

NLM Accessibility Needs Assessment Project Report

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Abstract

Objective

The main goal of the needs assessment was to determine opportunities for improvement of existing accessibility resources, training, and services. The long-term objectives for this project include: consistent enforcement of accessibility requirements across multiple testers and units; novice testers solve the main issues quickly and build skills over time; more clarity around accessibility requirements for new authors; saved time for authors and accessibility testers; increased levels of accessibility across NLM products, alignment with DEIA and CX initiatives.

Methods

The project consisted of three stages: a survey, two focus groups, and prototype development of an interactive PDF accessibility checklist. The survey was conducted using Qualtrics, had 15 questions, and had 47 respondents at a 37% response rate. The focus groups had 5 participants each and were conducted over Zoom and MURAL. Recruitment took place over email through the OpenText TeamSite license-holder list and the Web and Information Management Unit's list of Library Operations product owners. The checklist prototype was developed in Microsoft Word using the HHS PDF accessibility compliance checklist as a starting point supplemented by additional research using W3C, WebAIM, Adobe, Tagged PDF, and Level Access websites.

Results

The survey and focus groups revealed that NLM and NIH trainings and colleagues were the most utilized sources of information about accessibility. There was relatively low awareness of the NLM accessibility compliance and testing wiki and HHS accessibility resources, however the survey respondents who had used the HHS accessibility checklists found them useful. The main barriers NLM staff reported around accessibility were: difficulty keeping up with changing requirements, not knowing what tools to use, not knowing who to ask for support, lack of clear governance, lack of high level statement and positive messaging, resistance or lack of awareness among colleagues, lack of specific guidance, and complexity of PDF accessibility. The main suggestions for improvements in accessibility support centered around: tools, guidance, trainings, guides, workflows, staff support, culture change, and peer or expert review.

Conclusion

The following recommendations are based on the results of the needs assessment:

1. Promote a culture change around prioritizing accessibility at NLM.
2. Develop NLM trainings around accessibility.
3. Increase awareness around existing NLM, NIH, and HHS accessibility resources.
4. Provide more clear guidance on which tools staff should use for specific accessibility testing and remediation tasks.
5. Develop additional guidance and resources around understanding and solving accessibility issues.
6. Clarify the governance around accessibility and make that information easy to find.
7. Designate contacts that staff can go to with questions on specific accessibility areas or to request trainings.

8. Revisit and investigate additional suggestions that survey and focus group participants shared after the highest priority issues are addressed.

Introduction

NLM sites host over 10,000 PDFs, many of which do not meet Section 508 accessibility standards. Many NLM staff producing PDF documents are not accessibility experts, and nearly all PDFs require additional work to make them accessible. The HHS accessibility testing checklists were written for expert accessibility testers, which likely presents a barrier to use by the majority of NLM staff who create or are responsible for PDF files posted to the web. While Dan suspected that a more detailed and interactive version of the checklist would be useful to NLM staff responsible for PDF accessibility, there has not been research into accessibility-related needs of NLM web contributors or product owners. Therefore this project began with a needs assessment to validate these assumptions and discover other opportunities for supporting NLM staff with their digital accessibility efforts.

The main goal of the needs assessment was to determine opportunities for improvement of existing accessibility resources, training, and services.

The long-term objectives for this project include:

- Consistent enforcement of accessibility requirements across multiple testers and units
- Novice testers solve the main issues quickly and build skills over time
- More clarity around accessibility requirements for new authors
- Saved time for authors and accessibility testers
- Increased levels of accessibility across NLM products, alignment with DEIA and CX initiatives

Methodology

This project consisted of three stages: a survey, two focus groups, and a prototype of an interactive PDF checklist.

Survey

The survey was developed using Qualtrics with the goal to answer the following research questions:

1. What are the current practices (tools, resources) around ensuring web accessibility at NLM?
2. What barriers do web contributors and product owners face in ensuring web accessibility of their products? What improvements can we make to reduce these barriers?
3. How useful are the HHS Excel-based accessibility compliance checklists? What would make them more useful?

