



Innovative Accessibility

Shifting Manual Testing Left to Development Teams



Glenda Sims

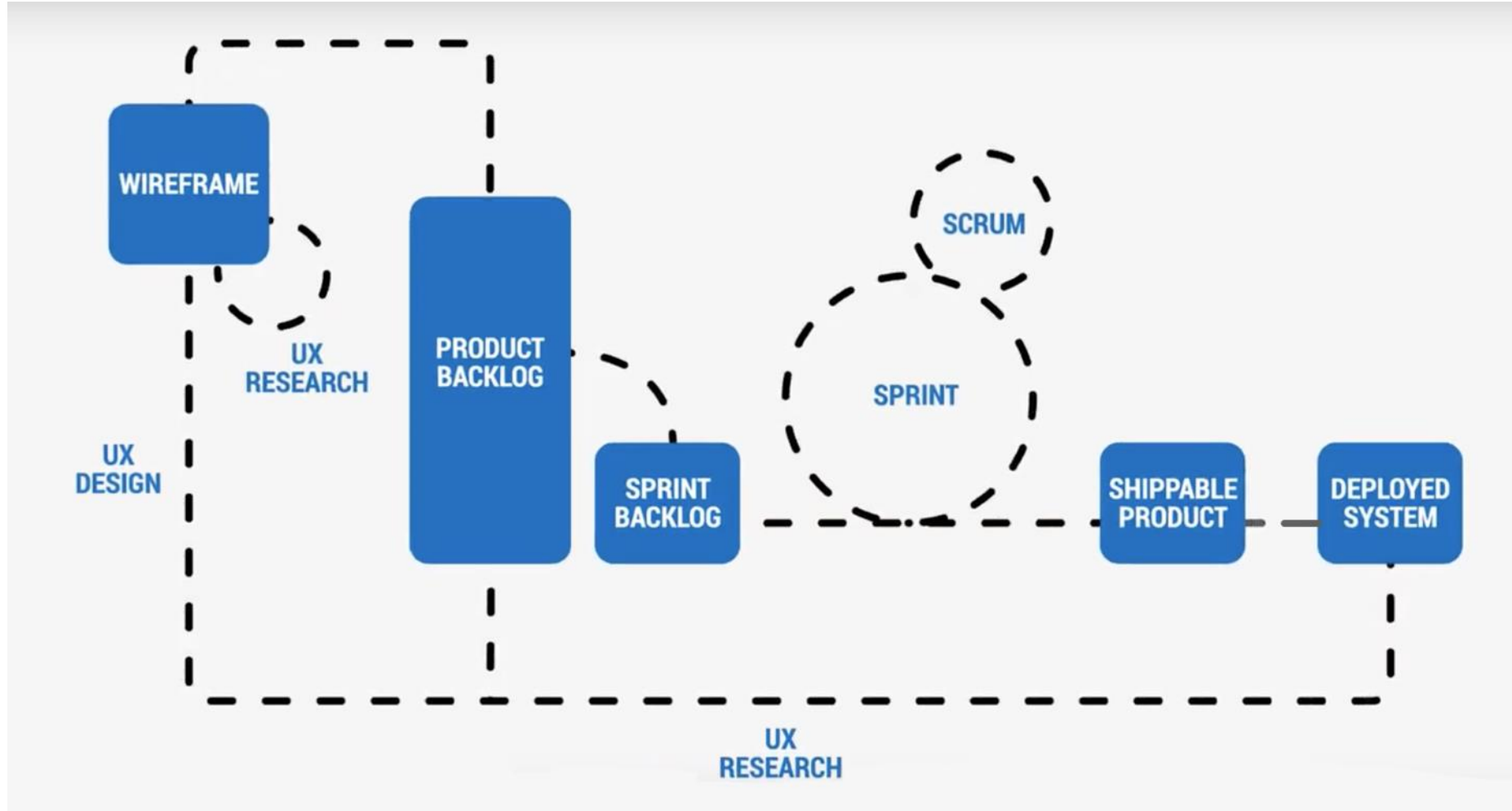
