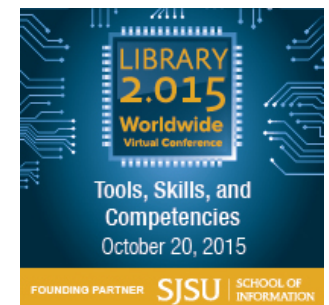


Creating Accessible User Experiences with Accessibility Evaluation Tools

Melissa Green, @mbfortson
The University of Alabama



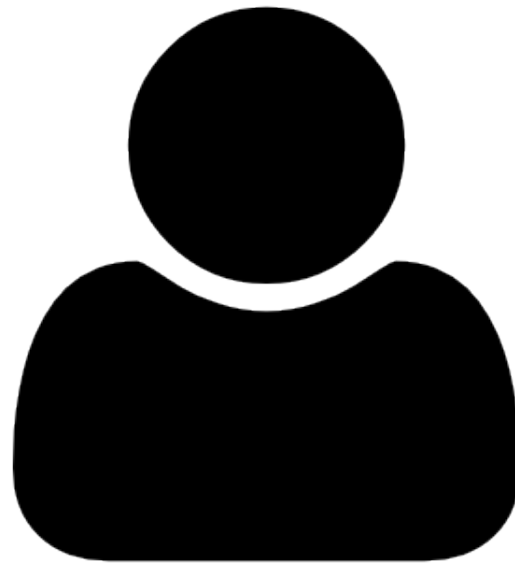
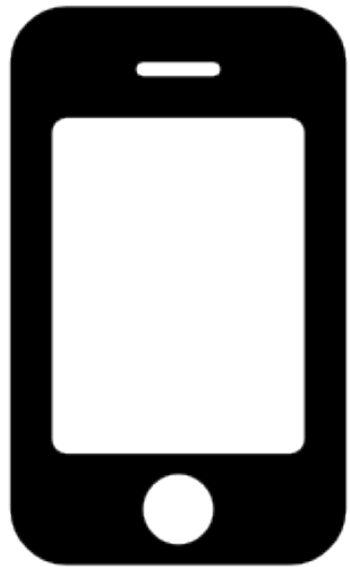
The Case for Accessibility

“The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect.” – Tim Berners-Lee

The Case for Accessibility

“To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others... to information and communications, including information and communications technologies and systems.” – UNCRPD

Designing for accessibility benefits everyone



Applicable laws & requirements

- In the United States
 - Americans with Disabilities Act (ADA)
 - Rehabilitation Act of 1973
 - Section 504
 - Section 508



Applicable laws & requirements

- In higher education
 - Departments of Justice & Education
 - Dear Colleague (2010)
 - Universities charged with planning for accessible technology tools, services, and information
 - “Accessible”
 - W3C Web Content Accessibility Guidelines (WCAG), 2.0 A/AA/AAA



Applicable laws & requirements

- World laws



Web Accessibility Evaluation Tools

Evaluation tools that can be used to determine whether or not web content is accessible.

Human testing is required

- No automated evaluation tool can tell you if your site is accessible, or even compliant.
- Human testing is always necessary.



Standards and guidelines used

- Most commonly used:
 - WCAG 2.0 A/AA/AAA
 - Perceivable
 - Operable
 - Understandable
 - Robust
 - Section 508



