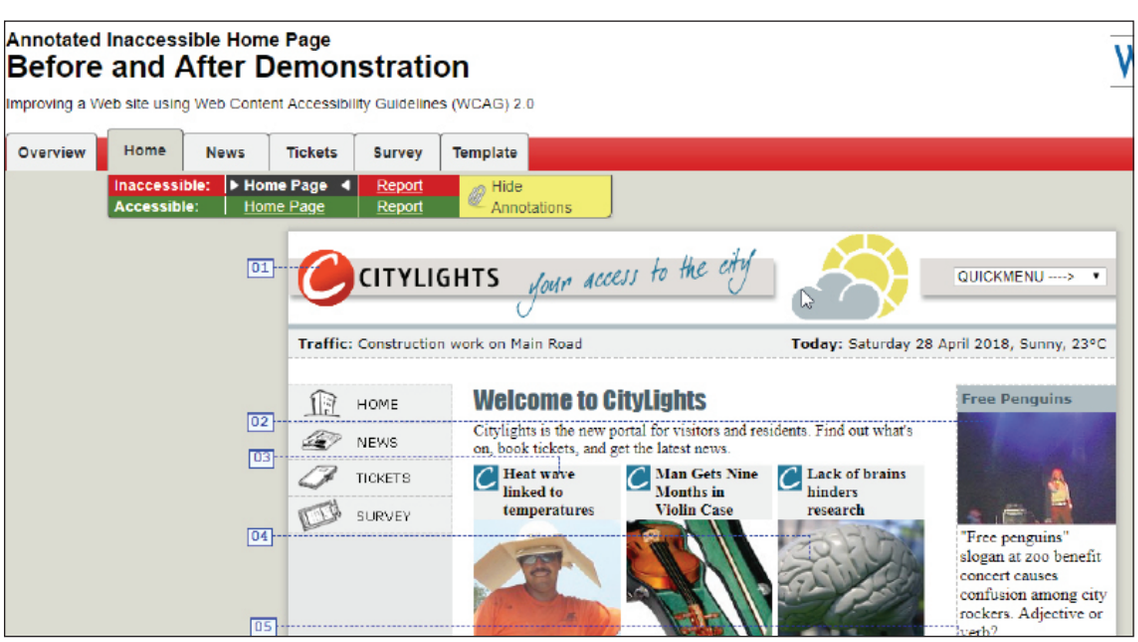


Figure 28: BAD Example 1 - Inaccessible Version of Home Page

In Figure 28, the Home Page is shown in the inaccessible version with annotations enabled. If the user hovers over the '01' annotation, they will see a screen tip which says, 'Image with incorrect text alternative'. Clicking on the '01' annotation will bring up the following information:

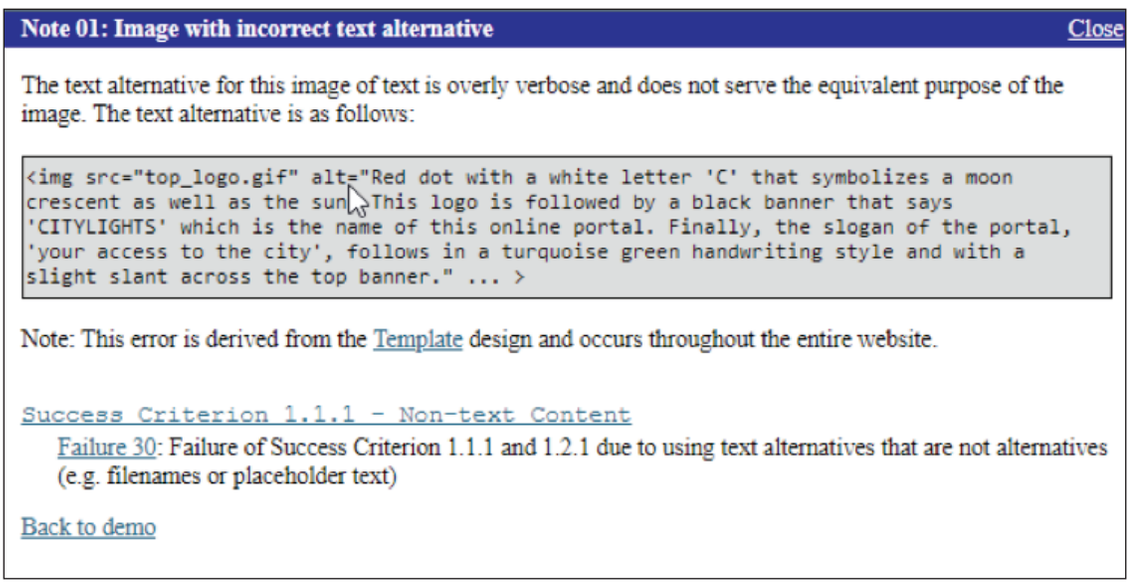


Figure 29: BAD explanation for Note 01

In Figure 29, the user can see that there are links to the **WCAG** resources, specifically the description of the SC 1.1.1, and the specific documented failure. The developer can see where the alternative text is located in the HTML, and the corrected version below will show how this alternative text should appear.

