# User-Centered Design and ADA Compliance for Websites and Digital Systems

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MSU Usability/Accessibility Research and Consulting University Outreach and Engagement Michigan State University

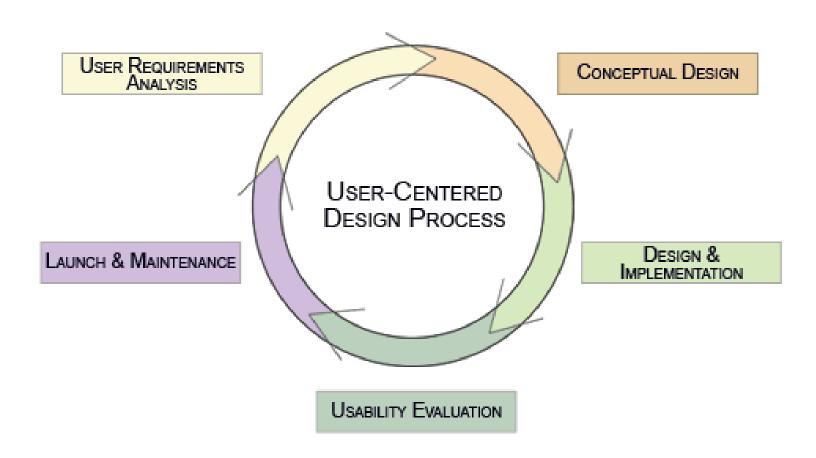
Michigan Municipal Executives 2018 Winter Institute February 1, 2018

#### Importance of Your Digital Presence

- Websites are a critical communication tool used for many purposes
- First impression of your website forms within 50 milliseconds



#### Design as a User-Centered Process



#### Usability - What is it? Why does it matter?

 Usability is focused on making your website and content as user-friendly and easy to navigate as possible.



#### Understanding Citizens as Website Users

- Feedback from citizens
  - Focus groups
    - Discover user needs
    - Explore design concepts
  - One-on-one testing
  - Website organization



### Michigan DHHS - One-on-One Testing



#### Michigan Dept. of Treasury - Taxes (Before)



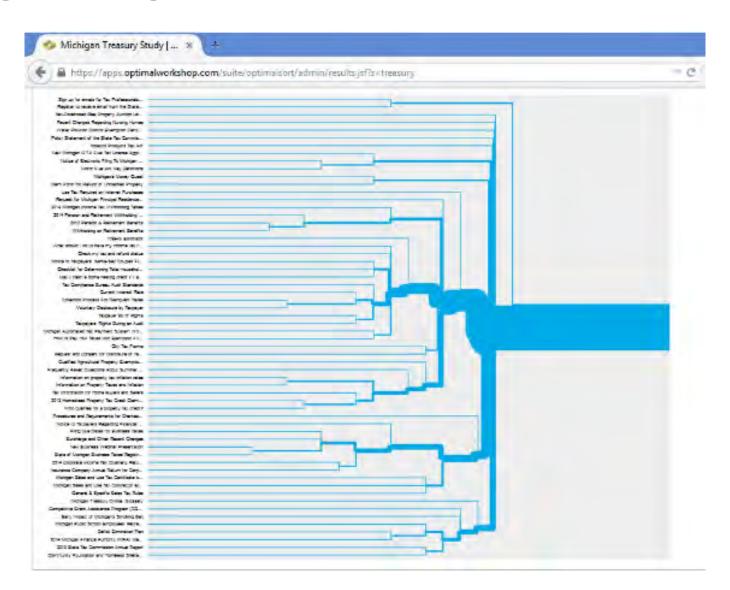
#### Tax Website Focus Groups

- Focus groups
  - General taxpayers
  - Tax professionals

- Concerns
  - Navigation
  - Searching for forms
  - Terminology
  - Layout



### Organizing Tax Website Content (Online)



#### Tax Website Validation Task (Online)



#### Michigan Dept. of Treasury - Taxes (After)



#### Design Best Practices

- User needs → User requirements
- Perform high-level website reviews
- Web Content Accessibility Guidelines
   2.0 AA



### Accessibility - What is it? Why important?











#### Document Accessibility

- Documents within websites and/or sent out electronically must be accessible, too
- Publications, Press Releases, etc.
- Tutorials
  - http://webaccess.msu.edu