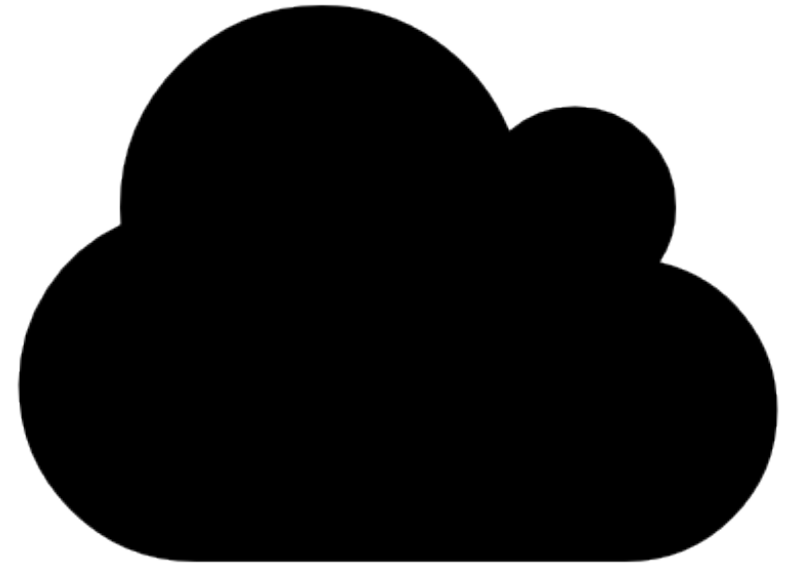
Free vs. commercial

- Knowledge of users
- Size of the site being examined
- Information need



Platform

- Online service
- Within a browser
- Within an authoring tool
- Installed on hard drive or server



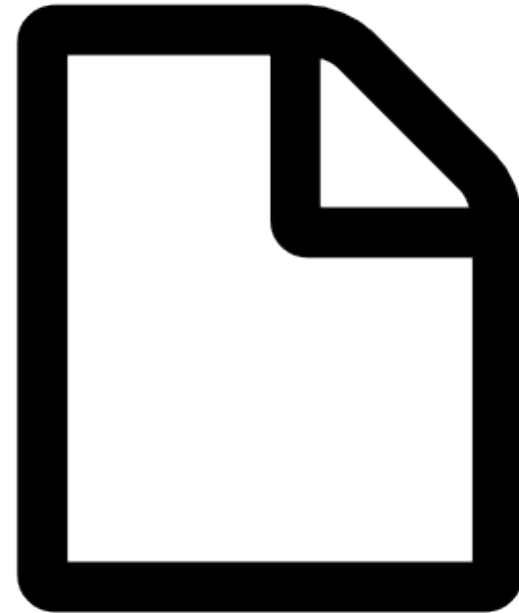
Repair functionality

- Evaluation only
- Evaluation and repair



Report style

- Text-based
- Graphic/icon-based
- Evaluation and Reporting Language (EARL)



Report style: text-based

Accessibility Review

Export Format: PDF Report to Export: All Get File

Accessibility Review (Guidelines: [WCAG 2.0 \(Level AA\)](#))

Known Problems (14)

Likely Problems (0)

Potential Problems (433)

HTML Validation

CSS Validation

1.1 Text Alternatives: Provide text alternatives for any non-text content

Success Criteria 1.1.1 Non-text Content (A)

Check 238: [input element has alt attribute.](#)

Repair: Remove the alt attribute from all input elements except those with a type attribute value of "image".

✘ *Line 49, Column 1:*

```
<input type="text" name="q" id="q" onblur="this.value=(this.value=='') ? 'SEARCH' : this.value;" onf ...
```

1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

Success Criteria 1.3.1 Info and Relationships (A)

Check 57: [input element, type of "text", missing an associated label.](#)

Repair: Add a label element that surrounds the control's label. Set the for attribute on the label element to the same value as the id

Report style: graphic/icon-based

h1

News



alt *News*

X2

Bell Named UA President | VIDEO

UA, YMCA, PARA Honor 'Swim to the Top' Participants

UA-Led Expedition Turns up More Fossilized Animal Remains

UA's Leeper Honored for Statistical Contributions to Medicine, Public Health

h1

Events



alt *Events* X2

1 JUL Using Tegrity in Blackboard Wed July 1, 9:00 a.m.

1 JUL P-Card Works Software Wed July 1, 1:30 p.m.

3 JUL Classes Dismissed - Independence Day Fri July 3, All Day

7 PIVOT - Identifying Funding

h1

Spotlight



alt *Spotlight* X2

h3 A UA research team called 'water wizards' can guide water management and protection through the state.

h3 Spotlight in Cuba Six UA students in Cuba with new eyes after spending time on the island through PIVOT.