After closing this dialogue box, the user is returned to the example page and can then click on the 'accessible' version of the same page. The page example will look the same, however hovering over the '01' annotation, the tool tip now says, 'text alternative matches the graphical text'. In this way, the user can see that the accessibility correction to the web page does not need to change the visual display of that page, a common misconception. However, if the user then clicks on the '01' note, they see the following:

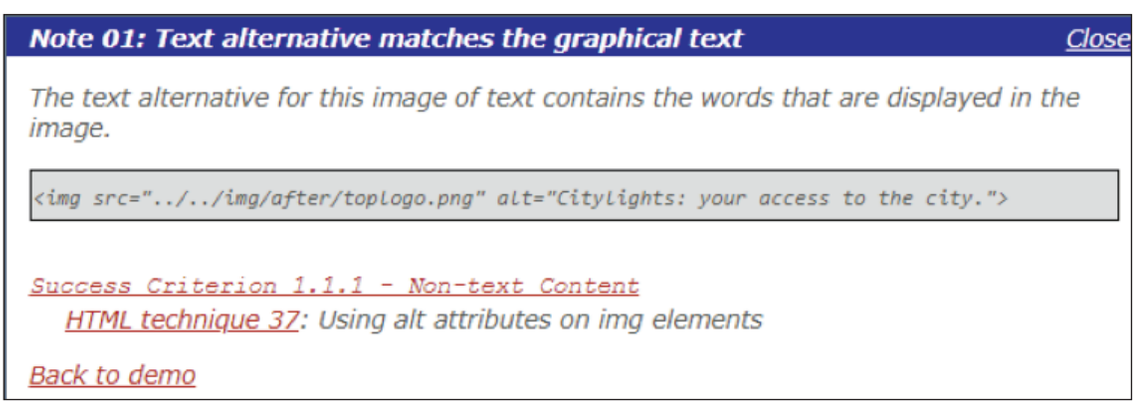


Figure 30: BAD example showing corrected image alternative text

The corrected note in Figure 30 provides information to the developer on which Technique was used to correct the issue as well as another link to the specific SC (1.1.1).

These examples demonstrate one example from 'BAD', that of SC 1.1.1 used throughout this document. However, the user of this Standards will be able to use this method to learn techniques and accessibility review and correction methods. In this way, the novice evaluator, content editor or website developer will be able to learn accessibility skills and apply these to existing and new digital material.

6.3. A Methodology for the Novice Evaluator

The Kuwait National Standards for Digital Accessibility sets the technical standard at **WCAG 2.0** to Level AA (to be updated to future iterations of that document). Checking for accessibility issues is not the solely the responsibility of the evaluator, but it is firstly the responsibility owned by the content editor or person who is putting new material onto the website, creating documents that can be downloaded from the website, or making changes to content on the website. This responsibility includes ensuring this content is compliant with this Standards. This establishes the need for training for all people associated with the website content or other digital materials.

While all the methods for checking issues are to be found in the WAI suite of materials, the following is the recommended methodology for conducting a preliminary evaluation by a novice evaluator or content editor. This methodology requires the basic tools listed below are installed, that the evaluator is familiar with their use and has received introductory digital accessibility training.

6.3.1. Tools, Browsers, and Extensions for Preliminary Accessibility Evaluation of Digital Material

For ease of use, the user should pin all the links to the taskbar to make it easier to navigate. NVDA and the Colour Contrast Analyzer can be used regardless of application or browser. This applies to different browsers and PAC etc. At present all these tools are based upon English language, however this situation is addressed in Section 8 of this Framework.

Browsers

- Internet Explorer (IE) and Chrome.
  - Add-ons for IE:

▪ Web Accessibility Toolbar (download from.

http://paciellogroup.com/resources/wat/ie).

▪ Colour Contrast Analyzer (download from.

http://www.paciellogroup.com/resources/contrastanalyser/).

- Add-ons for Google Chrome.

- WAVE (download from http://wave.webaim.org/extension/).

Accessibility testing software.

- NVDA: Screen reader – free but will ask if you want to donate. There is no obligation. Http.
- Colour Contrast Analyzer: http://www.paciellogroup.com/resources/contrast Analyser While this can be launched from the WAT in IE, it is most useful downloaded as a standalone application from Paciello (see above).
- PAC (PDF checking tool) – no cost PAC Accessibility Checker for PDF (http://www.access-for-all.ch/en/pdf-lab/pdf-accessibility-checker-pac.html).
- Adobe Reader – no cost https://get.adobe.com/reader/.
- Adobe Acrobat Pro – Optional, but helpful for working with PDF documents.

6.3.2. Novice Evaluator Testing Method

Once these tools have been installed, initial training has been received, and the user has become familiar with the WAI materials referenced above, what follows is the initial method to check a resource for accessibility. This method cannot be successful without completion of the recommended training.