A draft of the survey was pilot tested with seven NLM staff, suggested by Dan as people representing a variety of experiences around accessibility. The survey was modified based on their feedback. Additionally, Guanfeng Song was consulted on the design of the survey and focus groups. The final version of the survey was sent to 127 web contributors and product owners across NLM, combined from the OpenText TeamSite license-holder list and the Web and Information Management Unit's list of Library Operations product owners. 47 people responded to the survey, resulting in a 37% response rate. Due to restrictions on surveying contractors, the survey was sent only to federal staff and

contractors were excluded from taking the survey through an initial screening question. The full list of questions can be found in [Appendix A](#). Analysis and visualizations were conducted using Qualtrics.

Focus Groups

Focus group participants were recruited using the same email list as the survey. A total of 11 people expressed interest by filling out a short sign-up screening form, though one person who signed up was not able to attend. Approximately half of the people who filled out the sign-up form reported having experience using the HHS accessibility checklists, so the focus groups were split based on this question to allow for a deeper investigation of staff experiences with the checklists. Focus groups were conducted using Zoom and MURAL.

The focus groups were designed to answer the following research questions:

1. What resources and tools around accessibility do NLM staff find most helpful? What is helpful about them?
2. What are the biggest barriers NLM staff in ensuring the web accessibility of their products? What strategies would be helpful to address these barriers?
3. How are NLM staff using the HHS Excel-based accessibility compliance checklists? What are the pain points, limitations, and barriers of these checklists?

Each focus group consisted of two parts: 1. Discussion questions and 2. Brainstorming of possible improvements using a MURAL board. The focus group agenda can be found in [Appendix B](#).

Interactive PDF Accessibility Checklist

A prototype of an interactive PDF checklist ([Appendix E](#)) was created to address the barriers that survey and focus group participants reported around using the HHS accessibility checklists. PDF accessibility was chosen as an initial focus area because many focus group participants described testing and remediating PDFs as being particularly complex and cumbersome. This prototype lays the content and foundation for an interactive checklist that can be implemented in HTML. The checklist was created by using the [HHS PDF Accessibility Checklist](#) as a foundation, with the addition of instructions and notes around testing, solving, and understanding each issue as well as reformatting to prioritize the most common and impactful accessibility issues and allow users to easily select only those areas that are relevant to the document they are evaluating. A variety of additional sources, including the W3C, WebAIM, Adobe, Tagged PDF, and Level Access were consulted and referenced in the creation of the checklist.

Results

Survey

Participants

A total of 47 people responded to the survey, out of 127 who were emailed. We did not collect demographic or division data to ensure anonymity, given the small size of the population surveyed. Approximately half of respondents were product team members/web contributors, followed closely by product owners-managers. Several participants filled in “other” responses for role, including

“researcher”, “project or team lead”, “Section 508 coordinator”, “writer/editor”, “librarian”, “product consultant”, “unit head”. Only two participants selected “software engineer/front-end designer”. (Figure 1).

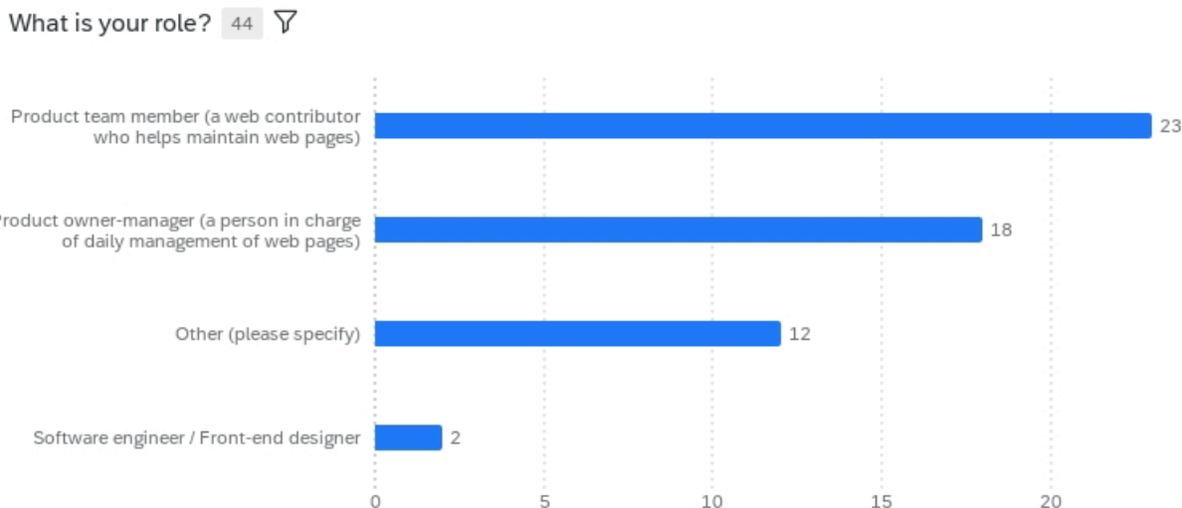


Figure 1 - What is your role?