Report style: EARL

```
1 <?xml version="1.0" encoding="UTF-8" ?>
2
3 <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
4   xmlns:earl="http://www.w3.org/ns/earl#"
5   xmlns:dct="http://purl.org/dc/terms/"
6   xmlns:cmt="http://www.w3.org/2007/content#"
7   xmlns:ptr="http://www.w3.org/WAI/ER/EARL/pointers#"
8   xml:base="http://www.example.org/earl/report#">
9
10  <earl:Assertion rdf:ID="assert">
11    <earl:result rdf:resource="result" />
12    <earl:test rdf:resource="http://www.w3.org/TR/2008/NOTE-WCAG20-TECHS-20081211/F65" />
13    <earl:subject rdf:resource="http://example.org/resource/index.html" />
14    <earl:assertedBy rdf:resource="http://example.org/cooltool/" />
15  </earl:Assertion>
16
17  <earl:Software rdf:about="http://example.org/cooltool/">
18    <dct:title xml:lang="en">Cool Tool accessibility checker</dct:title>
19    <dct:hasVersion>1.0.c</dct:hasVersion>
20    <dct:description xml:lang="en">A reliable compliance checker for
```

Which tool is best?

- Depends on your skills set and web responsibilities
- Often best to use a variety of tools



Automated Tools: Strengths & Limitations

“No automated evaluation tool can tell you if your site is accessible, or even compliant.” – WebAIM

Strengths

- Efficiency
- Can catch:
 - Missing alt text
 - form controls without labels
 - (many) contrast errors



Strengths

“Automated testing tools excel when the decision logic can be boiled down to a simple yes or no answer, and that answer can be determined using machine accessible data.”



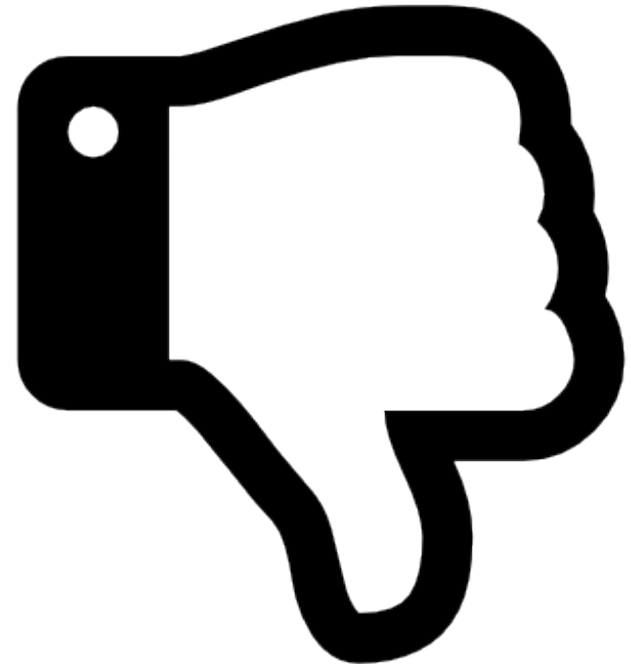
Limitations

- Pass != accessible
- May give a false sense of security
- May inaccurately portray a site or app as being fully accessible

