

WAI-ACT: Web Accessibility Now

Shadi Abou-Zahra

W3C Web Accessibility Initiative (WAI)
2004, Routes des Lucioles BP94
06902, Sophia-Antipolis, France

shadi@w3.org

ABSTRACT

The W3C web accessibility standards have now existed for over a decade yet implementation of accessible websites, software, and web technologies is lagging behind this development. This fact is largely due to lack of knowledge and expertise among developers and due to fragmentation of web accessibility approaches. It is an opportune time to develop authoritative practical guidance and harmonized approaches, and to research potential challenges and opportunities in future technologies in a collaborative setting. The EC-funded WAI-ACT project addresses these needs through use of an open cooperation framework that builds on and extends the existing mechanisms of the W3C Web Accessibility Initiative (WAI). This paper presents the WAI-ACT project and how it will drive accessibility implementation in advanced web technologies.

Categories and Subject Descriptors

H.5.2 [User Interfaces (D.2.2, H.1.2, I.3.6)]: Standardization; Style guides; Training, help, and documentation; User-centered design; Evaluation/methodology; Benchmarking.

General Terms

Measurement, Design, Human Factors, Standardization, Legal Aspects, Verification.

Keywords

Web accessibility, web development, web accessibility testing and evaluation, web accessibility policies, web accessibility research and development.

1. INTRODUCTION

WAI-ACT – “Cooperation Framework for Guidance on Advanced Technologies, Evaluation Methodologies, and Research Agenda Setting to Support eAccessibility”, addresses critical areas of advanced accessibility support through activities that build upon the strengths of past web accessibility work, harmonizes existing work, and helps shape a research agenda in coordination with key stakeholders in Europe and internationally.

The project addresses the need for expanded European and international cooperation on the development of accessibility solutions for people with disabilities; for consensus-based, authoritative technical guidance to accelerate implementation of advanced technologies; for internationally harmonized evaluation methodologies; and for a coordinated research agenda on eAccessibility.

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WAI-ACT addresses these challenges through development of a framework for open, expanded cooperation among European and international stakeholders, technical guidance on advanced web technologies; an evaluation methodology for web accessibility; and a research agenda for eAccessibility. Technical guidance includes a repository of information on accessibility support in web technologies, application notes on authoring accessible web page components, and code samples for web applications. WAI-ACT will result in supporting resources that are desperately needed to drive web accessibility implementation.

2. ABOUT THE PROJECT

WAI-ACT (IST 287725) is co-funded by the European Commission as a Specific Support Action under the IST 7th Framework Programme. WAI-ACT commenced on 1st September, 2011 for a duration of three years. It is lead by and builds upon the strengths of the existing World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI) cooperation mechanisms to facilitate strategic European and international participation throughout the project. WAI-ACT project partners are:

- W3C Web Accessibility Initiative (WAI)
- Sticking Bartimeus Accessibility (SBA)
- Fraunhofer Institute for Applied Information Technology (Fraunhofer)
- Johannes Kepler University (JKU)

WAI-ACT work is developed in an open, non-exclusive collaborative environment to maximize participation and involvement from all stakeholders. WAI-ACT also seeks active exchange with relevant networks in Europe such as eAccess+, and coordination standardization activities such as EC Mandate 376.

3. COOPERATION FRAMEWORK

Fragmentation of technical standards and implementation practices hinders effective development and deployment of accessibility solutions for people with disabilities. In particular, it leads to diverging or conflicting requirements and slows the development of solutions such as accessible websites, applications, assistive technologies, and mainstream browsers and tools with support for accessibility.

In contrast, active involvement of key stakeholders, including people with disabilities and older people, developers, researchers, accessibility experts, and other practitioners, in consensus-based development of accessibility solutions contributes to a common understanding of the needs, and to harmonized approaches for implementation. It accelerates implementation, research and the development of new solutions.

A first objective of the WAI-ACT project is to develop a framework for open international cooperation, including a cooperation forum that is open to all stakeholders; an open

cooperation platform with tools and mechanisms to facilitate the involvement and participation in each area of WAI-ACT work; and outreach for the open cooperation framework to particularly promote involvement of European stakeholders.

3.1 Open Cooperation Forum

The first element is an Open Cooperation Forum to support ongoing dialog, input, feedback, and dissemination and to build consensus on all areas of WAI-ACT work. Targeted participants include developers and practitioners, accessibility researchers and experts, people with disabilities and older users. Particularly during the first year, WAI-ACT invites initial contributions of perspectives on WAI-ACT work from related recent and current EC-funded projects in order to promote exchange and discussion. WAI-ACT welcomes additional inputs throughout the project.