@goodwitch

deque.com

#a11y

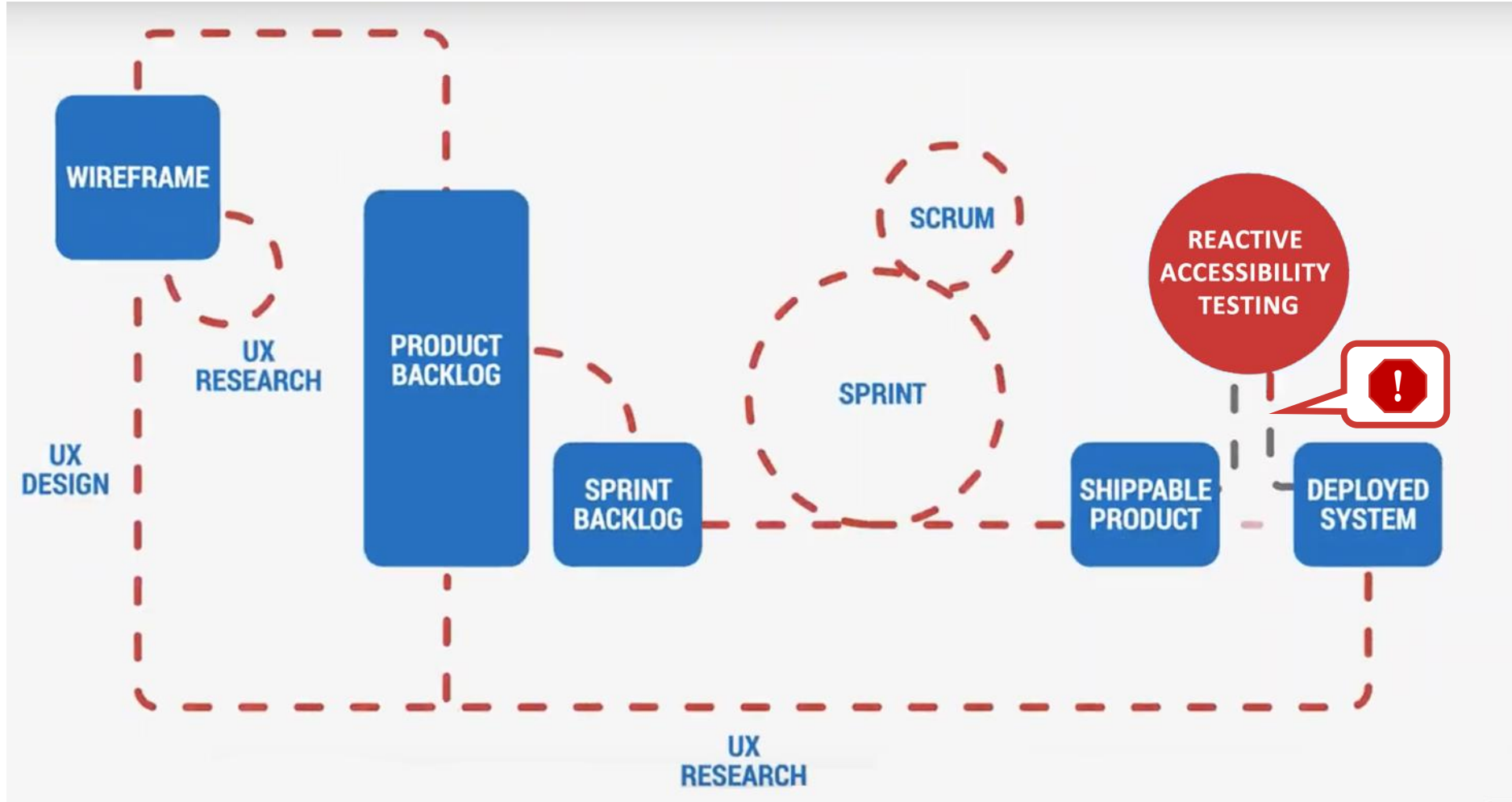


Where do **YOU** want to catch bugs in the SDLC?