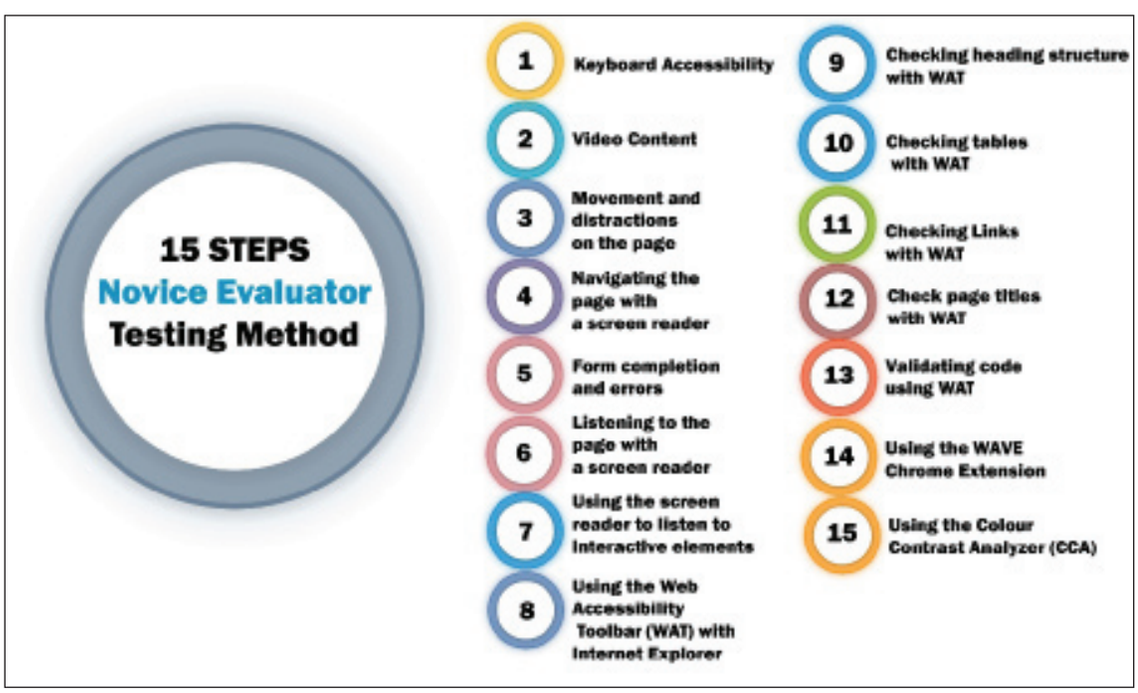


Figure 31: 15 Novice Evaluator Testing Method

6.3.2.1. Step 1: Keyboard Accessibility

- Disconnect the mouse – it is not available for use.
- Tab through the entire page using the 'Tab' key.
  - Does the tab order make sense?
  - Is every item that receives focus visible?
  - When an item receives focus, is that item styled in such a way that the focus is obvious?
  - Are there any keyboard traps? A "keyboard trap" occurs when a person using a keyboard cannot move away from an interactive element/control using just the keyboard.

6.3.2.2. Step 2: Video Content

- Are there any videos on the page?
- Are the videos captioned?
- Do the captions make sense?
- Is there a transcript available?
- Is there extended audio coverage? Extended audio describes what is happening when no words are being spoken, for example, "Bill enters the room, appearing anxious."

6.3.2.3. Step 3: Movement and distractions on the page

- Is there any movement which starts automatically when the page is loaded?
- What accessibility issues do you see?
- Would an epileptic user be able to use this site?
- Would a dyslexic user be able to concentrate and read all the information on this site?

6.3.2.4. Step 4: Navigating the page with a screen reader

- Open NVDA
- Use NVDA+F7 and try navigating via the Elements List
- Write down any issues or anomalies you find
  - Could you hear everything on the page?
  - Did it all make sense?
  - If you were a blind user would you have missed any important information?

6.3.2.5. Step 5: Form completion and errors

- Are there any forms to complete?
- Are the form fields properly labelled?
- If you make a mistake (try to make at least one), do the error messages display appropriately?
- Do the error messages rely on colour alone for you to locate them?

6.3.2.6. Step 6: Listening to the page with the screen reader

- Go to the website page, turn on NVDA
- Use the 'read all' mode (NVDA+down arrow)
  - Did you hear everything?
  - Does it make sense?

6.3.2.7. Step 7: Using the screen reader to listen to interactive elements

- Listening to NVDA - use the 'tab' key to move around to all the links, buttons, input fields etc.
  - Did you hear all the interactive elements?
  - Are they labelled appropriately?
  - Was the focus order logical?

6.3.2.8. Step 8: Using the Web Accessibility Toolbar (WAT) with Internet Explorer

- Ensure the toolbar is enabled: If necessary, enable the toolbar:
  - Settings>Manage Add ons>Web Accessibility Toolbar>Enable.
- Select – Images>Show images.
  - Do all the images have alternative text?
  - Do decorative images have a null alternative text? ("alt="")
  - Is the alternative text descriptive and correct?

6.3.2.9. Step 9: Checking heading structure with WAT

- Select – Structure>Heading Structure.
  - Shows all headings (including hidden headings) listed in a new window/tab.
- Select – Structure>Headings.
  - Shows all headings in situ.
- It is best practice to have only one H1 element on a page and that all other headings are arranged hierarchically following that H1 element.
- It is a failure to have empty heading elements, or to have what appear to be headings by appearance but which do not have semantic (HTML) markup as a heading.

6.3.2.10. Step 10: Checking tables with WAT

- Tables should be used for data only, and not for layout or display purposes.
- Select – Tables>Show Data Tables.
- All data tables should have Table header (TH) and Table Data (TD) elements. There should be no empty cells, rows or columns.
- If tables have been used for layout (while not best practice), they should not have TH or TD elements.