### Closed Captions





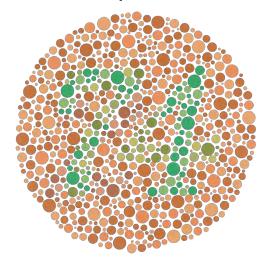
#### Screen Readers

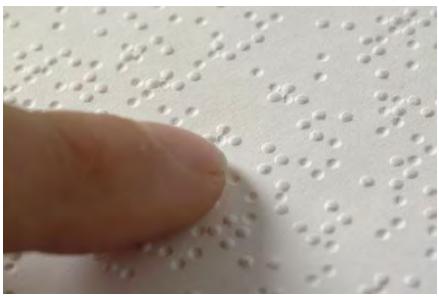


https://youtu.be/c0nvdiRdehw?t=53s

© The Tommy Edison Experience

### Visual Impairments









### Hearing Impairments





### Physical Impairments

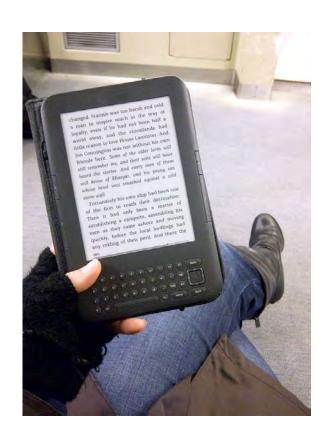








### Cognitive and Reading Impairments





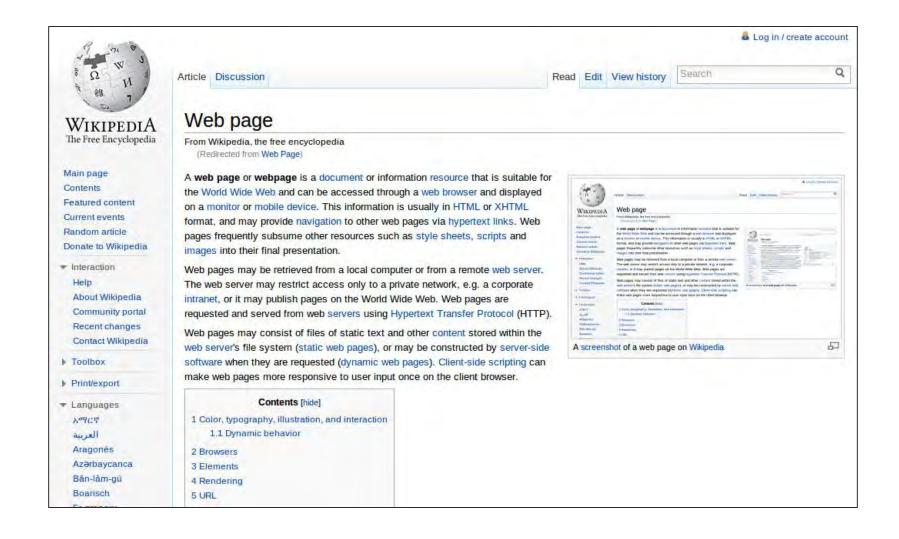






## What Needs to Be Made Accessible

#### Websites



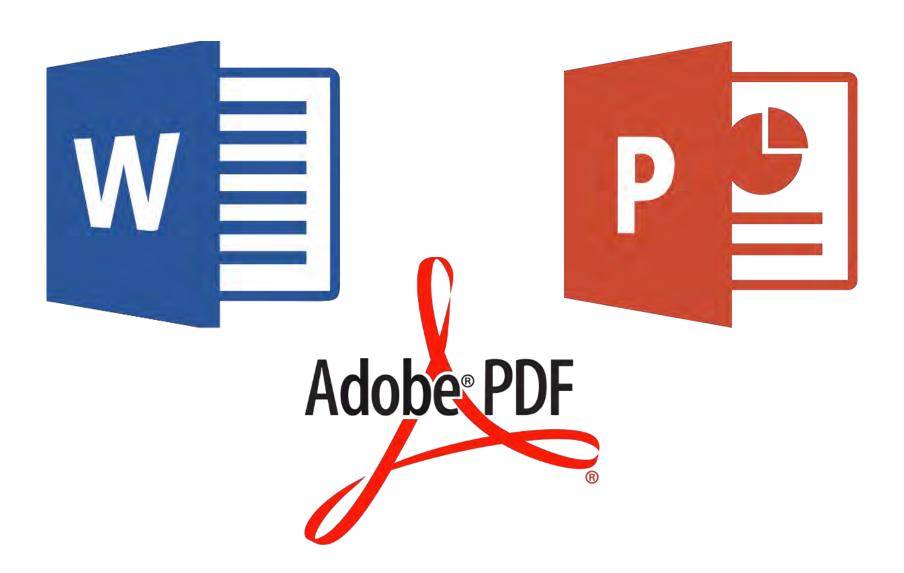
### Mobile Apps



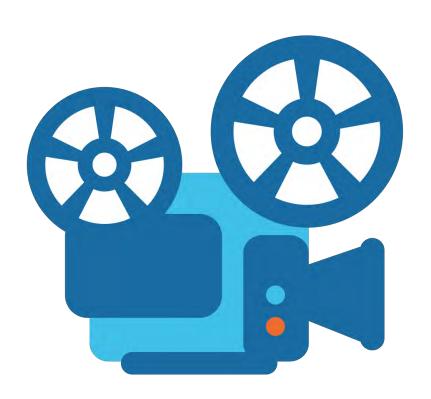
#### Software

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```

#### Documents



#### Videos

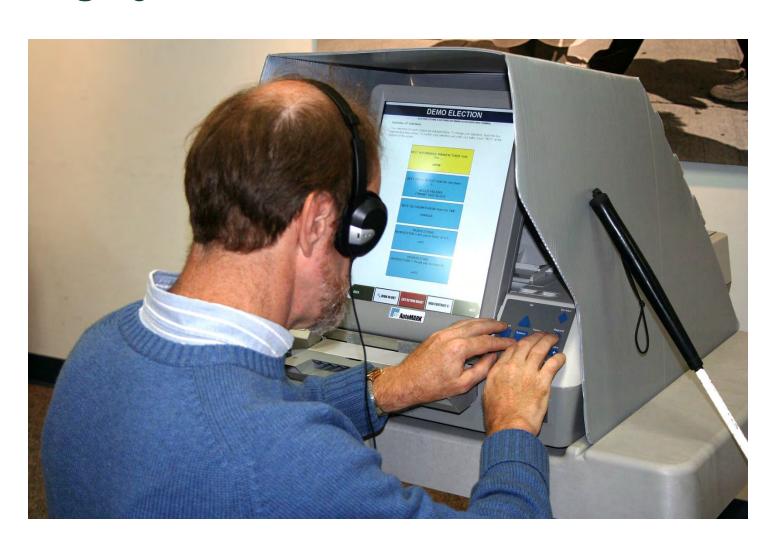




### Digital Signs and Kiosks



### Voting Systems



Laws, Rules, and Standards

### Americans with Disabilities Act (1990)



#### Global Standards



#### [contents]



#### Web Content Accessibility Guidelines (WCAG) 2.0

#### W3C Recommendation 11 December 2008

#### This version:

http://www.w3.org/TR/2008/REC-WCAG20-20081211/

#### Latest version:

http://www.w3.org/TR/WCAG20/

#### Previous version:

http://www.w3.org/TR/2008/PR-WCAG20-20081103/

#### Editors:

Ben Caldwell, Trace R&D Center, University of Wisconsin-Madison

Michael Cooper, W3C

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#### Previous Editors:

Wendy Chisholm (until July 2006 while at W3C)

John Slatin (until June 2006 while at Accessibility Institute, University of Texas at Austin) Jason White (until June 2005 while at University of Melbourne)

Please refer to the errata for this document, which may include normative corrections.

#### See also translations.

This document is also available in non-normative formats, available from <u>Alternate Versions of Web Content Accessibility Guidelines 2.0</u>.

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#### Abstract

Web Content Accessibility Guidelines (WCAG) 2.0 covers a wide range of recommendations