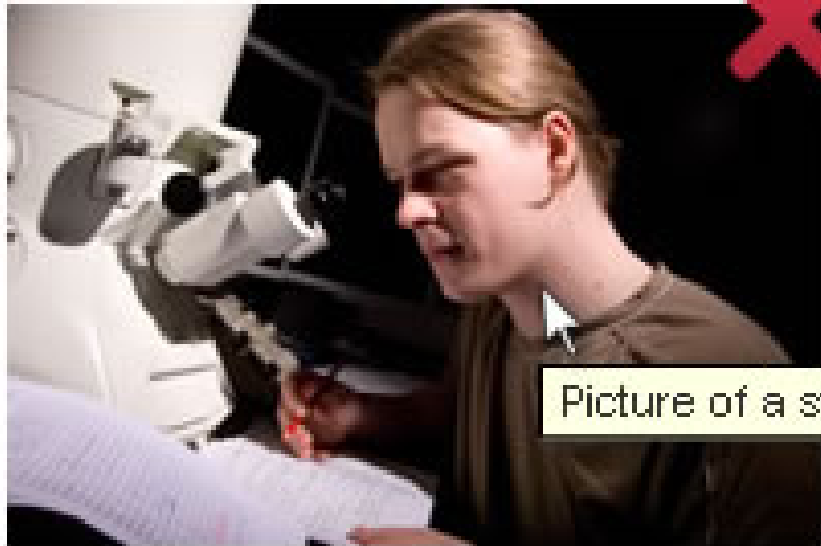


Limitations

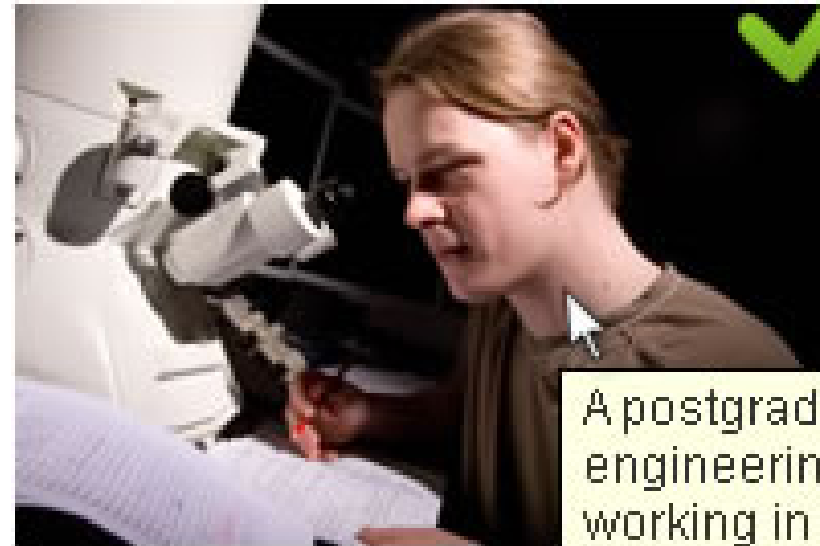
- Require human review:
 - Logical meaning
 - Logical flow
 - Tab order
 - Visible input focus
 - Keyboard access
 - Meaningful text alternatives



Limitations



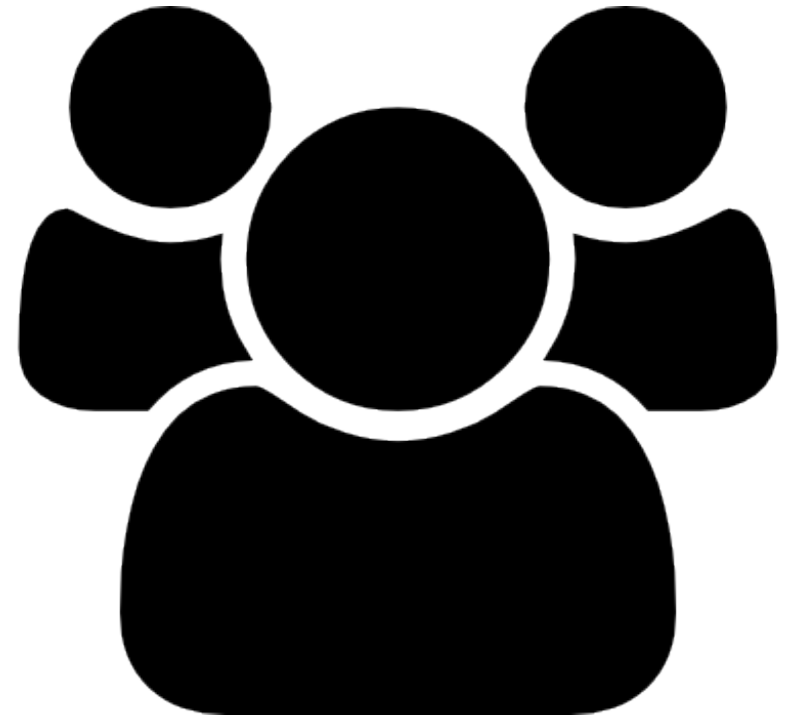
Picture of a student



A postgraduate engineering student working in the new electron microscope lab

Bottom line

“To be effective, accessibility checkers should form part of a wider process. A comprehensive approach, including testing by people with different abilities and skills as well as evaluation by individuals knowledgeable in the field of accessible Web design is best.”