Approximately half of respondents reported testing/analyzing content for accessibility as part of their jobs. Making recommendations for accessibility fixes was also a commonly performed job function. Training or assisting staff, evaluating staff accessibility efforts, and developing guidelines and standards were moderately common. Few respondents reported on accessibility-related accomplishments or created accessibility management plans. “Other” write-in responses included: “conducting technical evaluations”, “representing NLM at NIH accessibility meetings”, “creating accessible web pages”, and acquisitions related tasks. (Figure 2)

Q3 - What accessibility-related function(s) do you perform as part of your job?... 43

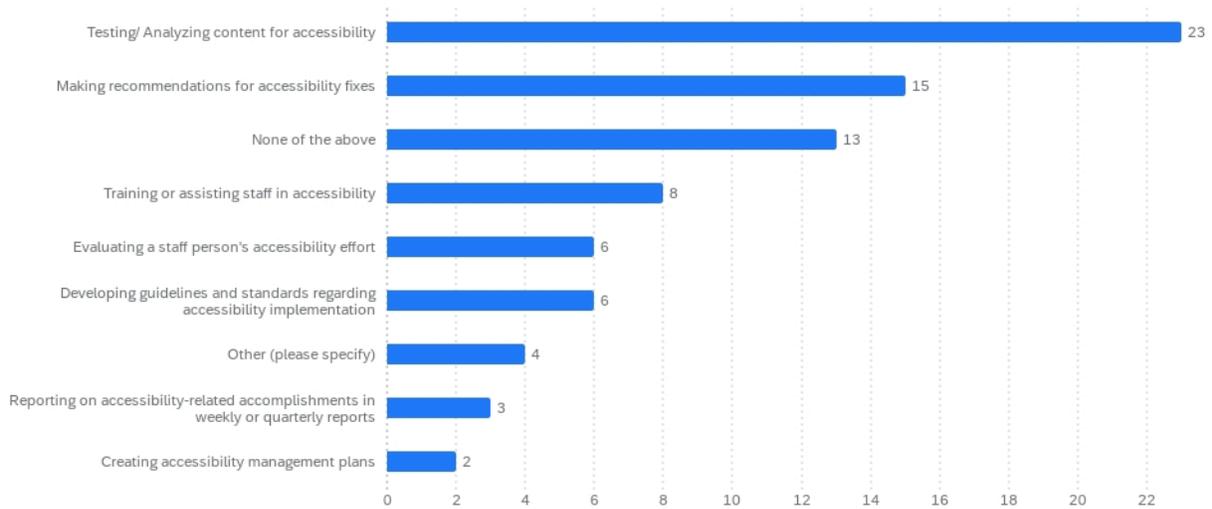


Figure 2 - What accessibility-related function(s) do you perform as part of your job?

Current Accessibility Practices

Among the respondents who reported testing or analyzing content for accessibility, the majority reported analyzing HTML content, followed by PDF files. “Other” write-in responses included: social media, online meetings, digital content and applications, databases, and legacy computer content (Figure 3). Microsoft Office Accessibility Checker and WAVE were the most commonly used tools, followed by Adobe Acrobat Pro. “Other” write-in responses included: JAWS, Narrator, “manual examination”, and “other downloads and offline services” (Figure 4). Respondents reported a range of PDF output from their product team from none to 50-99 in the last three years, with 10-19 being most common (Figure 5). For those from teams that have posted at least one PDF in the last three years, the majority reported the PDFs being created from Microsoft Word, with print to PDF and Microsoft PowerPoint also being fairly common but inDesign and other methods being rare. Many respondents reported that they didn’t know how the PDFs were created. “Other” write-in responses included: Adobe Acrobat Pro and NLM collection material (Figure 6)