### Section 508 (Revised)



### US Department of Justice



#### Courts



#### Recent Legal Settlements

#### Government

- Cedar Rapids, Iowa (2015)
- Chaves County, New Mexico (2015)
- Champaign County, Illinois (2015)
- DeKalb, Illinois, (2015)
- Fallon, Nevada (2015)
- Galveston County, Texas (2015)
- Humboldt County, California (2016)
- Isle of Palms, South Carolina (2015)
- Lumpkin County, Georgia (2015)
- Madison County, New York (2015)
- McLennan County, Texas (2015)
- Merced County, California (2015)
- Milwaukee, Wisconsin (2016)
- Nueces County, Texas (2015)
- Orange County Clerk of Courts (2014)
- Pennington County, South Dakota (2015)
- Parowan, Utah (2015)
- Robeson County, North Carolina (2015)
- Ruidoso, New Mexico (2015)
- Vero Beach, Florida (2015)
- Yakima County, Washington (2015)

#### **Fducation**

- Atlantic Cape Community College (2015)
- Argyle Independent School District (2015)

- Bellingham School District (2016)
- Chandler Unified School District (2014)
- Davidson Academy of Nevada (2016)
- Eduprize Charter School (2015)
- edX (2015)
- Florida State University (2014)
- Granite School District (2016)
- Guam Department of Education (2016)
- Higley Unified School District (2015)
- Juneau Alaska School District (2016)
- Law School Admission Council (2011)
- Louisiana Tech University (2013)
- Montana School for the Deaf and Blind (2016)
- Nevada Department of Education (2016)
- Oregon Department of Education (2016)
- Penn State University (2010)
- Seattle School District Consent Decree (2015)
- Santa Fe Public Schools (2016)
- University of Cincinnati (2014)
- University of Montana (2012)
- University of Phoenix (2015)
- Youngstown State University (2014)
- Washington Office of Superintendent of Winn-Dixie (2017) Public Instruction Superintendent (2016)
- Washoe County School District (2016)

#### Nonprofit

- American Cancer Society (2011)
- Massachusetts Eye and Ear Infirmary (2017)
- National Museum of Crime and Punishment (2015)
- San Francisco Federal Credit Union (2016)