3.2 Open Collaboration Platform

A second element is an Open Cooperation Platform, to facilitate the participation of all stakeholders in each area of WAI-ACT work. This includes improved collaboration tools such wiki-based tools, review systems, and other community-based tools with specific mechanisms to support contributions and collaborative development, facilitate discussion, knowledge sharing, and contribution by all stakeholders including individuals from the public.

3.3 Outreach in Europe

The third element is Outreach in Europe to support the Open Cooperation Framework. This includes annually held open meetings in Europe, development of educational resources explaining the benefits and opportunities for active participation in and contribution to the WAI-ACT project, and active outreach to relevant organizations, projects, and individuals to promote awareness on WAI-ACT work and encourage participation, contribution, and input.

4. AUTHORITATIVE GUIDANCE

Rapid advances in information and communication technologies (ICT) escalate the need for expanded and authoritative guidance to inform the implementation of accessibility in advanced technologies. In particular, there is a pressing need for information about the support for accessibility provided by different web technologies.

For instance, this includes information about support for captions in video formats, for keyboard navigation with particular browsers and assistive technologies, and for alternative text for images and other markup in document formats. Such data informs the development of techniques for leading edge web technologies such as W3C/WAI Accessible Rich Internet Applications (WAI-ARIA) and its intersection with W3C Mobile Web Applications Best Practices (MWABP) and other advanced technologies that are converging onto the Web.

Another part of the accessibility guidance needed is authoritative resources to guide developers in applying best practices and techniques that are backed by data on accessibility support. For instance, this includes guidance on applying accessibility in content, products, and services using advanced technologies such as AJAX¹, DHTML², and other forms of

¹ Asynchronous JavaScript and XML (AJAX) is a programming technology for the Web

scripting, as well as on best practices on accessible common web components to help eliminate frequently encountered barriers that are a primary cause of exclusion of people with disabilities.

In parallel, there is a need for guidance for policy and decision makers to drive implementation of accessibility in organizations and governments. In particular, there is need for guidance on referencing and adopting W3C/WAI standards in different settings given the variety of contexts among organizations in individual EU Member States. Such guidance would help accelerate the implementation of web accessibility.

A second objective of the WAI-ACT project is to develop authoritative technical guidance on advanced technologies for web development, including a repository of information on accessibility supported uses of technologies for WCAG 2.0; application notes for addressing frequently encountered web accessibility barriers such as in images, tables, forms, and other web components; application notes with code samples on advanced technologies; an open W3C Workshop on referencing and adopting WCAG 2.0 to collect and share best practices; and guidance for practitioners on adopting and applying W3C/WAI standards and guidelines in practice.

4.1 Accessibility Support Database

The first element is a repository of information on accessibility support in web technologies to guide the selection of technologies during the development of accessible websites and web applications. For instance, to help select web technologies that provide support for captions, keyboard support, and support for text alternatives for images with certain combinations of browsers and assistive technologies. This repository will be provided using collaborative tools developed through the Open Collaboration Platform that facilitate public input and contribution, to continually expand the repository with updated and new information on accessibility support in web technologies.

4.2 WCAG 2.0 Application Notes

The second element is application notes on authoring accessible web page components such as images, tables, and forms that conform to WCAG 2.0. Guidance on best practices in this area will help eliminate frequently encountered implementation faults, particularly by developers who are new to web accessibility, that are one of the main contributing sources of web accessibility barriers.

This also includes application notes and code samples for advanced technologies, to guide developers in best practices for implementing dynamic interfaces and widgets that use W3C/WAI Accessible Rich Internet Applications (WAI-ARIA), W3C Mobile Web Applications Best Practices (MWABP) and other advanced technologies, to support conformance to WCAG 2.0.

4.3 Workshop for Policy Makers

The third element is an open W3C Workshop³ on Referencing and Adopting WCAG 2.0 in Practice, to collect,

² Dynamic Hypertext Markup Language (DHTML) is the use of scripts to create dynamic HTML interfaces

³ W3C Workshops are events with involvement of key stakeholders, typically to convene experts and other interested parties for an exchange of ideas about a technology or policy: <http://www.w3.org/Consortium/Process/events.html>

discuss, and disseminate best practices on applying WCAG 2.0 in different settings. This includes participation from a broad set of key stakeholders in Europe and internationally. It also includes the development of a W3C Workshop Report that summarizes contributions and conclusions and that will feed into the development of practical guidance on adopting and implementing W3C/WAI standards.