What kind of content do you test/ analyze for accessibility as part of your... ▾

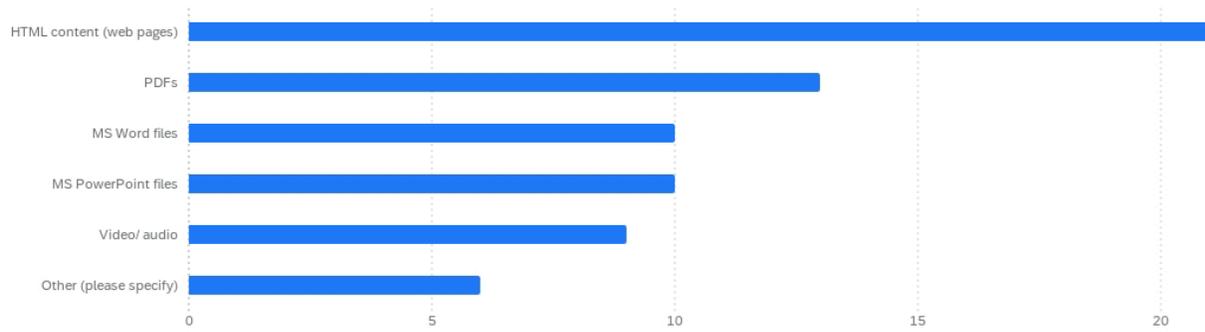


Figure 3 - What kind of content do you test/analyze for accessibility as part of your job?

What tool(s) do you use for testing, analyzing, and/or remediating documents and websites? ▾

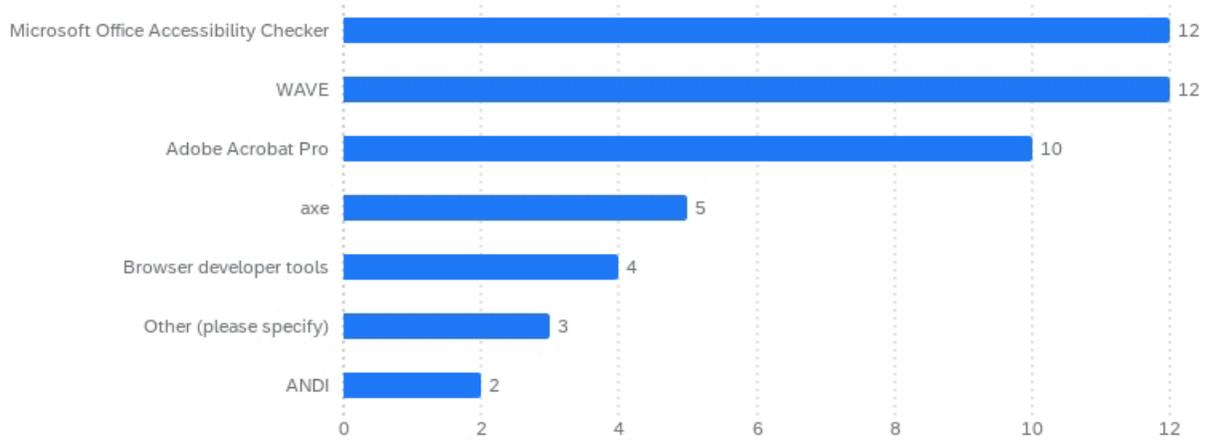


Figure 4 - What tool(s) do you use for testing, analyzing, and/or remediating documents and websites?

Approximately how many PDFs has your product team posted for customer use in the last 3 years? ▾