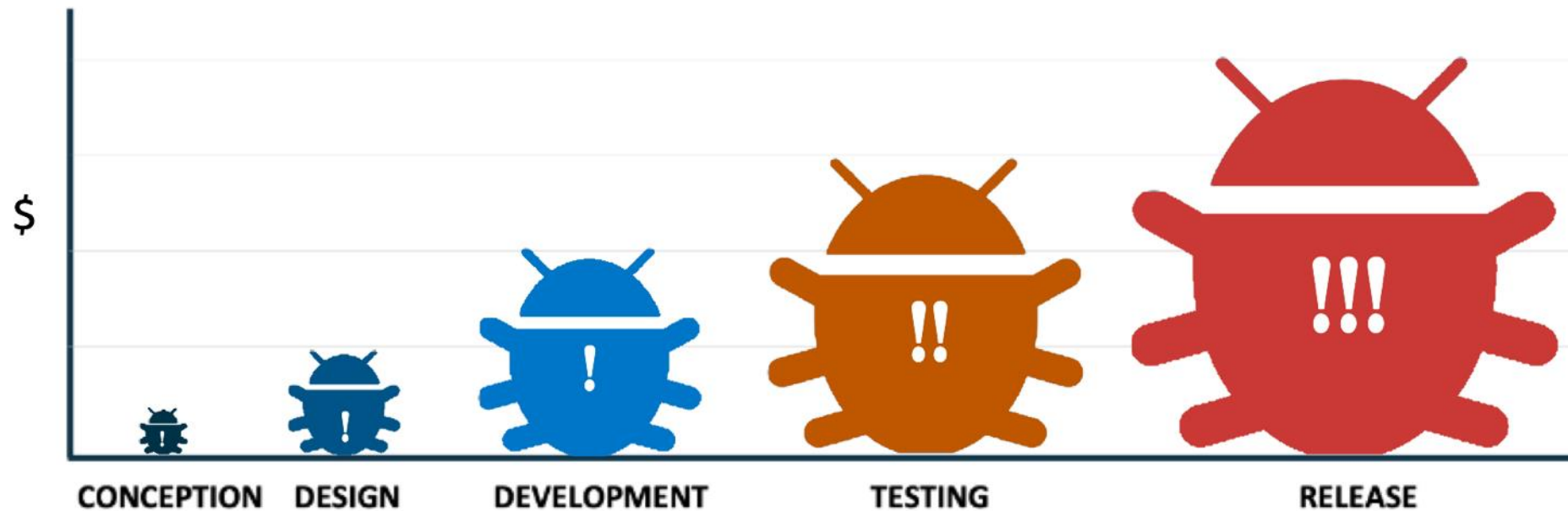


Reactive Accessibility Testing

= Surprise, Risk, Higher Cost

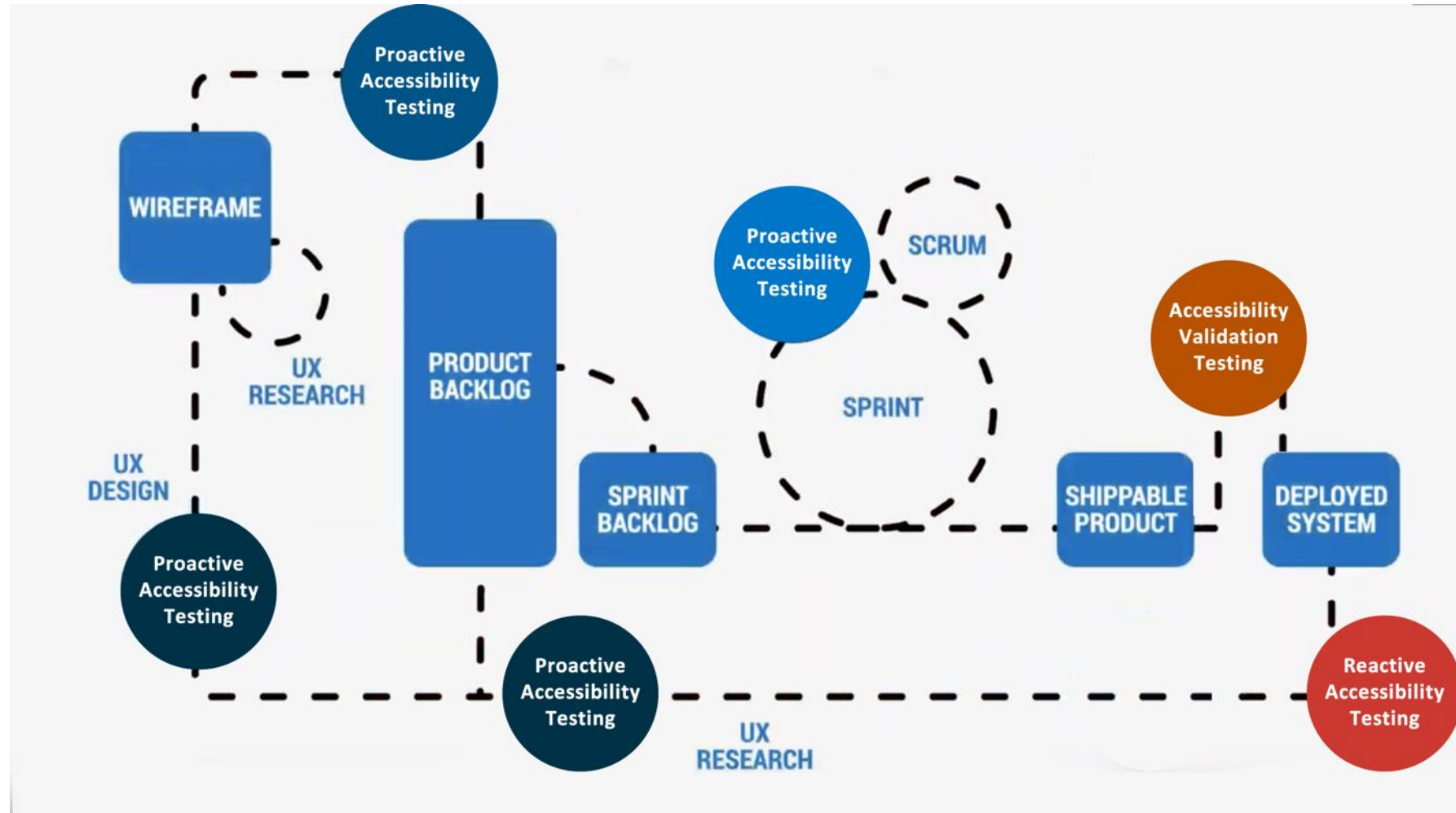


Cost of Accessibility Bugs



The longer it takes to discover an accessibility bug, the more it will cost your organization to fix it.

Efficiently Shift Accessibility Testing Left



An abstract graphic in the top half of the image features several thin, white, curved lines that sweep across the frame. Three white circles are positioned along these lines: one on the left, one in the upper-middle, and one on the right. The background is a solid dark blue.

Smart A11Y Testing for Web Devs



Efficient A11Y Testing for Devs

- Automated
- Smart Manual Testing



1. Rear Jack 2. Rear Tyre Off 3. Tyre Gunner 4. Rear Tyre On 5. Stabiliser 6. Front Tyre On
7. Tyre Gunner 8. Front Tyre Off/Stop Marker 9. Front Wing Adjuster 10. Backup Front Jack
11. Front Jack 12. Front Wing Adjuster 13. Front Tyre Off / Stop Marker 14. Tyre Gunner
15. Lollipop Man 16. Front Tyre On 17. Stabiliser 18. Rear Tyre Off 19. Tyre Gunner
20. Rear Tyre On 21. Driver






















An abstract graphic in the top half of the image features three white circles connected by thin white lines. The circles are positioned at approximately one-third, one-half, and three-quarters of the width. The lines are curved and flow across the top of the frame. The background is a solid dark blue.

Who owns a self-driving car?

Levels of Self-Driving Cars & A11Y for Web Devs

The 5 levels of driving automation

For on-road vehicles

		 Human driver	 Automated system		
		Steering and acceleration/deceleration	Monitoring of driving environment	Fallback when automation fails	Automated system is in control