#### Corporate

- Bank of America (2015)
- Carnival Corporation (2015)
- Charles Schwab (2012)
- Colorado Bag & Baggage 2017
- E\*Trade (2016)
- Greyhound Lines, Inc. (2016)
- H&R Block Consent Decree (2014)
- Hilton Consent Decree (2010)
- Major League Baseball (2012)
- Motley Fool, LLC 2017
- Peapod (2014)
- Rite Aid (2008)
- Safeway Web Accessibility (2013)
- Scribd (2015)
- Sweetgreen (2017)
- Weight Watchers (2013)

http://www.d.umn.edu/~lcarlson/wcagwg/settlements/

#### WCAG 2.0 / Section 508









#### WCAG 2.0 / Section 508 & ADA



# Help America Vote Act (2002) & Voluntary Voting System Guidelines



# WCAG 2.0 / Section 508

#### Document Structure

- Heading 1
  - Heading 2
  - Heading 2
    - Heading 3
  - •Heading 2

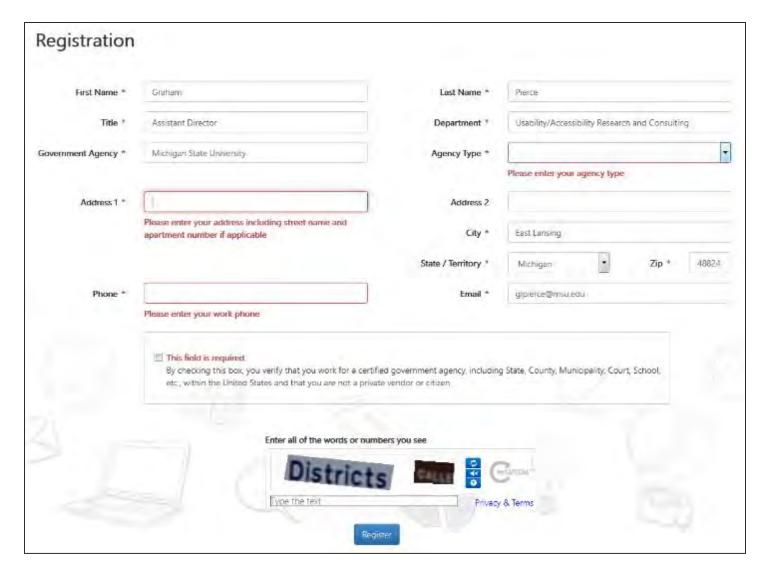
# Keyboard Support



# Navigation



#### Forms and Data Submission



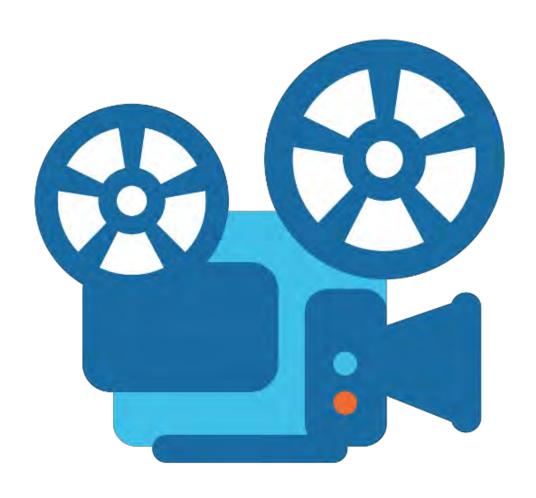
# Images



"logo.png"

"Big Ten Network"