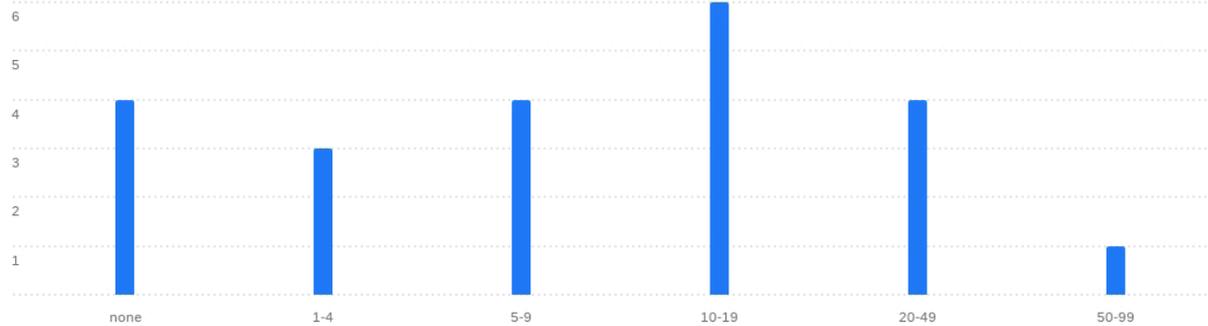


Figure 5 - Approximately how many PDFs has your product team posted for customer use in the last 3 years?

What method(s) does your product team use to create PDFs? ▾

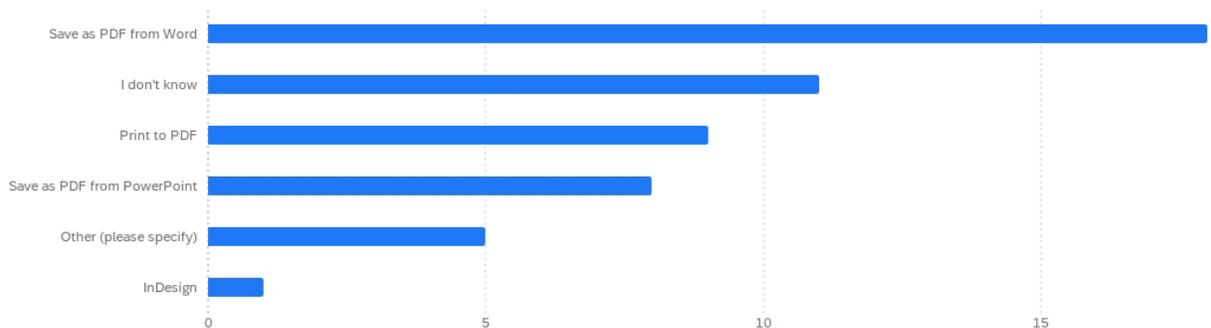


Figure 6 - What method(s) does your product team use to create PDFs?

The most frequent source of information about accessibility was NIH or NLM training, followed closely by working with a colleague. Other government and online resources were less common but still fairly popular, such as Section508.gov, web-browser tools, HHS accessibility resources, the NLM Accessibility Testing and Compliance wiki, and the W3C/WAI. Digital.gov, WebAIM, Deque, and LinkedInLearning were not commonly used. “Other” write-in responses included: “a different federal agency”, “sponsored classes with Adobe and others”. (Figure 7). These responses indicate that NIH and NLM training is one of the most effective methods for reaching NLM staff interested and engaged in accessibility work, so an expansion of NIH/ NLM training efforts would likely have a large impact on accessibility awareness. Fostering networks of collaboration around accessibility can also effectively reach and support staff in learning about and implementing accessibility. Only 34% of participants who answered this question reported using the NLM Accessibility wiki and only 37% reported using HHS accessibility resources to learn about accessibility, which suggests a low awareness of these resources among NLM web contributors and product owners.

How have you learned about accessibility in the past?

