

Challenges in Updating Trusted Tester for Revised Section 508

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Abstract

The Trusted Tester Working Group (TTWG) is currently in the process of updating the Trusted Tester process to align with updated Section 508 requirements (which incorporate by reference the WCAG 2.0 Level A and AA Success Criteria). The group originally targeted completion at the end of September 2017, but updates are still in progress. The TTWG is a part of the Federal CIO Council's Accessibility Community of Practice (ACOP). This paper discusses the process the TTWG has followed to update the Trusted Tester process, current status of work, and some of the challenges and lessons learned so far.

Background

The Trusted Tester process, created to validate conformance to the original Section 508 requirements, provides a standardized, repeatable, manual testing process to evaluate the accessibility of web and Windows native applications and content. Trusted Tester training has been available for four years, and in that time, over 1000 Trusted Testers have successfully passed the certification exam, demonstrating that they can reliably perform accurate accessibility testing following the Trusted Tester Process. Organizations that participate in the Trusted Tester program trust and share test results within the community of certified Trusted Testers.

In January 2017, the U.S. Access Board released updates to the Section 508 standards (36 CFR 1194), which incorporate WCAG 2.0 Level A and AA Success Criteria and conformance

requirements, new software provisions, and new requirements for authoring tools. The Trusted Tester Working Group (TTWG) is working to update the Trusted Tester process to include all of the Revised Section 508 requirements.

Test Process Evolution

While the Trusted Tester process aligned to the 2001 Section 508 technical standards for Web and Software, it also incorporated some WCAG 2.0 Success Criteria with justification that conformance was necessary to meet the Section 508 Functional Performance criteria. As it was expected that Section 508 would align with WCAG 2.0 (for Web and software), the creators of the Trusted Tester process at that time included some WCAG requirements. However, the updated Section 508 standards do away with the original technical standards for Web and Software entirely and include all of the WCAG 2.0 Level A and AA Success Criteria, WCAG conformance requirements, software provisions, and potentially authoring tool provisions as well. To attempt to ensure the Trusted Tester process addresses all of the revised Section 508 standards, the TTWG's work has included the following:

- Gap Analysis to identify differences between the WCAG 2.0 Success Criteria and the Trusted Tester process
- Gap Analysis of new Section 508 software requirements and Trusted Tester process
- Test Process Revisions, including:
 - Addition of tests or test steps to address WCAG 2.0 Success Criteria not previously addressed
 - Removal of tests or test steps that do not align with the WCAG 2.0 Success Criteria
 - Modification to tests to more accurately measure conformance to the WCAG 2.0 Success Criteria
- Reconfiguration of tests to align with W3C's Accessibility Conformance Testing (ACT) Task Force test rule format
- Identification, modification, or creation of tools to support updated test requirements

Once the TTWG completes revision to the Trusted Tester process, work remains for the group: while the group will publish the test process upon finalization, related training and certification exams also require corresponding revisions. The TTWG will perform similar gap analysis of the training materials against the revised test process to identify the training materials that require revision as well as the degree of change required. Naturally, these updates to the training materials and exams will require additional time to complete, following finalization of the test process revisions.

Finally, the TTWG will evaluate how the test process revisions will affect the certification status of existing Certified Trusted Testers. When the Trusted Tester process moved to Version 3.0, all previously Certified Trusted Testers had a window of time to complete a training course covering the differences between Version 3.0 and the previous version, with a re-certification exam at the end of the course. After the window closed, all were required to complete the

updated training course and certification exam in full. At the time of the writing of this paper, the TTWG anticipates that the updates to the test process will be significant and currently certified Trusted Testers will need to take the full updated training and exam to certify under the revised test process.

Gap Analysis

The TTWG compared the WCAG 2.0 Success Criteria to the test steps described in the Trusted Tester process to identify Success Criteria that the test process may not address and/or may not address completely or accurately. The TTWG further examined the Trusted Tester process to determine if it addressed the Sufficient Techniques and Common Failures described in WCAG 2.0 documentation. Finally, the Working Group searched for instances where the Trusted Tester process might exceed the WCAG 2.0 Success Criteria Level A and AA.

The TTWG produced a detailed mapping between Trusted Tester process elements, WCAG 2.0 elements, and any gaps identified in either direction – from WCAG 2.0 to Trusted Tester or from Trusted Tester to WCAG 2.0.