4.4 Resources for Policy Makers

The fourth element is practical guidance on adopting and implementing W3C/WAI standards to help plan and manage the implementation, retrofitting, and ongoing maintenance of accessible websites, through updating existing W3C/WAI resources to current standards and best practices and expanding these with conclusions from the W3C Workshop on Referencing and Adopting WCAG 2.0 in Practice.

5. EVALUATION METHODOLOGIES

A complementary need to authoritative technical guidance for implementing web accessibility is an internationally harmonized evaluation methodology for web accessibility. This is particularly relevant to support activities relating to adoption and implementation of WCAG 2.0 within different EU Member States as well as internationally.

More specifically, there is a need for an internationally harmonized methodology for evaluating the conformance of websites and web applications to WCAG 2.0. The methodology needs to be able to support self-assessment as well as organizational monitoring of accessibility, given diverse needs of SMEs and large enterprises; and it needs to support an authoritative interpretation of the standard so that it can accelerate implementation of authoring and evaluation tools supporting production of accessible websites. In Europe, this would contribute to meeting the goals of the Riga Declaration and i2010 Action Plan. In practice, this would support improved benchmarking of web accessibility progress.

To facilitate more effective evaluation a new generation of web accessibility evaluation tools that support the new concepts introduced by WCAG 2.0 is needed. This includes semi-automated as well as fully-automated evaluation tools that support reviewers in carrying out different evaluations tasks and that support different technologies. In particular, tools that support reviewers with less expertise in web accessibility are needed to facilitate capacity-building of web accessibility evaluators, and to reduce the learning curve for web accessibility developers.

Similarly, guidance is needed to further support reviewers in carrying out web accessibility evaluation. This includes guidance on finding and selecting web accessibility evaluation tools that match the needs of the reviewer, for instance with regard to level of expertise, evaluation task, or integration into an existing development environment – as well as educational guidance to assist different reviewers in managing and carrying out entire evaluation reviews according to the evaluation methodology and other technical resources.

A third objective of the WAI-ACT project is to develop an internationally harmonized evaluation methodology for web accessibility, including an authoritative methodology for evaluating conformance to WCAG 2.0; guidance on developing automated and semi-automated web accessibility evaluation tools to support evaluation reviews; updated guidance on finding and

selecting evaluation tools to support different evaluators to carry out different evaluation tasks; and an interactive guide for web accessibility evaluators to assist managing evaluation reviews.

5.1 Internationally Harmonized Methodology

The first element is an internationally harmonized methodology for evaluating conformance of websites to WCAG 2.0 that defines a consensed approach and metrics for evaluating the conformance of entire websites, including web applications, to WCAG 2.0, to promote common interpretation and harmonized uptake of WCAG 2.0 among EU Member States and internationally.

5.2 Techniques for Evaluation Tools

The second element is techniques for automated and semi-automated evaluation tools, to guide the development of a new generation of web accessibility evaluation tools that support WCAG 2.0, in order to assist evaluators with varying skills and expertise in web accessibility in evaluating websites, including web applications, for accessibility.

5.3 Guidance on Evaluation Tools Use

The third element is guidance on finding and selecting web accessibility evaluation tools, to assist evaluators with varying skills and expertise in web accessibility in finding and selecting evaluation tools that are appropriate for specific situations and evaluation purposes through updating existing W3C/WAI resources to support WCAG 2.0, and through expanding these with additional guidance.

5.4 Interactive Guide for Evaluators

The fourth element is an interactive guide to assist managing web accessibility evaluations, to aide evaluators with varying skills and expertise in web accessibility in carrying out evaluation through improving the educational quality and usability of resources on web accessibility evaluation.

6. RESEARCH AND DEVELOPMENT

As the Web continues to evolve, new technologies are emerging in a rapid pace. For instance, telephony and voice technologies as well as video and audio media are becoming a core part of the Web “stack” of technologies. This convergence of technologies and media onto the Web is paralleled by rapid developments in mobile technologies such as processing power, internet access, voice recognition and text-to-speech functionality, touch-screen interaction, vibration alerts, camera and sensors integration, and many more features of mobile devices.