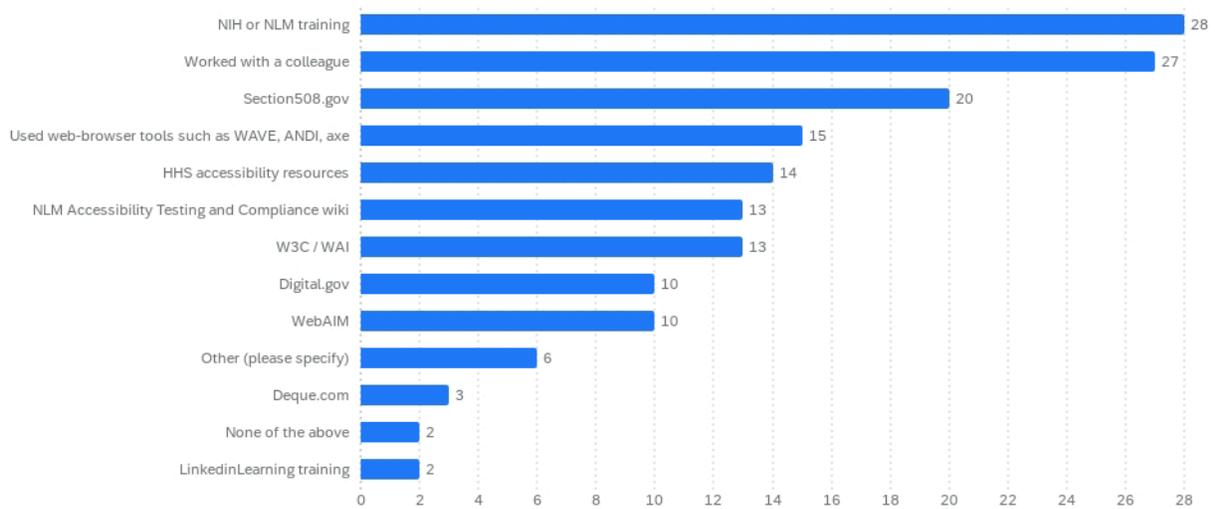
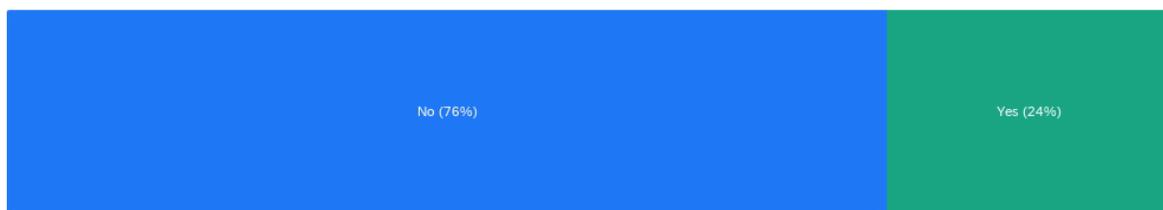


Figure 7 - How have you learned about accessibility in the past?

HHS Checklists

Only 24% of survey respondents reported having used the HHS accessibility compliance checklists (Figure 8). However, among those who had used the checklists, 89% found them to be very useful and the remaining 11% found them to be moderately useful. (Figure 9). This data backs up the lack of awareness of HHS accessibility resources found in Figure 7 and suggests that expanding awareness of these resources could be useful for other staff in their accessibility work.

Have you used one or more of HHS's Excel-based accessibility compliance checklists?



No Yes

Figure 8 - Have you used one or more of HHS's Excel-based accessibility compliance checklists?

How useful were the HHS Excel-based accessibility compliance checklists? 

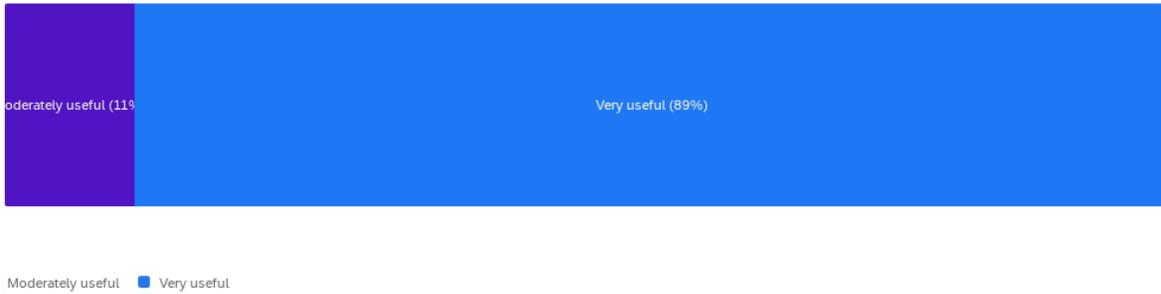


Figure 9 - How useful were the HHS Excel-based accessibility compliance checklists?