Web Accessibility Evaluation Tools List



Web Accessibility Evaluation Tools List

▼ Filters:

▼ Guidelines

- WCAG 2.0 – W3C Web Content Accessibility Guidelines 2.0 (38 tools)
- WCAG 1.0 – W3C Web Content Accessibility Guidelines 1.0 (16 tools)
- BITV, German government

Guidelines (1 tool)

- Section 508, US federal procurement standard (14 tools)
- Stanca Act, Italian accessibility legislation (3 tools)

► Languages

► Type of tool

► Assists by ...

► Automatically checks...

► License

- Tools providing accessibility information (1 tool)

- Guidelines
- Languages
- Type of tool
- Assists by...
- Automatically checks...
- License

<http://www.w3.org/WAI/ER/tools/>

Web Accessibility Evaluation Tools List

FireEyes by Deque Systems Inc.



FireEyes is a Firefox plugin that integrates with Firebug and allows developers, QA engineers and subject matter experts to test individual and multiple pages for Section 508 and WCAG 2 accessibility issues. It has built-in color contrast analysis, screen reader simulation and support for DHTML pgs.

<http://www.deque.com/products/fireeyes/>, Version: 2, Released: 2010-Jun-01

▼ Detailed Information about “FireEyes”

- **Guidelines:** WCAG 2.0 – W3C Web Content Accessibility Guidelines 2.0, Section 508, US federal procurement standard
- **Assists by:** Generating reports of evaluation results, Providing step-by-step evaluation guidance, Displaying information within web pages, Modifying the presentation of web pages
- **Automatically checks:** Single web pages, Groups of web pages or web sites, Restricted or password protected pages
- **Languages:** English, Japanese (日本語)
- **Browser plugins:** Firefox, Internet Explorer ≥ 9
- **APIs:** Java, Web service (Rest API, Webhook...)
- **Supported formats:** CSS, HTML, XHTML, PDF
- **Online Service:** Hosted service, Server installation, Browser plugin
- **Report formats:** HTML, CSV, Exports issues to JIRA and HP ALM
- **License:** Free Software, Commercial, Enterprise
- **Accessibility information:** (none provided)
- **Information updated:** 2014-Nov-20

Browser Extensions



Accessibility Developer Tools

offered by Google Accessibility

★★★★★ (57)

[Developer Tools](#)

56,213 users

+ ADD TO CHROME

g+ 269

OVERVIEW

REVIEWS

RELATED

The screenshot shows a Chrome browser window displaying the Guardian news website. The Chrome Developer Tools are open, and the Accessibility audit pane is visible at the bottom. The audit pane shows a list of rules that are violated by the page, with one or more elements on the page shown as a result for each rule. The audit pane is titled 'Accessibility audit and element properties' and includes a 'Report Abuse' button.

Compatible with your device

Accessibility audit and element properties.

This extension will add an Accessibility audit, and an Accessibility sidebar pane in the Elements tab, to your Chrome Developer Tools.

To use the audit: go to the Audits tab, select the Accessibility audit, and click Run. The audit results will appear as a list of rules which are violated by the page (if any), with one or more elements on the page shown as a result for each rule.

To use the sidebar pane: inspect an element

[Report Abuse](#)

Browser Extensions



ChromeVox

offered by chrome.google.com

★★★★☆ (436)

[Developer Tools](#)

73,036 users

+ ADD TO CHROME



OVERVIEW

REVIEWS

SUPPORT

RELATED

g+1

783

weather - Google Search

www.google.com/search?scient=psy-ab&hl=en&site=&source=hp&q=weather&btnK=Google+Search#scient=psy-ab&hl=en&source=hp&q=weather&pbx=1

Web Images Videos Maps News Shopping Gmail more -

Google weather

Search About 1,160,000,000 results (0.23 seconds)

Everything

Images

Maps

Videos

News

Shopping

More

San Francisco, CA
Change location

Show search tools

Weather for San Francisco, CA

69°F | °C
Partly Cloudy
Wind: W at 16 mph
Humidity: 60%

Mon Tue Wed Thu

68° 56° 64° 55° 63° 54° 60° 54°

Detailed forecast: The Weather Channel Weather Underground - AccuWeather

National and Local Weather Forecast, Hurricane, Radar and Report
www.weather.com - Cached
33 minutes ago - The Weather Channel and weather.com provide a national and local weather forecast for cities, as well as weather radar, report and hurricane ...