6.3.2.11. Step 11: Checking Links with WAT

- Doc Info>List Links.
  - Links must clearly state the destination and use unique link names.
  - Do not use generic link text (e.g. ‘Click here, ’Read More’) and make sure there are no empty links.

6.3.2.12. Step 12: Check page titles with WAT

- Doc info>metadata information.
  - titles need to be unique.
  - inform the user where they are in relation to other pages, not requiring the user to read the page to get this information.
  - best practice note – it is recommended to place the purpose of the page in front of the organisation’s name because of how browsers truncate the title when more than one window is open e.g. use: Contact Us | Ministry of the Interior Kuwait, not Ministry of the Interior Kuwait | Contact us.

6.3.2.13. Step 13: Validating code using WAT

- Valid code for specific **WCAG** requirements is a Level A requirement, and does not require developer skills to check.
- Check>W3C Nu Validation Service (checks the full code validation).
- Check>Filter Nu Validation Results (filters out the non-**WCAG** validation errors).
- If there are errors remaining, the code is not valid, and this constitutes a **WCAG** 2.0 Level A accessibility error, and this should be referred to the developer to fix.

6.3.2.14. Step 14: Using the WAVE Chrome Extension

- The WAVE Chrome extension provides a mechanism for running WAVE reports directly within Google Chrome.
- Because the extension report runs entirely within your web browser, no information is sent to the WAVE server. This ensures 100% private and secure accessibility reporting.
- The toolbar can check intranet, password-protected, dynamically generated, or sensitive web pages.
- Since the WAVE extension evaluates the rendered version of your page, locally displayed styles and dynamically-generated content from scripts or AJAX can be evaluated.
- The figures below demonstrate the PADA home page assessed in Chrome with the WAVE toolbar check. The figures highlight the missing form label, which means that when a screen reader user listens to that element, they would hear 'edit blank.' This tells the user there is a form field, but they are not told what to enter into the form field.
- One of the best uses for the WAVE extension is reporting issues to the person responsible for making corrections. They can see where the issue is and have a clear indication of how this affects the user.

6.3.2.15. Step 15: Using the Colour Contrast Analyzer (CCA)

- With the page of the website to be checked open, open CCA (it should be pinned to the task bar).
- Select the foreground colour eyedropper and position it over the foreground colour (text).
- Select the background colour eyedropper and position it over the background colour behind the text.

- The CCA will show the colour contrast level and the pass/fail for Level AA and AAA.
- Results will depend on whether the text is large or normal size.
  - Normal size text requires a contrast ratio of 4.5:1 for Level AA.
  - Large size text requires a contrast ratio of 3:1 for level AA.
  - The definition of normal and large are defined within WCAG 2.0 and are fixed requirements.
- Use of colour can also be tested with the CCA.
  - If colour is used to indicate functionality (the border of a search box, the presence of a link – if not underlined etc.), a contrast of at least 3:1 with the surrounding text or background is required.