These trends present new opportunities and potentially also present new accessibility challenges for people with disabilities. For instance, the availability of advanced technologies in mainstream mobile devices and its resulting impact on human-computer interaction, such as increased use of gestures, location-based services, and augmented reality, present new opportunities for advanced and affordable assistive technologies. At the same time, content, services, and products such as applications provided on the Web need to include accessibility features to ensure that people with disabilities can equally benefit from these technological developments.

There is both the need and the opportunity to identify, explore, and thematically organize eAccessibility research topics to address new challenges resulting from the convergence of

technologies and media onto the Web, to drive a common vision and contribute to future eAccessibility research and development.

A fourth objective of the WAI-ACT project is to contribute to a coordinated research agenda for eAccessibility and common visions on future research and development activities, including through holding regular teleconference seminars on eAccessibility research topics, such as digital TV, mobile Web, cloud computing, and supports for people with cognitive disabilities; and an annotated catalogue of web accessibility research topics and resources.

6.1 Teleconference Seminars

The first element is holding regular teleconference seminars to explore eAccessibility research topics to bring European and international researchers and experts together through planning, organization of topics and speakers, and holding teleconference seminars on eAccessibility particularly on topics relating to the convergence of technologies and media with the Web and its impact on accessibility for people with disabilities.

6.2 Repository of Research Topics

The second element is maintaining an annotated catalogue of eAccessibility research topics and resources to help inform researchers and experts on opportunities for research and development through collecting, assessing, and compiling eAccessibility research topics and challenges from the broadest audience possible.

7. PROJECT STATUS

At the time of writing this paper, WAI-ACT demonstrates significant results in the short time frame since its launch on 1st September, 2011. We expect to have more resources and tools to demonstrate by the time of the WWW conference in April 2012.

Particularly developments on application notes, accessibility support database, evaluation methodology, research coordination, and the open collaboration platform are already visible results. They are developed iteratively through relevant W3C Working Groups to ensure open multi-stakeholder participation in the production of royalty-free resources available to everyone.

7.1 WCAG 2.0 Application Notes

WCAG 2.0 Application Notes will be the heart-piece of the authoritative technical guidance on web accessibility to drive the implementation in practice. They are practical guides for different audiences written in consumable “how-to” and “cookbook” styles that are easy to follow. This work is currently being initiated in the W3C WAI Education and Outreach Working Group (EOWG).

7.2 Accessibility Support Database

The accessibility support database will provide critical data about accessibility support in web technologies, to contribute to more transparency and guidance for web developers. Current plans include the use of crowd-sourcing approaches to initiate a highly self-sustaining information repository that will continue to live on beyond the lifetime of the project. At the time of writing this paper, this work in planning mode but will soon be available.

7.3 Evaluation Methodology

An internationally harmonized web accessibility evaluation methodology will be a significant contribution to more clarity on the level of conformance of websites to WCAG 2.0. This work is being developed through the WCAG 2.0 Evaluation Methodology Task Force (Eval TF), a joint sub-group of the W3C WAI Web Content Accessibility Guidelines Working Group (WCAG WG) and the W3C WAI Evaluation and Repair Tools Working Group (ERT WG). At the time of writing this paper, Eval TF has developed the requirements and outline for this methodology.

7.4 Coordination with Research

Another important pillar for the success of web accessibility is the coordination with research and development, to benefit from accessibility opportunities in new technologies address any potential problems at the earliest possible stage. At the time of writing this paper, WAI-ACT is significantly contributing to the documentation of accessibility research topics and to exploration of selected topics through the W3C WAI Research and Development Working Group (RDWG).

8. CONCLUSION

In this paper we introduced the WAI-ACT project, including the resources and tools to address the needs of different audiences for implementing web accessibility in practice. We have shown that WAI-ACT is developing essential, authoritative, and practical resources to drive accessibility implementation in advanced web technologies. WAI-ACT also provides open collaborative tools to facilitate participation of all stakeholders, including the public, in the development of these resources as well as to invite discussion and exchange among anyone interested in web accessibility.

Particularly the accessibility support database will provide fundamental information for developers of rich web applications, mobile websites, and other advanced areas of web accessibility. It is at the same time a public repository of information using crowd sourcing techniques that provides new and exciting ways for the public to engage with W3C WAI developments. Also the planned WCAG 2.0 Application Notes demonstrate a practical approach to support the community in applying W3C standards in advanced implementations. WAI-ACT project places these and many other essential resources and tools in the hands of web developers to drive implementation of web accessibility now.

9. REFERENCES

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