10 Day Weather Forecast for Las Vegas, NV
www.weather.com/weather/10day/Las+Vegas+NV

Maps
www.weather.com/weather/.../interact...
Our interactive local weather ...

US Current Weather
Forecast

By Google

Compatible with your device

ChromeVox - Giving Voice to Chrome

The ChromeVox screen reader is an extension to Chrome that brings the speed, versatility, and security of Chrome to visually impaired users.

Unlike most accessibility software, it is built using only web technologies like HTML5, CSS and Javascript. ChromeVox was designed from the start to enable unprecedented access to modern web apps, including those that utilize W3C ARIA (Access to Rich Internet Applications) to provide a rich, desktop-like

Website

Report Abuse

WordPress

Access Monitor



TENON



Test your WordPress site for accessibility compliance. Run on-demand tests or schedule a weekly accessibility check.

[Download Version 1.0.4](#)

[Description](#)

[Installation](#)

[FAQ](#)

[Screenshots](#)

[Changelog](#)

[Stats](#)

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[Reviews](#)

[Developers](#)

WordPress



The banner features a dark blue background with a network of white dotted lines. At the center is a large orange circle containing a white icon of a person in a wheelchair. Surrounding this central icon are several smaller blue circles, each containing a white icon: a WordPress logo, a link chain, a leaf, the text 'AA', a code symbol '</>', and a list icon. A black rounded rectangle with the text 'WP Accessibility' is positioned in the lower-left area of the banner.

WP Accessibility

WP Accessibility fixes common accessibility issues in your WordPress site.

[Download Version 1.4.1](#)

[Description](#) [Installation](#) [FAQ](#) [Screenshots](#) [Changelog](#) [Stats](#) [Support](#) [Reviews](#) [Developers](#)

tota11y



ks

JavaScript file that inserts a small button
of your document. (It's on this very

several plugins that each provide

s "annotate" elements on the page.

their existence, other times to point out

s wrong.



h2roduction to algebra

Videos exploring why algebra was developed helps us explain our world.



h2lear eq

We will now
about how i
take on. The
the heart of



h2lear ine

Headings

- 1 Algebra I
 - 2 Introduction to algebra
 - 2 Linear equations
 - 2 Linear inequalities
 - 2 Two-variable linear equat functions
 - 2 Functions
 - 2 Sequences
 - 2 Systems of linear equatin

aXe (The Accessibility Engine)



axe

THE ACCESSIBILITY ENGINE

Web Accessibility Evaluation Tool

“WAVE is developed and made available as a free community service by WebAIM. Originally launched in 2001, WAVE has been used to evaluate the accessibility of millions of web pages.”

WAVE demo



WAVE

web accessibility evaluation tool

Chrome Extension

chrome web store mbfortson@gmail.com

WAVE Evaluation Tool

offered by WebAIM

★★★★★ (22) | [Accessibility](#) | 17,904 users

ADDED TO CHROME

OVERVIEW REVIEWS SUPPORT RELATED

Compatible with your device

Adds WAVE (Web Accessibility Evaluation Tool) to Google Chrome.

This is a beta release of the WAVE Extension.

WAVE is a web accessibility evaluation tool developed by WebAIM.org. It provides visual feedback about the accessibility of your web content by injecting icons and indicators into your page. No automated tool can tell you if your page is accessible, but WAVE facilitates human evaluation and educates about accessibility issues. All analysis is done entirely within the Chrome browser allowing secure valuation of intranet, local, password protected, and other sensitive web pages.