Human driver monitors the road	0 NO AUTOMATION				N/A
	1 DRIVER ASSISTANCE				SOME DRIVING MODES
	2 PARTIAL AUTOMATION				SOME DRIVING MODES
Automated driving system monitors the road	3 CONDITIONAL AUTOMATION				SOME DRIVING MODES
	4 HIGH AUTOMATION				SOME DRIVING MODES
	5 FULL AUTOMATION				



- **0:** No A11Y Automation
- **1:** Dev Assistance
- **2:** Partial Automation
 - Auto A11Y
 - Integrate into every unit test
 - Default part of Formal Integration Testing
 - Dev Assistance
 - Run auto testing tool in browser
 - Perform targeted manual tests with best ROI



How do you stop 50% of a11y bugs
in Development?

Run axe. Fix all Violations. = 50% fewer WCAG Failures at QA!



axe 	
Violations found 0 ▼	Run again
<div> Congratulations!</div> <p>No accessibility violations found in the current state of the page. Now you should rerun axe on every state of the page (including expanding accordians, modals, sub-menus, error messaging and more). You should also perform manual testing using assistive technologies like NVDA, VoiceOver and JAWS.</p>	

commit to axe your a11y bugs

axe: quick free auto test in browser

- axe: The Accessibility Engine
 - easy to install and use
 - zero false positives
 - able to find up to 50% of your WCAG failures
 - Automated testing for 25% of types of issues
 - Proven to help you STOP more than 50% of your issues
 - explains how to fix the issues
 - browser extension flavors:
 - Chrome
 - Firefox



A11Y in Automation Integration Testing Framework

- Defect prevention
- Catch 50% or more of accessibility issues in Sprint
- Flavors:
 - Open Source: axe-core library on github
 - Professional Grade: Worldspace Attest
(built in integration support)