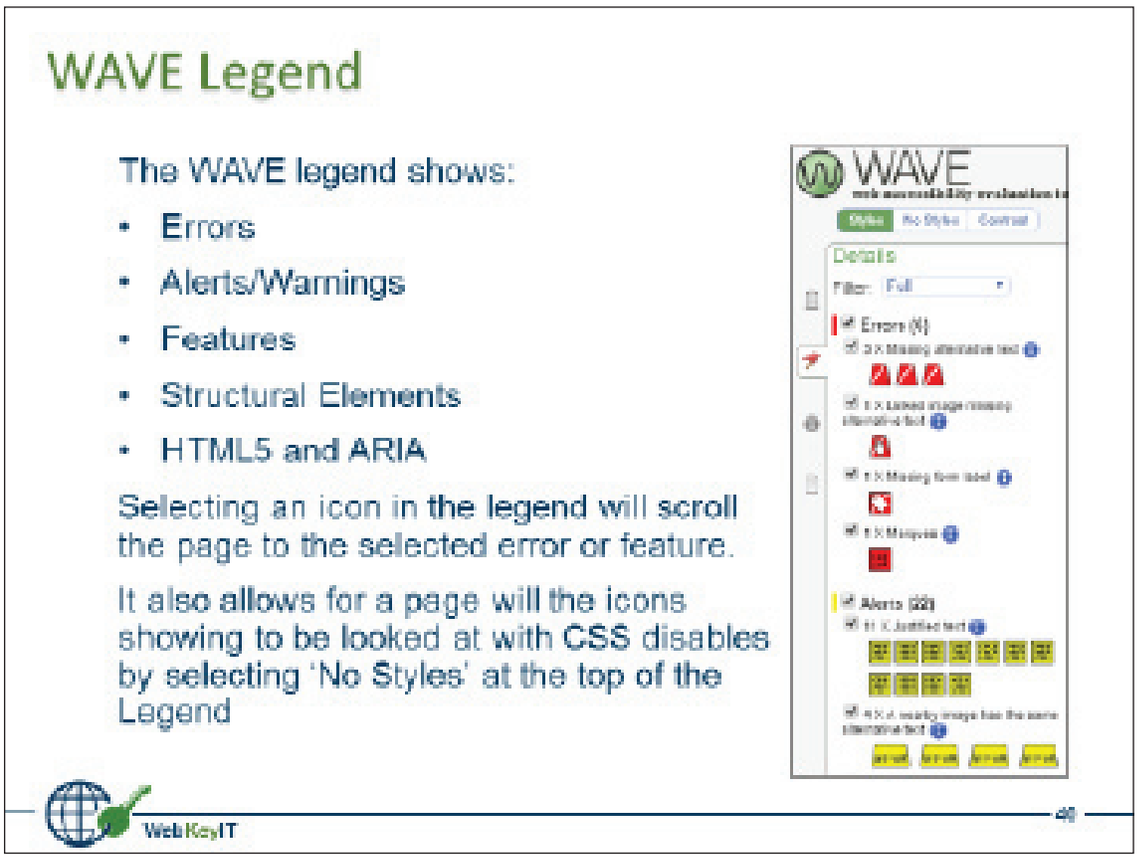


Figure 32: WAVE Extension Legend

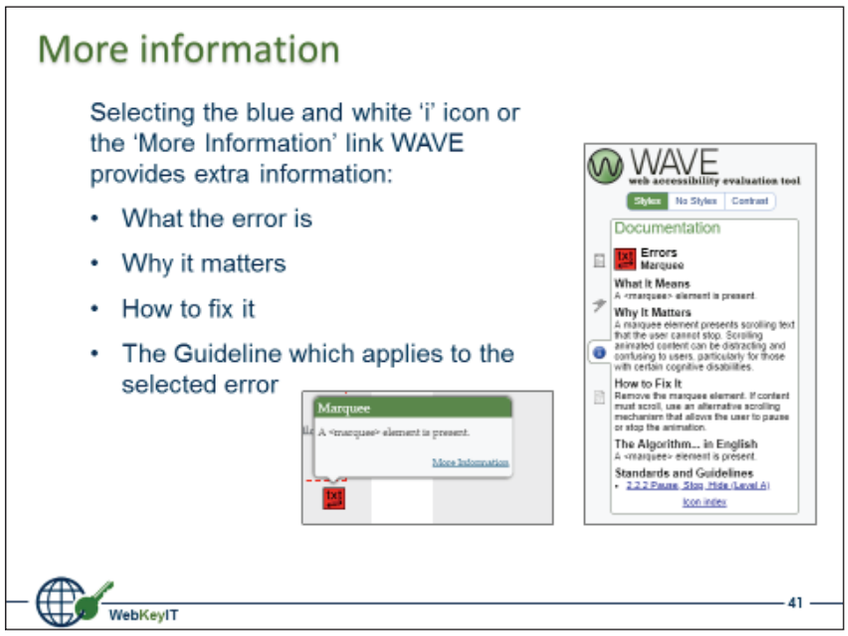


Figure 33: WAVE Information on Errors

Figure 34: WAVE analysis of PADA home page

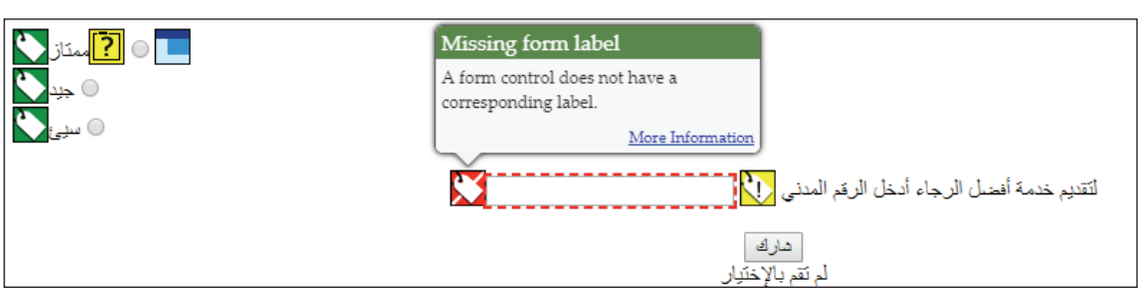


Figure 35: WAVE indication of missing form label

6.4. Accessibility Requirements Beyond Traditional Websites

Digital Accessibility requirements do not only concern external facing websites, but also include:

- social media websites and applications used on both desktop and mobile devices
- documents that are downloaded from websites
- internal websites such as an Intranet for internal staff purposes
- dedicated websites for suppliers (known as an 'extranet)
- mobile devices and their displays
- applications – native and web-based

For the most part, the **WCAG** guidance can be applied to other issues such as documents and mobile technologies. As there are some issues that do not translate completely into these areas, W3C have provided guidance for mobile and non-ICT resources such as documents.

- Mobile Accessibility: How **WCAG 2.0** and Other **W3C/WAI** Guidelines Apply to Mobile : https://www.w3.org/TR/mobile-accessibility-mapping/.
- Mobile Web Application Best Practices: https://www.w3.org/TR/mwabp/.
- Mobile Accessibility at W3C: https://www.w3.org/WAI/standards-guidelines/mobile/ .
- Guidance on Applying **WCAG 2.0** to Non-Web Information and Communications Technologies (**WCAG2ICT**) https://www.w3.org/TR/wcag2ict/.
- UAAG (User Agent Accessibility Guidelines) covers web browsers and other 'user agents', including mobile browsers.
- For examples of how web browsers that follow UAAG benefit people with disabilities using the Web on mobile devices, see Mobile Accessibility Examples from UAAG.
- For those wanting to explore the issues more, see Applying UAAG to Mobile Phones.
- ATAG (Authoring Tool Accessibility Guidelines) covers software used to create web pages and applications, including for mobile.
- WAI-ARIA (Accessible Rich Internet Applications) defines ways to make web content more accessible, especially dynamic content and advanced user interface controls. It applies to web applications and to accessing websites with mobile devices.