#### Audio and Video Media



#### Color and Visual Characteristics



Find out how we're bringing millions into the financial fold

Sign up Log in

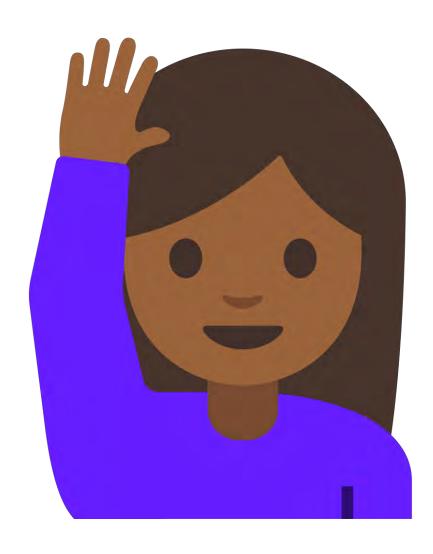
See how it works

# Custom Elements and Dynamic Content

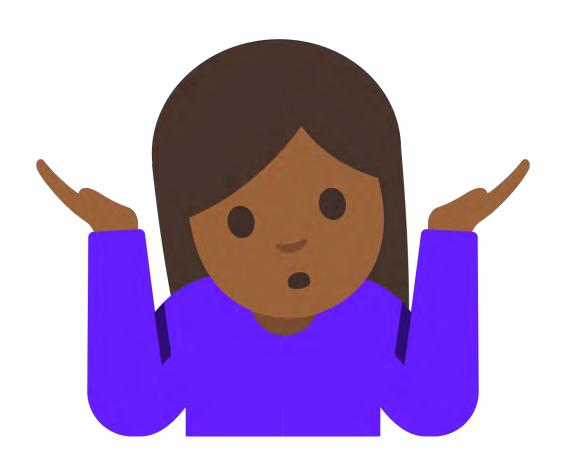


# Evaluating Accessibility

#### The Question



#### What About Automated Scanners?



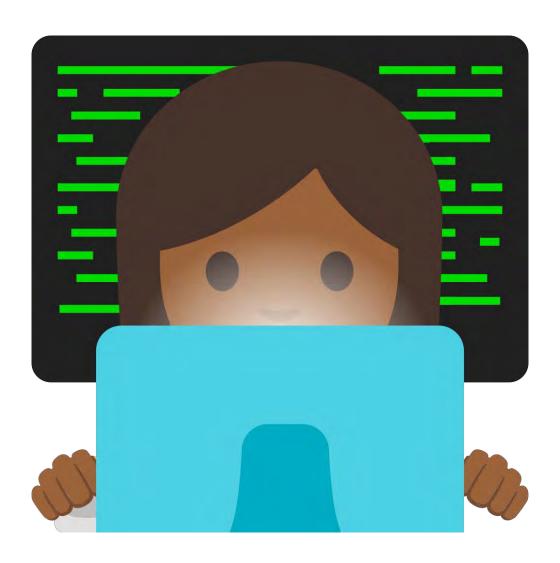
# No!



# Sorry!



#### Not Just Code



# Human Investigator



# Human Judgment



## WCAG 2.0 AA Requirements

## Human Judgment Necessary

#### What Can Automated Tools Do?

Warn you when some things might be wrong

# What Else Can They Do?

# Process Management

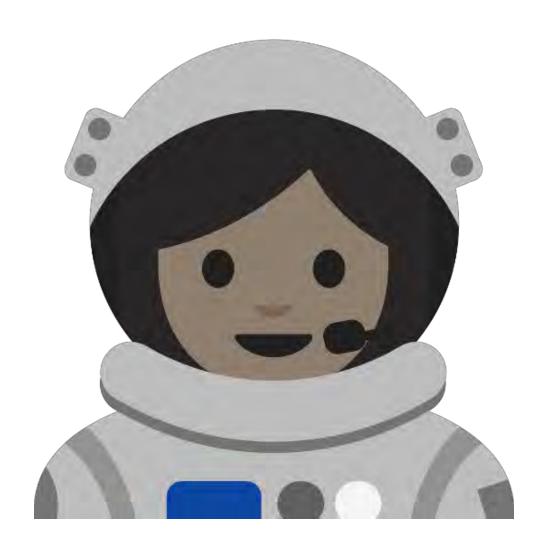
# What Can't They Do?

# Tell you that anything is correct

(other than Parsing)

# Manual Evaluation

# Expert Reviewers



# Keyboard



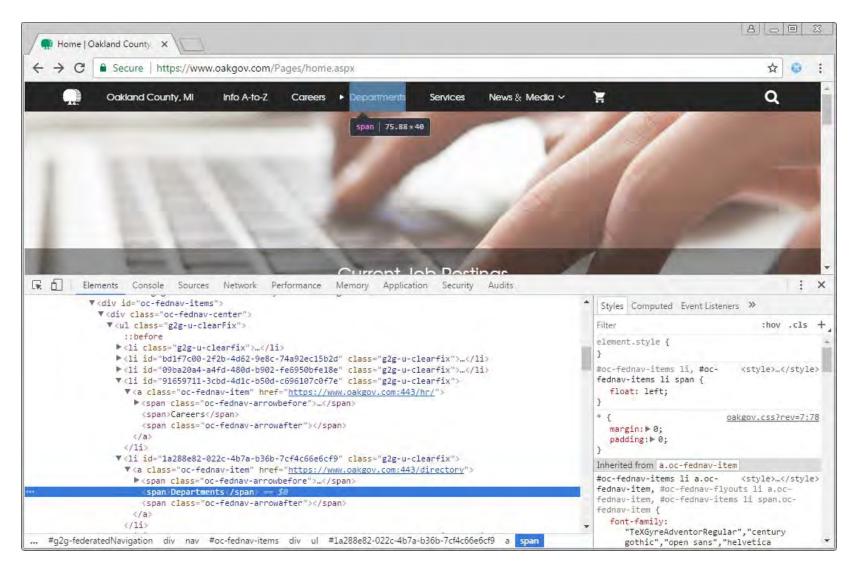
#### Screen Readers



#### Color Contrast



# Code Inspection



# Mobile Testing



#### MSU Evaluation Protocol



http://usallility.msu.edu - parc@msu.edu

#### Introduction

This tiered protocol for evaluating Web Content Accessibility Guidelines (WCAG) 2.0 AA was developed by Michigan State University Usability/Accessibility Research and Consulting (MSU UARC). This document is intended to provide a simple and standardized accessibility evaluation protocol for faculty, staff, and students at MSU to use on websites and digital content, but is not a substitute for an accessibility evaluation by trained experts or for the official WCAG 2.0 language from the World Wide Web Consortium (W3C). Following this protocol does not guarantee or certify accessibility, nor fulfillment of WCAG 2.0 AA specifications, which can be consulted in their entirety at <a href="http://www.w3.org/TR/WCAG20/">http://www.w3.org/TR/WCAG20/</a>. While developed for MSU, this document may be equally effective for other institutions and organizations, as it does not rely on any MSU-specific resources or requirements.