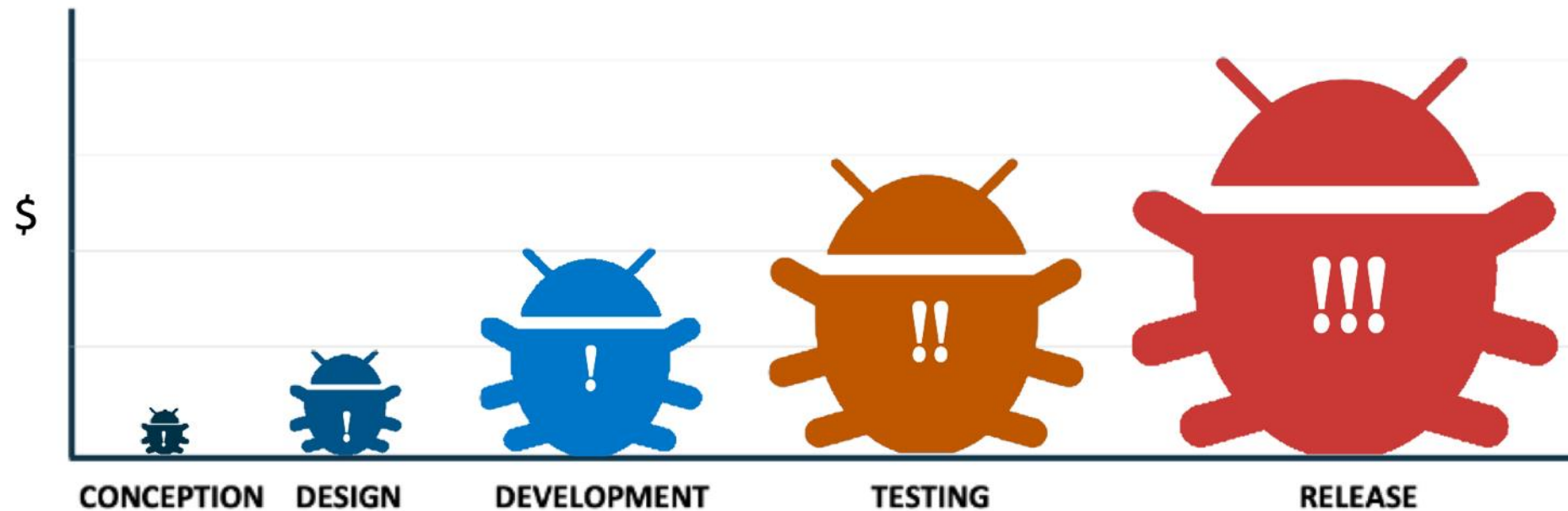
WorldSpace
Attest





Can I stop at just fixing axe bugs?

Cost of Accessibility Bugs



The longer it takes to discover an accessibility bug, the more it will cost your organization to fix it.



Keyboard Testing

Make Sure Everything Works using Keyboard Alone





Is the Tab Order Logical

Testing for Logical Tab Order

- Use Microsoft's Accessibility Insight extension for Chrome
- Open Ad Hoc Tools and turn on the Tab stops option.

The screenshot shows a Chrome browser window with the Deque University website open. The browser's address bar shows the URL <https://dequeuniversity.com>. The website's header includes the Deque University logo and navigation links: Online Courses, Instructor-Led Training, Resources, and User Guides. The main content area features the text "Be an accessibility expert" and a description: "Deque University offers training for every level of expertise and every area expertise in digital accessibility." Overlaid on the right side of the browser is the "Accessibility Insights for Web" extension interface. This interface has a title bar and a settings gear icon. It lists several categories with toggle switches: "Automated checks" (Off), "Landmarks" (Off), "Color" (Off), "Headings" (Off), and "Tab stops" (On). The "Tab stops" toggle is circled in red. Below the "Tab stops" toggle is a link that says "How to test tab stops". At the bottom of the extension interface is a link that says "Back to launch pad".

Deque University

Online Courses Instructor-Led Training Resources User Guides

Be an accessibility expert

Deque University offers training for every level of expertise and every area expertise in digital accessibility.