Words such as “simplify”, “clarify”, “applied”, “easy”, “guidelines”, and “workflow” were commonly used in open-ended responses to “What is useful about these HHS checklists?” (Figure 10). In open-ended responses to “What is NOT useful about these HHS checklists?”, respondents frequently used words such as “link”, “irrelevant”, “cumbersome”, “overwhelming”, “difficult”, “complicated”, and “skip” (Figure 11). These wordclouds suggest that the checklists were valued as a relatively simple way to apply accessibility guidelines in a consistent workflow, but respondents faced challenges around the layout and structure of the Excel-based checklists being cumbersome and presenting a lot of complicated and irrelevant information. This is backed up in a more in-depth analysis of these responses. Several participants valued the thorough list of requirements that the checklists present, with one stating that “They give me a sense of security that I’m not forgetting anything.” However, several respondents also mentioned barriers around lack of information on how to solve accessibility issues, difficulty sifting through irrelevant information, and lack of links to the WCAG criteria for more detailed information about the issues ([Appendix C](#)).



Text Source: Q6 - What is useful about these HHS checklists? (If you wish to comment)



Figure 10 - What is useful about these HHS checklists?

Q9 - What barriers do you face in improving the accessibility of your products?... 36

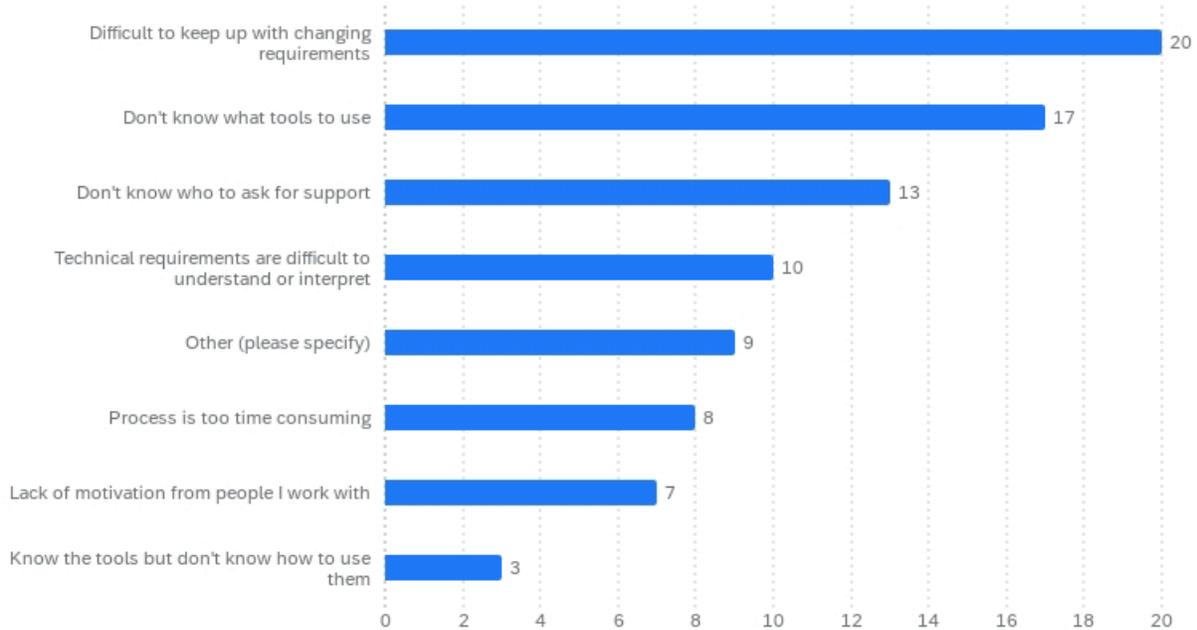


Figure 12 - What barriers do you face in improving the accessibility of your products?

Support

In addition to general terms like “accessible”, “web”, and “compliance”, terms like “tool”, “checklist”, “workflow”, “template”, “training”, “guidance”, “simple”, and “clear” were among the most commonly occurring in the open-ended free text responses to the question “What accessibility skills, procedures, or other help would make your future accessibility work easier?” (Figure 13).

Q11 - What accessibility skills, procedures, or other help would make your future...



Figure 13 - What accessibility skills, procedures, or other help would make your future accessibility work easier?