6.4.1. Mobile Device Accessibility

As demonstrated above, there are many issues affecting digital accessibility beyond the traditional desktop or laptop computer. **W3C WAI** have been working on additional resources to address some of the newly emerging issues such as the Internet of Things, Wearables, Internet-connected homes and more.

"Mobile accessibility" refers to making websites and applications more accessible to people with disabilities when they are using mobile phones and other devices. **WAI's** work in this area addresses accessibility issues of people using a broad range of devices to interact with the web, including:

- phones and tablets.
- digital TVs.
- wearables such as smart watches.
- devices in car dashboards and airplane seatbacks.
- devices in household appliances and other "Internet of Things".
- and more.

It addresses a wide range of issues, including:

- touchscreens.
- small screen sizes.
- different input modalities, including voice and 3D touch enabled by pressure sensors.
- device use in different settings, such as bright sunlight" (W3C WAI More than Mobile, 2018).

6.4.2. Document Accessibility

There are important issues that need to be addressed regarding accessibility of documents which are available online. These include:

- The format of the document,
  - formats include PDF, MS Word, MS Excel, ePub3, InDesign etc.
  - not all documents have the same ability to be made accessible.
- Alternatives that are provided for the document.
  - for example, providing an HTML version.
- Whether the user needs specific tools such as a PDF reader or ePub3 reader

- Making it possible to download a document from a mobile device.
- Making sure that interactive documents (forms) can be completed online without requiring printing.
- When necessary, locking the document so that user is unable to alter the format.
- If the original document is created using best practice for accessibility, making any alternatives accessible is much easier.
- The same tools for testing websites can be used for testing documents – for example, screen readers, keyboard access and colour contrast analyser.
- User testing is critical for documents, just as for websites.

6.4.3. Social Media Accessibility Issues

The accessibility of social media can be of importance in the lives of people with disabilities, who already face significant issues with lack of contact with others. The rise of the use of social media for self-management of physical and mental health is making this more evident. People with disabilities are over-represented in areas relating to health such as obesity, Type II diabetes and others. Applications such as My Fitness Pal, Fitbit (to accompany a Fitbit wearable device) and others, enable people to be able to challenge each other, monitor their fitness levels (competing against themselves or others, keeping track of weight, diet, steps etc.), and set goals for improving their health. Many people with disabilities experience issues with mental health which are exacerbated by lack of community involvement. Because of these issues, it is important that persons with disabilities are not restricted in their ability to access social media platforms because of these platforms' accessibility.

"The more public information is digitized, the more it lands on or sprouts from social media channels. This is why there needs to be a greater level of awareness and consideration for those who can benefit most from that information—people with disabilities—since they have the least access to it. Like many websites, social media platforms present some of the greatest barriers in digital accessibility." (DigitalGov. 2017)

Whenever possible, social media sharing should include:

- captions for all video content – if using auto-captioning, check the accuracy of the captions.
- alternative text for images – possible through most platforms.
- listen to the content using a screen reader including the built-in features on mobile devices.
- supplement tweets with hashtags to enable users to locate items of particular interest.

Because of social pressure, social media platforms are now improving their accessibility.

Information is provided below on the accessibility issues in Facebook, YouTube and Twitter, however this is a rapidly-changing area and it is hoped these issues will be fixed soon. For instance, YouTube have made significant changes in the accessibility of the controls, and while still not perfect, they are improving.

6.4.4. Facebook

Every organisation can optimize their Facebook page for accessibility, however there are often issues inherent in the different platforms. Facebook has an Accessibility Information page to provide additional assistance. Facebook now have an accessibility team and they also provide a help page for people with disabilities located at: https://www.facebook.com/help/141636465971794 which describes how to use a screen reader on the page, how to use short-cuts and other hints. They also provide a separate Accessibility page located at: https://www.facebook.com/accessibility . In 2016 Facebook launched a feature based on image recognition to provide Automatic Alternative Text (AAT) for photos uploaded to the social media service.

According to Queens University in Canada, Facebook still has the following accessibility issues:

- Timeline layout does provide a logical reading order of top-to-bottom but can be difficult and confusing to navigate.
- CAPTCHA during the sign-up process. Although there is an audio alternative, but many users have reported that this does not work very well depending on which device or web browser is being used.
- Facebook will change its layout frequently which makes remembering navigation difficult. (Queens University. n.d.).

6.4.5. Twitter

Twitter has a help page which is designed to assist users learn about the built-in features of Twitter located at Twitter Help Centre.

Queens University states Twitter has the following issues:

- No accessibility hotlink which lists the accessibility features of the site.
- Registration is done with a CAPTCHA system; audio option available however the link for it is small.
- Text resizing is locked. (Queens University, n.d.) .