Accessibility Insights for Web

Automated checks ☐ Off
[List view and filtering](#) ⌘1

Landmarks ☐ Off
[How to test landmarks](#) ⌘2

Color ☐ Off
[How to test color](#)

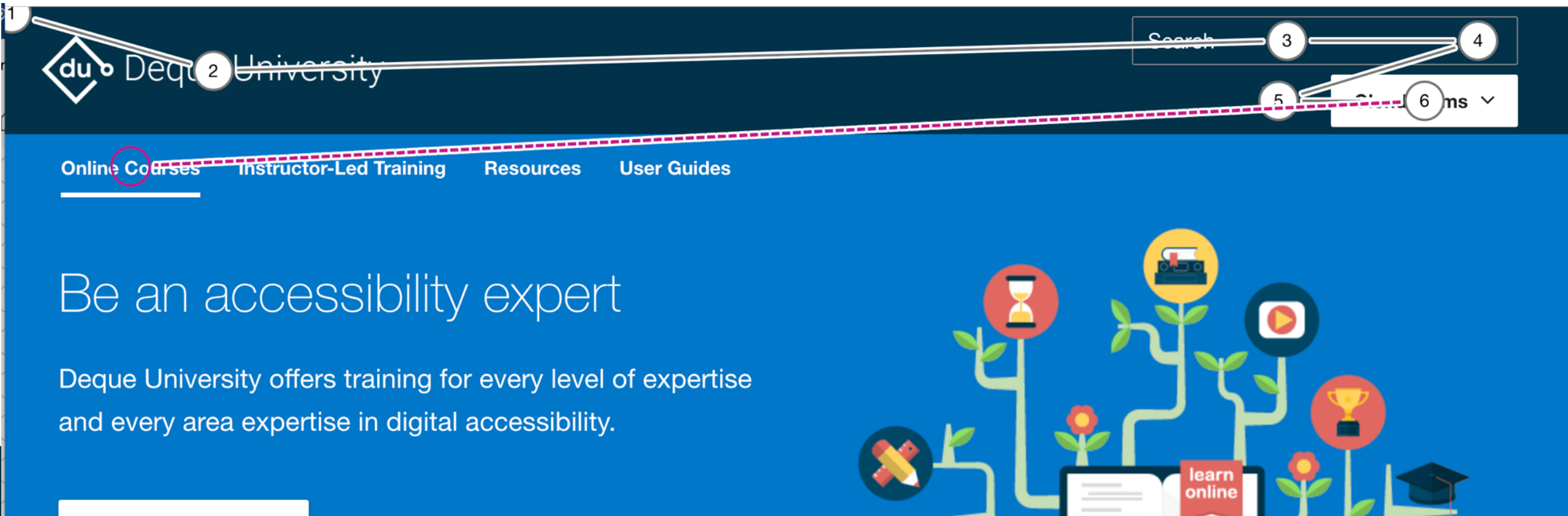
Headings ☐ Off
[How to test headings](#) ⌘3

Tab stops ☒ On
[How to test tab stops](#)

← Back to launch pad

Visualize Tab Stops

- Press tab to visualize the tab stops.
- No fair using your mouse. Just use tab on the keyboard.
- Is the tab order logical?







WorldSpace Attest HTML Extension

<h1>

Accessibility for Good

Meet your compliance goals and help make the web a better place.

[Learn More](#)
[Talk to an expert](#)

508

Select a Tool:

Experimental

Headings

Links

Lists

Images

Focus

Frames

Objects

Headings Tool

(CLEAR HIGHLIGHTS)

Heading Level and Accessible Text

1 Accessibility for Good

2 Latest News

3 Blog Post Moving Beyond axe to WorldSpace for the Enterprise

3 On-Demand Webinar The Accessibility Legal Landscape

3 Free Tool Calculate the Cost of False Positives

3 Podcast Fedscoop and Preety Kumar Discuss New Section 508 Rules

2 What you need to know about Accessibility

3 Design

3 Development

3 Compliance

2 Accessibility leadership you can trust

Meet one of our Awesome Tool Engineers

- **Combining Automated Testing Tools with Comprehensive Audits**
 - Friday at 1:20 PM
 - Matt Isner