This evaluation protocol is designed to be easily used by individuals with limited time and limited knowledge of accessibility, and is not intended to be complete or comprehensive. Reviewers should always start with Tier 1 and move through tiers in order, until they run out of time or reach the limits of their abilities. Tiers should always be completed in full (e.g., do not conduct only half of the tests in a given tier).

The MSU IT Services Digital Content & Accessibility Team (<a href="webaccess@msu.edu">webaccess@msu.edu</a>) is available to provide free assistance in using this document to MSU faculty, staff, and students. MSU UARC (<a href="warpure-uarcemsu.edu">warpure-uarcemsu.edu</a>) is available to provide assistance and to conduct high-level and full accessibility evaluations for individuals and organizations inside and outside of MSU (for a cost).

#### Online Resources

- Michigan State University (MSU) Web Accessibility: <a href="http://webaccess.msu.edu/">http://webaccess.msu.edu/</a>
- MSU Usability/Accessibility Research and Consulting (UARC): http://usability.msu.edu/
- World Wide Web Consortium (W3C): http://www.w3.org/
  - Web Accessibility Initiative (WAI): http://www.w3.org/WAI/
  - Web Content Accessibility Guidelines (WCAG) 2.0: http://www.w3.org/TR/WCAG20/
  - Accessible Rich Internet Applications (WAI-ARIA) 1.0: https://www.w3.org/TR/wai-aria/
- NVDA Screen Reader: https://www.nvaccess.org/
- Colour Contrast Analyser: https://www.paciellogroup.com/resources/contrastanalyser/
- Web Accessibility In Mind (WebAIM): <a href="http://webaim.org/">http://webaim.org/</a>
  - Using NVDA to Evaluate Web Accessibility: <a href="http://webaim.org/articles/nvda/">http://webaim.org/articles/nvda/</a>
  - Testing with the NVDA Screen Reader: http://webaim.org/blog/testing-with-the-nvda-screen-reader/
  - Using VoiceOver to Evaluate Web Accessibility: http://webaim.org/articles/voiceover/

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#### Tier 1



http://usahitte.hs...s... • barc@msiherid

Tier 1

Always complete tiers in full (i.e., do not skip any tests). If pages do not contain any audio/video content, mark \*N/A" as appropriate.

Test	Protocol	Pass	Fail	N/A	Notes	2.0 SC
1. Keyboard Focus Visibility	Use the tab key on the keyboard to move through the page, and make sure there is always a clearly visible way to tell where focus is.					2:4.7
2. Keyboard Focus Order	Use the tab key on the keyboard to move through the page, and make sure the order that elements receive focus in makes sense. Make sure inactive/disabled parts of pages aren't reached by keyboard.					243
3. Keyboard Access	Make sure everything on a page works with a keyboard (i.e., everything that can be done with a mouse/touchscreen also can be done without one).					.2.L1
4. Keyboard Traps	Make sure keyboard focus can't be stuck anywhere (i.e., you can get out of everything you can get into with a keyboard, without needing to use a mouse or touchscreen).					2.1.1
5. Heading Levels	Go to <a href="http://wave.webaim.org/">http://wave.webaim.org/</a> and enter the site address, Click on the bottom tab on the left side of the page ( <a "h1"="" "h3"),="" (e.g.,="" (i.e.,="" all="" and="" are="" doesn't="" from="" h1"="" headings="" href="http://www.make.gov.nethere.is.only.one" in="" it="" jump="" levels="" list,="" makes="" nested="" no="" overall="" properly="" sense).<="" skipped="" structure="" td="" that="" the="" to=""><td></td><td></td><td></td><td></td><td>1.3.1</td></a>					1.3.1
6. Color Contrast (Visual)	Look for text and icons (not including logos) that are hard to read against the background due to the colors used (e.g., light grey text on white or green text on blue).					141
7. Video Captions	Make sure all prerecorded videos have captions. Make sure captions are accurate.					122
8. Live Video Captions	Make sure all live videos (livestreams) have captions. Make sure captions are accurate.					1.24
9. Audio Controls	If there is any audio (including audio in a video) that plays automatically and lasts for more than 3 seconds, make sure that there is a way to stop the audio on the page. Make sure the controls work with the keyboard.					1:52
10. Video/Animation Controls	If there is any moving, blinking, or scrolling content (including banner rotators and videos) that start automatically and last for more than 5 seconds, make sure that there is a way to stop them on the page. Make sure the controls work with the keyboard.					2.2.2