6.4.6. YouTube

While YouTube now can provide automatic captioning, this is far from perfect. What it does though is put in the timing with the cations. The video owner can go into the captions and edit those captions so that they make sense. This is often a major issue with different accents, which YouTube finds it difficult to differentiate.

Queens University states the following issues with YouTube accessibility:

- Registration is done with a CAPTCHA system and may be difficult to use with persons who are blind or low vision.
- Lack of keyboard controls for the interface of the video player.
- Lack of closed captioning or described video.
- If the closed captions are not supplied by the account owner, YouTube's provides machine-generated captions automatically and may be inaccurate. (Queens University. n.d.).

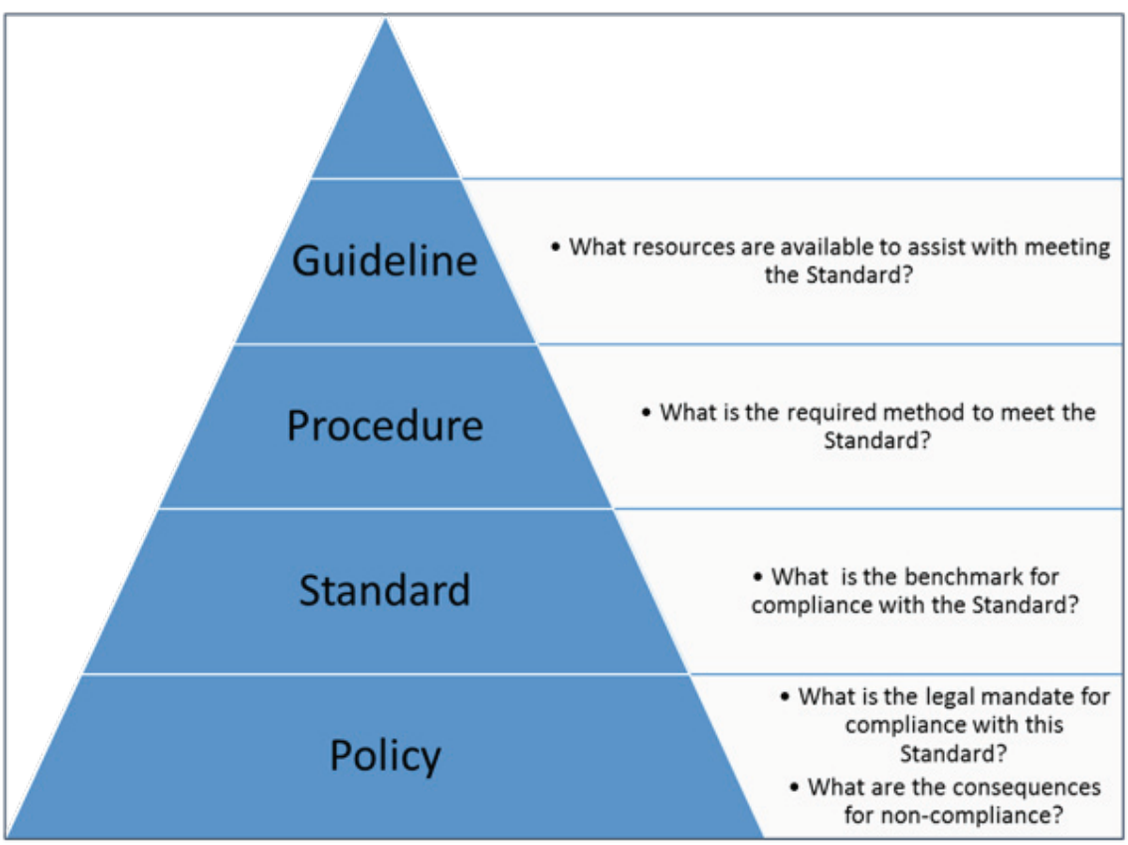
Conclusion

7. Conclusion

The Kuwait National Framework for Digital Accessibility provides a solid foundation to build digital accessibility into all digital projects in Kuwait. This is especially important as Kuwait embraces the “Towards Kuwait 2035 Visions Towards Persons with Disabilities Project”. This document describes the Policy, Standard, Procedures and Guidance for this project and outlines in details how best to meet this ambitious project.

It cannot be assumed that such a Framework can be instantly adopted and set as a requirement, but that a gradual process will be required, starting with setting a standard for all new developments and then looking towards managing older resources.

This Framework sets the requirements and outlines how to meet them, however there is considerable work to be done in ensuring all stakeholders are trained in their implementation, and further skilled in developing new accessible digital material.



There are several issues that are not within the scope of this project, some of which are itemized below.

7.1. Future Consideration

It is important to consider the infrastructure that the website is built upon (or will be built upon in the case of a new website being planned). Some technical development situations cause issues for people with disabilities that are difficult to correct once the website is put on a particular platform.

When planning a new website, procedures need to put in place to ensure that any new development is planned according to this Framework. This will involve ensuring that accessibility is a primary consideration at every stage of the project, as discussed in the section 6.3.2.15 'Using the Digital Accessibility Maturity Model', as well as deciding whether an organisation has the skills to conduct preliminary accessibility evaluation in-house or whether external third-party assistance is required.