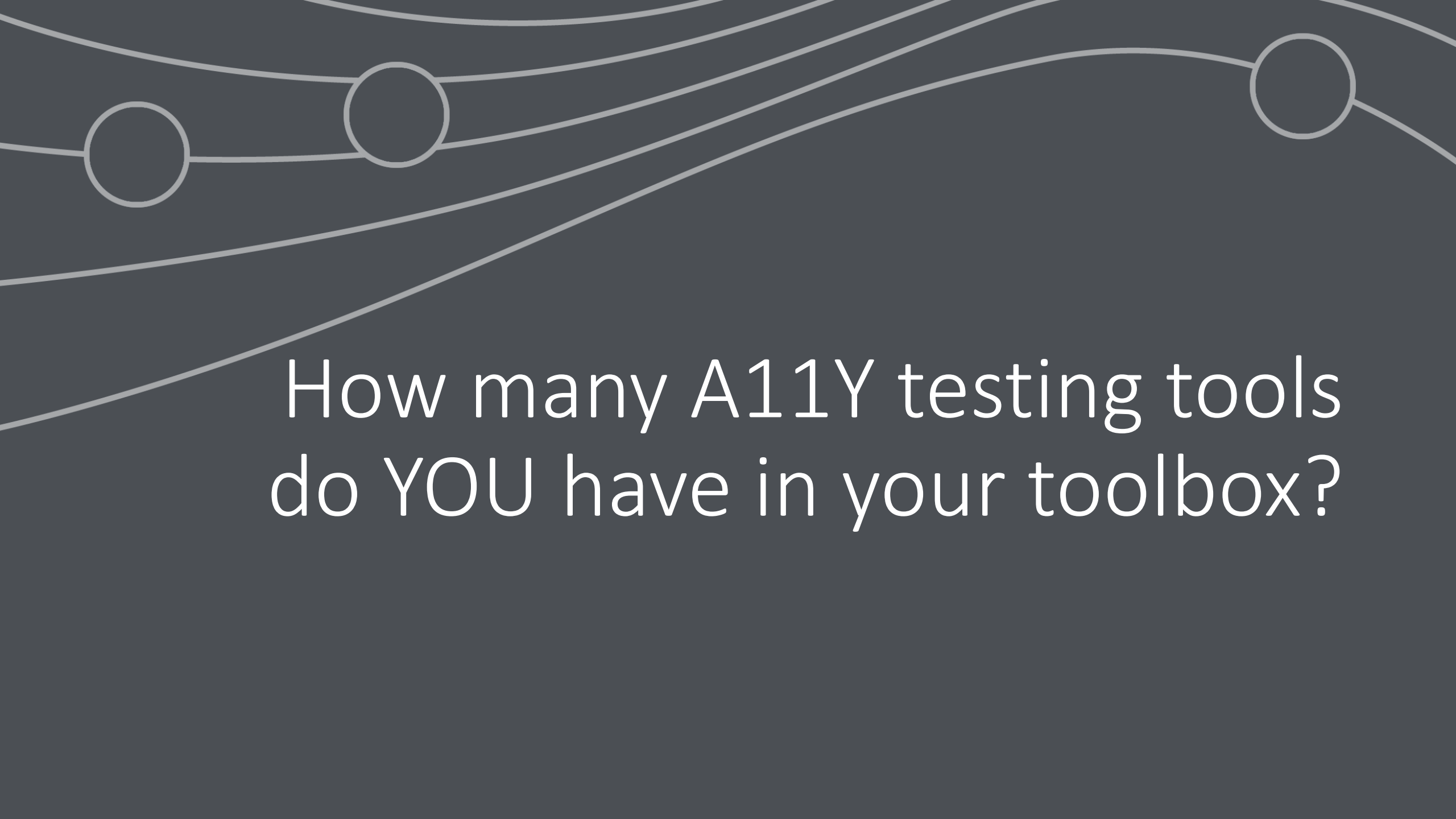
WorldSpace Assure

Guided Manual Testing with rocket boosters

WorldSpace Assure

- Integrated axe-core testing
- Guided manual testing
 - Detailed Methodology
 - Accurate for WCAG 2.0 and 2.1 Normative
- Issue Description Library
 - Vetted by Deque Experts
- Remediation Recommendation Library
 - Integrated with Deque University Content

The screenshot displays the WorldSpace Assure web application interface. The browser address bar shows the URL `assure.dequecloud.com`. The navigation bar includes links for Home, Admin Settings, Test Cases, Test Runs, and a Browser Connection status. The breadcrumb trail indicates the current location: Home > Test Runs > Test Run Overview: Mars Commuter > Checkpoint Tests: Home Page > 1.3.4.a Device Orientation. The main content area is titled '1.3.4.a Device Orientation' and includes a 'Page Info' button. On the left, a sidebar lists various checkpoints, with '1.3.4.a Device Orientation' selected. The main panel shows the 'Checkpoint Tests' section with buttons for 'Add Issue' and 'Flag for Review'. It also features a 'Required Senses' section with a 'Sight' icon, an 'Overview' section with a description of the checkpoint, a 'Testing Methodology' section with a 'Desktop Web' subsection, and a 'Mobile Web' subsection. The 'Desktop Web' section contains a list of steps for testing the checkpoint, including opening the web page on a mobile device, ensuring the device orientation is unlocked, and rotating the device to landscape orientation. The 'Mobile Web' section is currently empty.



How many A11Y testing tools
do YOU have in your toolbox?