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# Policies

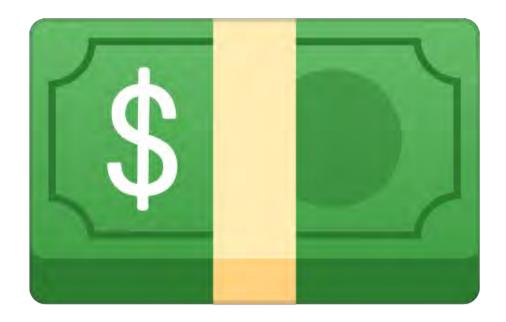
# Policy



# Training



### Procurement



# Auditing



### Exceptions



### Complaints

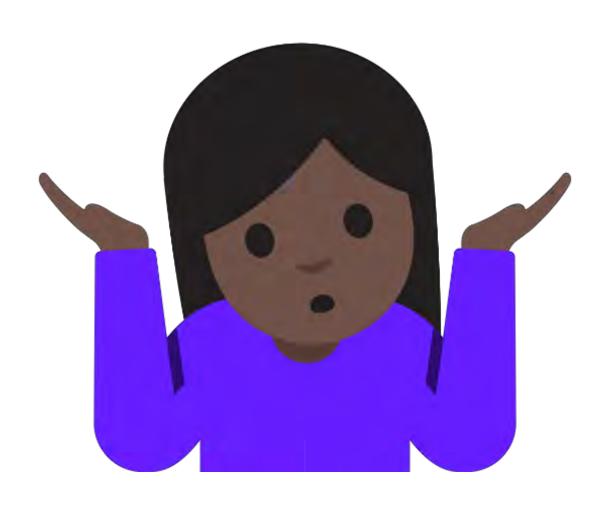


### Timeline



# Fixing After Development, Purchase, or Deployment

### Why Not Wait and Fix Things Later?



### Time



### Money



#### Document Issues



### Determine Causes



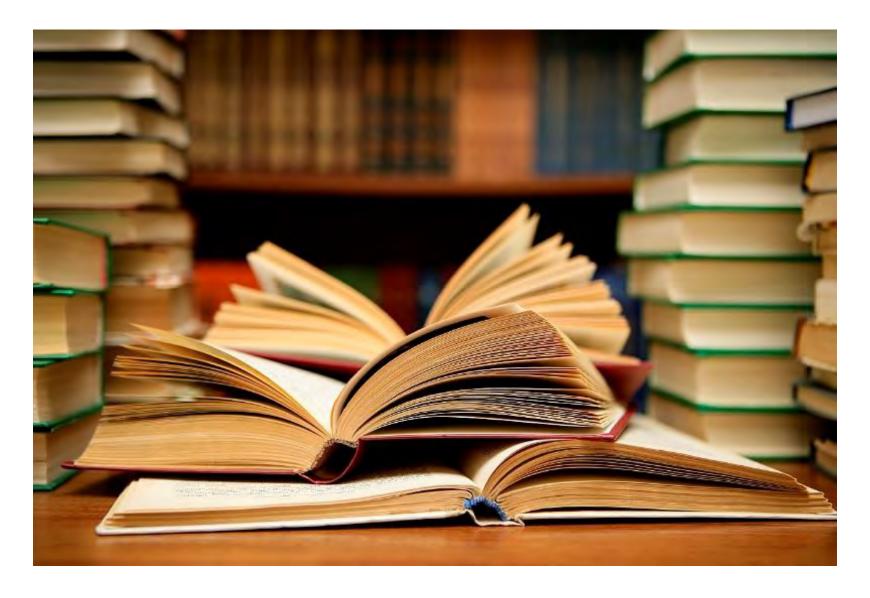
# Attempt to Fix



### Total Loss



### Research Alternatives



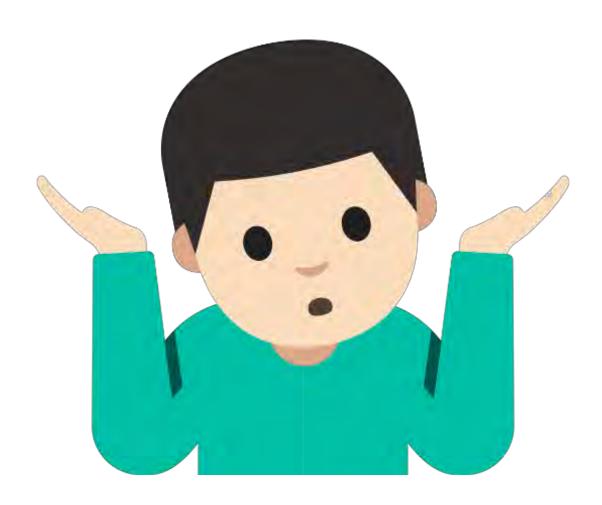
### Start from Scratch



# Expensive!



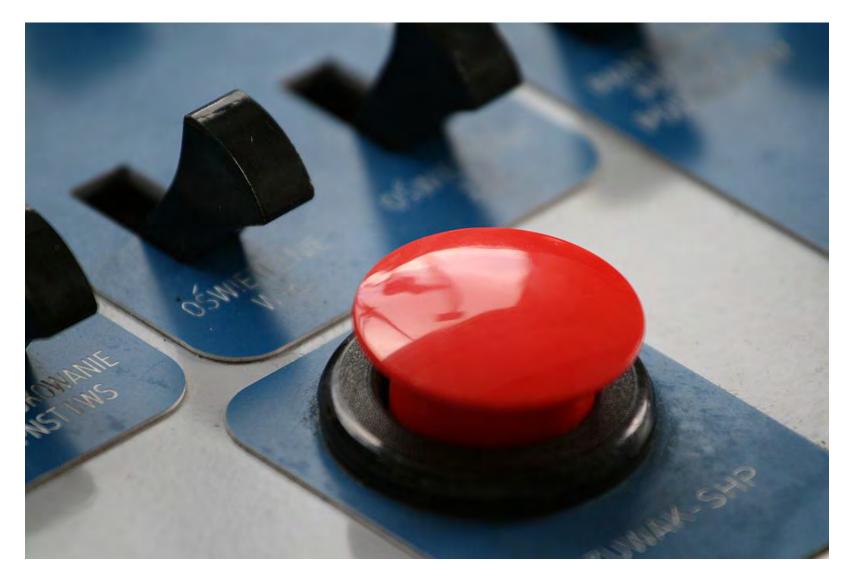
### "Easy" Fixes?



### Overwhelming



### Worst-Case Scenario



# Working with External Vendors

# Budgeting



#### **Evaluation Timeline**



#### Contracts

#### SERVICES AGREEMENT WITH UNIVERSITY OUTBEACH AND ENGAGEMENT AT MICHIGAN STATE UNIVERSITY

Thank you for your request for services from Usebelity/Accessibility Research and Consulting (UARC), a division of University Outreach and Engagement (UDE) at Michigan State University.

- 1. Purpose. The University, through UARC will perform the services and provide the deliversities described in Exhibit A.
- A Payment now agree to pay, when you receive as invoice, the sum of money specified on sublish a.
- 2. confidentially, "confidential information" reason also instead, written information, and clear marked "confidential" that you provide. If you provide instead or confidential, you must write flow that information, much it as Confidential, and forward it to USC written S0 tasks of first brawing the information. Confidential information does not include information in the public domain or independently known or obtained by the University. The Orientially agree to their governormation in the public domain or independently known or obtained by the University. The Orientially agree to their governormation in the Confidential Information with the same degree of case that it can be prefer to one confidential formation, and to the extensive places to be confidential information and the confidential information and the confidential information confidential information of the confidential information confidential information of the confidential information confidential information of the confidential information and the confidential information of the confidential information of the confidential information confidential information of the confidential information of the confidential information confidential information of the confi