The TTWG’s Gap Analysis found that the Trusted Testers process already addressed many of the WCAG 2.0 Level A and AA Success Criteria. Some exceptions include:

- [1.4.2 Audio Control](https://www.w3.org/WAI/WCAG20/quickref/#visual-audio-contrast-dis-audio) – requiring the ability to pause, stop, or independently control audio that plays for more than three seconds
(<https://www.w3.org/WAI/WCAG20/quickref/#visual-audio-contrast-dis-audio>)
- [2.2.2 Pause, Stop, Hide](https://www.w3.org/WAI/WCAG20/quickref/#time-limits-pause) – requiring the ability to pause, stop, or hide moving, blinking, scrolling, or auto-updating information
(<https://www.w3.org/WAI/WCAG20/quickref/#time-limits-pause>)
- [3.3.4 Error Prevention \(Legal, Financial, Data\)](https://www.w3.org/WAI/WCAG20/quickref/#minimize-error-reversible) – requiring an application to provide the ability to reverse, check, or confirm and correct information on pages that lead to legal commitments or financial transactions
(<https://www.w3.org/WAI/WCAG20/quickref/#minimize-error-reversible>)
- [4.1.1 Parsing](https://www.w3.org/WAI/WCAG20/quickref/#ensure-compat-parses) – essentially requiring that code is valid and follows specification
(<https://www.w3.org/WAI/WCAG20/quickref/#ensure-compat-parses>)

In several instances, the TTWG also identified WCAG 2.0 Success Criteria, which the Trusted Tester process may not fully address. Some examples include:

- 1.1.1 Non-text Content – the Trusted Tester process did not specifically address validation of:
 - Sufficient techniques to provide text alternatives specifically for Scalable Vector Graphics (SVGs)
 - Alternative text for font-based graphics, text “look-alikes,” ASCII art, emoticons, etc.
 - Alternate versions of CAPTCHA modalities and instructions on locating the alternatives

- 1.3.1 Info and Relationships – the Trusted Tester process did not address validation of certain techniques for structuring tables in software/Windows native applications
- 3.2.1 On Focus 3.2.2 On Input – the Trusted Test process did not adequately address changes of context initiated by on focus or on input events

The TTWG has initiated a similar analysis for updated Section 508 software requirements to inform changes to the software tests in the Trusted Tester process. While many of the web content-related tests are very similar in nature, procedures for identifying, inspecting, and evaluating content elements in software can vary widely. Evaluation of revisions to software-specific tests is still in process.

Test Process Revision

The TTWG is in the process of revising the Trusted Tester process to address identified gaps. Some portions of the Trusted Tester process require little or no modification, while others require significant modification to fully align with WCAG 2.0. In the case of the Keyboard Accessibility tests with the Trusted Tester process, only minor changes were required to consider “specific timings for individual keystrokes” (WCAG SC 2.1.1). Whereas in the case of tests related to forms and other interactive interface elements, more significant revision is necessary to account for a broader range of techniques and attributes to provide accessible name and description information and include the use of specific tools to facilitate inspection.

In all cases where changes are necessary, team members have typically performed the following steps:

1. Evaluate sufficient techniques to comply with the WCAG 2.0 Success Criteria
2. Identify methods and tools necessary to validate successful implementation of said techniques; some techniques require interaction and cognitive evaluation of content elements, while others may require code inspection
3. Identify methods and tools necessary to detect and characterize when content fails to conform to the Success Criteria
4. Define process steps, test instructions, related testing tools, and failure conditions to describe possible test results
5. Define and implement test cases and create content samples to validate new or revised tests against the Sufficient Techniques and Common Failures
6. Evaluate test process effectiveness (including incidences of false positives or negatives), and revise test processes as necessary

As TTWG revises the test process, it must consider browser, operating system, and content type implications as they relate to a particular test or failure condition. The TTWG must also balance the WCAG 2.0 Success Criteria against HTML (and other) specifications and best practices to devise steps to produce a valid test of accessibility for particular content elements. For example, W3C provides guidance for calculating the accessible name and description for components in its HTML Accessibility API Mappings 1.0 document (<https://www.w3.org/TR/html-aam-1.0/>), The Trusted Tester process must consider the computation in order to produce techniques to validate accessible names and descriptions. In this case, the TTWG is considering semi-

automated tools to support evaluation of content elements, given the complexity of parameters in the computation guideline. Likewise, the TTWG is evaluating potential new inspection tools as well as modifications to its existing toolset to better evaluate Success Criteria within the Trusted Tester process. Some new tool may require development from scratch, however finding an existing tool, even if some modification is necessary, would be preferred. Ideally, the TTWG would like to address all of its tool needs within a single, open-source tool framework. Several of the tools under evaluation are favelets or bookmarklets, including:

- Tool to identify rendered font size
- Tool to facilitate testing of flashing, blinking, and scrolling elements
- Tool to identify conflicting HTML and ARIA semantics
- Tool to identify accessible name for SVG-coded images

The TTWG is also coordinating with Microsoft Corp., as the Product Owner of the Microsoft User Interface Automation (UIA) application programming interface (API), to update testing tools and test processes specific to Windows-native applications. One of the more significant updates to software-specific tests will incorporate the use of tools to evaluate event-related information in addition to static content element attributes. Additionally, the TTWG is working with Microsoft to create Microsoft Developer Network (MSDN) articles describing techniques and steps for validating accessibility of specific content elements. Once published to MSDN, the Trusted Tester process will refer to the MSDN articles to describe and detail the test processes.