A Few Commonly Used Free Tools

- axe html extension
- accessibility extensions with axe-core rules built in
 - Google Chrome Dev Tools / Lighthouse
 - Microsoft Accessibility Insight
 - ACE by Daisy
 - Pa11y
 - and more...
- independent tools
 - Andi - <https://www.ssa.gov/accessibility/andi/>
 - Functional Accessibility Evaluator – <https://fae.disability.illinois.edu/>
 - Wave - <https://wave.webaim.org/>
 - and more...
- javascript bookmarklets
 - Paul J. Adam's Bookmarklets - <http://pauljadam.com/bookmarklets/>
 - Faulkner's WCAG Parsing Only Bookmarklet - <https://s.codepen.io/stevef/debug/VRZdGJ>
 - and more...

Bookmarklets Beware

- Did you know, a bookmarklet can:
 - see everything on the page
 - read cookies and local storage
 - interact with the server the page came from
 - make cross-domain requests
- If your IT Security Team knew you had installed boo
 - They would be very likely to remove your admin privldges



An abstract graphic at the top of the slide features several thin, white, curved lines that sweep across the upper portion of the frame. Three white circles are positioned along these lines: one on the left, one in the center, and one on the right. The lines and circles are white, contrasting with the dark blue background.

How Will You Win the A11Y Race?



Commit to Shift Left

1. *Run axe extension. Fix all violations.*
2. *Use automated unit & integration testing*
3. *Targeted Manual Testing*
 - *Keyboard*
 - *Focus Order*

An abstract graphic in the top left corner of the slide. It features three white circles of equal size, each connected to a horizontal line segment. These segments are part of a larger network of thin, white, curved lines that sweep across the top of the slide. The background is a solid dark blue.

Want to Do More?



ACCESSIBILITY CHECKLIST

Your guide to basic web accessibility compliance...

ADA compliance in the 21st century means making sure your website and applications can be accessed and used by people with disabilities and the assistive technologies they use to navigate the web. For banks, that also means ensuring your online banking and other personal financial management applications are also accessible.

How do I know if my web content is accessible?

To ensure that your organization's site and applications are accessible, you'll want to perform automated and manual accessibility testing against web accessibility standards or regulations. The U.S. and international standard for accessibility is WCAG 2.0 AA compliance, and our checklist is based on that very standard.

★ **Pro Tip!** WCAG, a.k.a. the Web Content Accessibility Guidelines, are the technical guidelines created by the World Wide Web Consortium (W3C) for creating accessible web-based content. WCAG serves as the basis of accessibility regulations throughout the planet including the US, Canada, the UK, the EU, Australia, and Japan.

The 5 major categories of disabilities are...



Visual

Includes blind, low-vision, and color blind



Speech

Includes people who are not able to speak



Hearing

Includes deaf and hard of hearing



Cognitive

Includes dyslexia, ADD, and epilepsy



Motor

Includes people who are not able to use a mouse

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect."

-Tim Berners-Lee

Testing for Accessibility

The Deque Team developed this Accessibility Checklist to help your developers, designers, QA testers, and content creators get a head-start on 12 core accessibility requirements. These checks are a subset of WCAG 2.0 AA requirements that provide the most ROI in a very short time frame.

This Accessibility Checklist does not replace the need for a complete WCAG 2.0 review by an expert. It does however empower your team to begin testing for these accessibility requirements right away!

★ **Pro Tip!** A11y is an abbreviation for accessibility (which has 11 letters between "a" and "y") commonly used as shorthand for digital accessibility.



Before you get started...

Make sure you visit www.deque.com/axe to download the free axe browser extension to perform automated accessibility tests on your website. axe is easy to install and to run, and there's a short tutorial video on the [axe page](#) if you need any help.

TOP 12 ACCESSIBILITY CHECKS

Color



1. Is color alone used to convey important information?

- **How to check:** View the page in gray-scale. Can you still understand all the information and perform all page functions?
- **Primarily Benefits:** Colorblind
- **Requirement:** [WCAG 2.0 SC 1.4.1](#)

2. Is the color contrast of text readable by people with low-vision?

- **How to check:** axe should not detect any issues related to color contrast.
- **Primarily Benefits:** Low-Vision
- **Requirement:** [WCAG 2.0 SC 1.4.3](#)

Images



3. Do all images have alternative text?

- **How to check:** axe should not detect any issues related to missing alt text.
- **Primarily Benefits:** Blind
- **Requirement:** [WCAG 2.0 SC 1.1.1](#)



**Developers!
Start your
A11Y Engines!**

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