Maintenance and on-going accessibility verification is another important consideration. Once the work has been completed (and re-tested), how will the fixed website maintain its accessibility? This is critical, as experience shows that once a website is handed over to the owning organisation and people begin to enter and change the content, the website quickly degrades into inaccessibility. All staff require extensive training to learn not just how to enter content correctly and accessibly, but also to learn how to do the necessary checks with the appropriate tools and resources, making sure that the content they have added or changed is truly accessible.

7.1.1. Language Issues, Translation and Resources

A critical issue for Kuwait is the provision of tools and resources that are language and culture appropriate. At present there are no resources (tools or information), specifically-designed for Arabic-speaking people, however this is not within the scope of the Kuwait National Standards for Digital Accessibility. It is strongly recommended that Kuwait invest in the development of both tools and resources to enable Arabic-speaking people to understand accessibility issues and requirements. To be able to implement digital accessibility requirements, it is critical that this is available. Because all the resources have been developed with English as the primary language, it has been a slow process to get them translated into different languages. To date there has been a partial and unofficial translation of **WCAG 2.0** into Arabic, but work is now commencing to have an official translation completed of this resource and other WAI resources so that Arabic-speaking people have the material required. Work will need to be done to obtain other tools such as the WAVE Extension for Chrome, the WAT Toolbar and other helpful tools either translated into Arabic, or Arabic-versions created. Other tool providers should be contacted to discuss Arabic versions, or else encouragement provided to Arabic-speaking organisations to develop tools targeted for this demographic.

7.1.2. Training and Skill Requirement

As mentioned in Sections 5 and 6 of this Framework, the role of the digital accessibility auditor is highly technical and skilled, requiring at least a year's training post technical training. It is not reasonable to expect people to be able to pick up these skills without a substantial investment of time and resources. In this document, information has been provided to assist individuals to conduct preliminary evaluations and not audits. The **WCAG-EM** document specifically states that an accessibility audit is the work of an experienced professional, but that people can be trained to create more accessible content, and to begin to understand the requirements of accessible design. Actual audit work will need to be contracted to eternal third-party accessibility professionals to obtain valid results.

It is the recommendation of this Framework, that individuals within organisations be provided training in conducting preliminary evaluations of digital accessibility. This training will most likely require two weeks when delivered by professional accessibility trainers. However, the provision of this training is a recommendation and not within the scope of this Framework.

At the present time, there is a scarcity of trained individuals in Kuwait to undertake accessible new digital development, provide accessibility training and consultancy, and to provide external expert auditing and accreditation services. This will require considerable investment in training services and resources.

7.1.3. External Verification Audits and Certification

The evaluator and website owner need to ask whether the organisation has the skills necessary to make the determination of whether the website is accessible. There is no validity to conducting a full accessibility of your own website –it equates to a student writing their course, writing the exam, taking that exam, and then marking it themselves. Such results would have no validity and would not be recognized anywhere. It can also be compared to an accountant conducting their own audit of a company's financial records that they prepared, and then submitting their own audit to the government as proof that the accounting records are accurate.

However, despite the need for an external accessibility audit to answer the quantifiable information required in the previous section on whether the website owner has met the standard required, there is certainly room for an organisation to resource their employees to conduct preliminary evaluations of their website, and act as a resource to their entire organisation for accessibility advice.

7.1.4. Monitoring and Enforcement

Once issues have been identified, do the developers who are responsible to fix the website (whether internal or out-sourced) have the necessary knowledge and skills to do the work required. Our experience shows this is seldom the case, even when language is not an issue. Once an audit has been completed, whether an internal preliminary or full external audit, does the developer possess the necessary skills to make the correction work required? Developers are often not familiar with issues that improve accessibility, and it is not uncommon for a developer to have no formal education in designing according to industry best practice.

Once the developer has made the corrections that are appropriate, who will assess the work that has been completed? A re-test is required by a qualified accessibility professional to verify that the work has been completed to a satisfactory standard.

If the Kuwait Government plans to assess the accessibility of websites within its jurisdictions, then a standard will need to be adopted against which each website can be measured. Perhaps the simplistic view of assigning a pass/fail grade may be tempting, however it will not produce information which will be helpful in later assessments. For instance, if a website failed a test today and the owner worked to make the changes

and had it re-tested, and it still failed, how will they know how much the website had improved? However, if the evaluator knows that on the first test, the website failed 25% of the Level 'A' Success Criteria, and a subsequent test shows a significant improvement in this rating to where the website only failed 5% of the Level 'A' Success Criteria, then the evaluator will know that the website owner is working and is making progress.

7.1.5. Policy and Legislation

This document has demonstrated the need for Kuwait to determine whether the current legal documents support equal access to digital information, thus ensuring the importance of access to all information for persons with disability. Many countries that have similar disability discrimination laws have either tested these laws in a court of law to determine their applicability, have amended current laws, or developed new laws to ensure that this basic human right is enshrined in the country's laws. While writing laws or policies is not within the scope of this Framework, it is strongly recommended that this be addressed in the very near future.

7.1.6. Strategy for Compliance

As with any new Standards, time and assistance is required to ensure adoption of the requirements is successful. There will need to be time to provide training and dissemination of the Standards and for formulation of policy as to how the Standards will be enforced.

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