ACT Test Rule Format Alignment

While updating the Baseline tests (on which the Trusted Tester process is based), the TTWG is attempting to align its test format to that defined by W3C's Accessibility Conformance Testing Task Force (<https://w3c.github.io/wcag-act/act-rules-format.html>). Doing so would promote collaboration with other ACT parties and the ability to share testing practices using a common language. Revising the Baseline to the ACT test rule format required a significant adjustment of perspective. While the underlying processes did not change, test instructions and failure conditions had to be rewritten to fit ACT test rules and test cases.

For the first set of updates of baseline tests, the TTWG attempted to follow the ACT format and encountered some challenges. The Baseline specifies tools for use during testing to reveal accessibility properties of the page content for tester evaluation. These tools are essential for manual testing because they minimize the need to view source code, which we have found can be overwhelming and confusing for some non-developer testers. The ACT format does not have a placeholder where testing tools can be specified, understandable since it was originally intended as rules for automated testing tools. The TTWG was also not clear on some Rules whether the testing tools were testing the "rendered page" or "DOM tree" for the ACT section "Test Subject Types".

The ACT structure suggested separate Rules for each test outcome (result). The original Baseline format allowed for a single set of test instructions to produce multiple test results. For example, a Baseline testing tool can reveal accessible name and role. With both of these accessibility properties available for evaluation, a tester is able to determine the results for multiple WCAG 2.0 Success Criteria. Under the ACT structure, the evaluation of each of these properties would

be under separate rules. Converting from the original Baseline format to ACT's resulted in repetitive test instructions, which the TTWG deemed undesirable for this round of updates.

As a result, the TTWG decided to forgo the ACT structure for the initial Baseline update. Upon completion of the Baseline updates, TTWG will revisit the ACT structure so that the Baseline tests can contribute to the W3 ACT Rules while at the same time the ACT format and review/acceptance procedures can mature.

Challenges in Revising the Trusted Tester Process

The TTWG initially anticipated a more rapid timeline for revisions to the Trusted Tester process. While the TTWG has maintained a governance process to facilitate ongoing changes to the Trusted Tester process, the size and scope of changes related to the Revised Section 508 standards required a higher level of attention and commitment that outpaced the TTWG resource availability. The technical nature of the gap analysis and revision process has also exacerbated the TTWG's resource constraints. With relatively few technical resources available to the team, it has simply taken longer than expected to revise test processes, create content samples for testing, and validate the revised processes. Additionally, the collaborative nature of the TTWG itself, and variable level of expertise of participating members, tends to require more time to reach consensus on important decisions. The TTWG has therefore had to balance the need for transparency, ownership, and collaboration among TTWG members against a desire for a faster pace of progress.

Promoting Future Collaboration

As the federal Trusted Tester community expands, the governing committee continues to seek opportunities to solicit input from other interested parties. With the intent to promote transparency and increase participation from a wider group of interested parties, the TTWG is currently using GitHub to manage updates to the test process. The TTWG has created a GitHub repository for the "Harmonized Processes for Section 508 Testing: Baseline Tests for Software & Web Accessibility," which is visible to the public. Interested parties may also create "forks" of the repository and suggest updates via "pull requests" that the TTWG may then evaluate and choose to incorporate, modify, or reject. Once the TTWG has completed updates to the Baseline tests, it will also post the Trusted Tester process to manage updates in a similar manner.

The GitHub repository for the draft version of the "Harmonized Processes for Section 508 Testing: Baseline Tests for Software & Web Accessibility" currently under revision is located at: <https://github.com/Section508Coordinators/ICTTestingBaseline>

The Web view of the same content is also available via GitHub Pages at: <https://section508coordinators.github.io/ICTTestingBaseline/>

The current test processes (before updates to address the revised Section 508 standards) are located at: <https://www.dhs.gov/publication/dhs-section-508-compliance-test-processes>

The TTWG hopes that moving to such an "open source" format and platform will improve the ability for others to make comments and suggest changes to the process. The TTWG is very

interested in feedback to improve the Trusted Tester process and increasing its acceptance beyond the federal community.

If you are interested in contributing to the TTWG efforts please email accessibility@dhs.gov with subject line of TTWG contribution and we will reach out to you to discuss participation moving forward.

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