[Report Abuse](#)

Version: 0.1.1.6
Updated: April 7, 2015
Size: 145KB

WAVE
web accessibility evaluation tool

Styles: No Styles | Contrast

Details

Filter: Full

Errors (4)

- 2 x Multiple form labels
- 1 x Missing first level heading
- 8 x Suspicious link text
- 13 x Redundant link

Features (23)

- 1 x alternative text
- 1 x Null or empty alternative text
- 15 x Linked image with alternative text
- 4 x Form label
- 2 x Placeholder

The following apply to the entire page:

- 1 x [h1](#)

Utah State University

State University

PROSPECTIVE STUDENTS CURRENT STUDENTS ALUMNI & GIVING FACULTY & STAFF COMMUNITY & VISITORS

5K PARADE AG DAY BBQ PREGAME 5U vs. AIR FORCE

OCTOBER 6-11TH 2014

Once on Aggie Always an Aggie

Homecoming 2014

ABOUT US ACADEMICS STUDENT LIFE APPLY

YouTube Twitter Facebook Blogger

Living on Campus Clubs & Student Involvement Recreation and Wellness Arts and Culture Athletics

Apply Now Undergraduate Graduate Tuition and Fees Financial Aid

Find a Degree A-Z Degree List More Search Options e.g. biology, history, etc. Undergraduate Search

WELL-CAMPAIGN CHURCH FIND EVENTS CALENDAR UTAH STATE TODAY

Offices & Services Library Commencement Extension

USU Homecoming Weekend Mark your calendars for the 2014 USU Homecoming Weekend! Events are being planned now so please... Enchanted Modernism

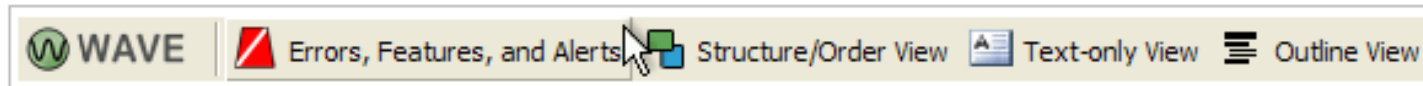
Utah State University Homecoming 2014 "Once on Aggie, Always an Aggie"

Even discontinued individuals will be honored

Firefox Toolbar

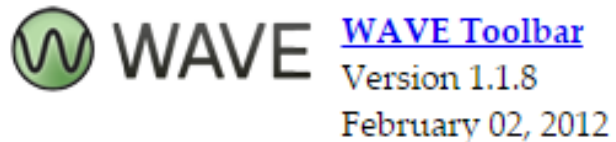


WAVE Toolbar



The WAVE Firefox toolbar provides a mechanism for running WAVE reports **directly within Firefox**. Because the toolbar reports 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. Also, because the WAVE toolbar evaluates the rendered version of your page, **locally displayed styles and dynamically-generated content from scripts or AJAX** can be evaluated.

Download now



WAVE tools compared

Web Service

- Submit a web page address
 - WAVE server downloads content and a custom version of Firefox renders page with CSS applied
 - Virtual page/DOM is checked against WAVE rules
 - Original page loaded
 - Icon and report data loaded
 - WAVE icons and descriptions inserted into the original page and interface

Extension/Toolbar

- Evaluates content directly within browser
- No info sent to WAVE server ("100% private and secure")
- Can check intranet, password-protected, dynamically generated, or sensitive web pages.
- Evaluates the rendered version of your page; locally displayed styles and dynamically-generated content from scripts or AJAX can be evaluated

WAVE API



[Register](#) | [Login](#)

WAVE API (v.1)

What is the WAVE API?

The WAVE API allows automated and remote accessibility analysis of web pages using the WAVE processing engine. You send us the URL or content of the page to analyzed, we'll send you back useful data about how accessible it is.

How do I get started?

Simply [register for a new API key](#) and purchase WAVE API credits. *All new accounts get 100 free credits.* If you already have an account, [log in to the account manager](#). You can purchase additional credits starting at just \$.025 each. The more you purchase, the less expensive credits become.

If you're familiar with APIs, using the WAVE API will be very easy. You perform a simple GET request that contains your API key and the URL of the page to check, we'll send you back results data in either JSON or XML format. You can customize the request to get more or less data. Additional details are available in the [API Specification](#).

Let's create
accessibility.

“Disability is a phenomenon
of the experience that occurs
by the individual intersecting
with the environment.”

– Valerie Fletcher

Resources

On the Library 2.015 site & at
bit.ly/Lib2015a11y