- Intellectual Property, any intellectual property you provide to Users will remain your intellectual property. Any intellectual
  property that UNEX provides to the project will remain the intellectual property of the Interventy's. Are copyrighted delimentable
  provided to see under this agreement will be considered. Work for Hex and become your property peroperants in first.
- Export Control You may not provide any export controlled data or materials to the University without the University agreeing
  is writing in advance.
- Termination. Either you at the University may terminate this agreement by giving 10 days written notice to the other. You will pay all reconsible costs and non-conclude obligations incorred by the conversity at the time of the termination. All your request and appears, the Mannathy and instant is you or destined all suspend matternal provided by your
- Independent Contractor: The University is an independent contractor providing services to you. You and the University do not have the relationship of partners, point venturers, principals or agents.
- E TANIBY IN NO EVENT WILL THE UNIVERSITY BE OF SOCIALIES FOR ABY DANABOLE OR PRINT THE PRODUCT THE UNIVERSITY'S PARLIES TO PROVING A DELAY IN PROPINCING, THE SOURCES OR DELIVERABLE. IF A SERVICE OF DELIVERABLE IS FOUND, WITHIN 35 MONTHS OF INDOORS, TO BE JUSTIANTIALD DESCRIPE, THE UNIVERSITY FULL CORRECT THE DEFECTIVE PORTION OF THE SERVICE AND DELIVERABLE AT NO COST TO YOU. THIS IS YOUR SOLE AND EXCLUSIVE REMEDY UNDER THIS ASSEMBLY. THIS SERVICE AND DELIVERABLE AT NO COST TO YOU. THIS IS YOUR SOLE AND EXCLUSIVE REMEDY UNDER THIS ASSEMBLY SETTING THE PROPERTY OF THE CORREST OF REPUISOR. AND DELIVERABLE AND THE PROPERTY OF THE PROP
- 2. Conditions Support Control. You and for the University (nit be account from the obligations of the agreement of the performance in delayed on prevented by promotivations (except frametal) presonably beyond control, including, sut not finished to, by the, lack of value, taken of series above of performance and the promotive of the promotiv
- 10. Defects. This agreement is non-assignable and non-translatative. The state of Michigan's bies apply to this agreement, and only the modern the perfect of the agreement, and to be writing agreement between the perfect and can only be modeled in a written change agreed by both you and the instructor.

[Vignature blocks removed]

### RFP Development



#### Contact Information

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usability.msu.edu