This focus on technical support and guidance was backed up in a more in-depth analysis of these responses. Six respondents mentioned tools, including web scanning/monthly reports, enterprise-wide access to tools, a site license for JAWS, guidance on which tools to use, and a database listing potential tool options. Five respondents mentioned more clear guidance on issues such as requirements, tools, and solutions, with an emphasis that the guidance should be concrete and specific. For example, one respondent wrote that it would be helpful to have “Someone we can ask for help that won't refer us to a

web page that we've already seen and can't interpret or apply with confidence." Trainings, guides, workflows, and staff support were each mentioned four times. With trainings, respondents shared that the trainings would be most helpful if they were regularly scheduled, with one respondent writing that "There is SO MUCH out there on accessibility and it would be good to schedule a 'time out' from regular work to catch up." Workflow integration was a common theme, with one respondent writing that "Accessibility should be built into the process flow for adding or editing content to a webpage. Instead, it's often treated as an afterthought" and another pointing out that this retrofitting approach to accessibility ends up costing more as contractors later need to be hired to test for and fix accessibility issues that could have been avoided. Requested staff support included an "identified in-house specialist", "Friendly identified authority and governance individual", and a "Centralized place at NIH that performs this work for all ICs." Other less commonly mentioned suggestions included information on NLM specific resources and products, templates, reminders, reports, culture change, feedback from disabled users, and examples of accessible documents and websites.

Focus Groups

Participants

The first focus group included participants from the Office of Engagement and Training, Office of Communications & Public Liason, Public Services Division, and Lister Hill. Four out of five participants described their level of experience with digital accessibility as "beginner" and one as "advanced". "Testing/Analyzing content for accessibility" was the most frequently reported job function, followed by "Making recommendations for accessibility fixes" and "Training and assisting staff in accessibility."

The second focus group included participants from the Technical Services Division, the Office of Engagement and Training, History of Medicine Division, the History of Medicine Division, and Lister Hill. Two out of five participants described their level of experience as "beginner" and three as "intermediate." "Testing/Analyzing content for accessibility" was the most frequently reported job function, followed by "Making recommendations for accessibility fixes."

Current Practices

Participants mentioned learning about accessibility from a presentation by the US Access Board, OET accessibility workshop webinar series, Drupal GovCon, CIDI series, Section508.gov, Digital.gov, Usability.gov, W3C, WebAIM, HHS checklists, tools built into software (e.g. Microsoft and Adobe accessibility checkers), browser tools such as ANDI and axe, and colleagues. Some participants also consulted various online sources, which were described as being "hit or miss". One participant shared, "If there's anything in-house, haven't discovered it," supporting the survey finding that there is low awareness of NLM, NIH, and HHS accessibility resources.

HHS Accessibility Checklists

Participants in the second group, all of whom reported having experience with the HHS accessibility checklists in the screening survey, were asked what they found helpful and not helpful about the checklists. The most helpful things about the checklists included their comprehensiveness, being tied closely to the Section 508 law, and the report format that makes it easy to share findings. One participant found the comprehensiveness comforting, since they know that if they go through the

checklist they will catch any possible Section 508 violation. Another appreciated the reminders of areas of accessibility that they tend to neglect such as sensory characteristics and said that they primarily use the checklists when evaluating a new format they hadn't worked with recently. The checklists were also described as being useful tools to explain the accessibility issues and justify the effort to fix them when speaking with content creators or supervisors. The main frustrations with the checklists revolved around lack of guidance on solutions and better understanding the issues. One participant said that they prefer to use tools that can guide them built into the software they're already using and found it difficult to understand the checklists without assistance.

Communication

When asked how participants would want to hear about a new accessibility resource that becomes available, the wiki and emails from the web contributors listserv were the most popular responses. However, one participant mentioned that they are not subscribed to the wiki page so they may not see changes, and another participant mentioned that emails may get lost in a crowded inbox. Word of mouth from colleagues was also mentioned as a potential source. These responses suggest that a multi-pronged communication strategy relying on emails, wiki updates, and word of mouth would be most effective.

Challenges

The main challenges participants identified included: lack of clear governance, lack of high level statement and positive messaging, resistance or lack of awareness among colleagues, lack of specific guidance, and complexity of PDF accessibility. Several participants brought up concerns around navigating bureaucracy, such as not knowing the proper channels for filtering feedback on accessibility issues, who is responsible for making decisions around accessibility, and especially around how much authority staff have when working with inherited content they didn't create, relying on third-party developers or platforms, and facilitating events with external presenters who may not be informed about accessibility. Similarly, one participant brought up that they didn't know whose job it was at NLM to conduct trainings and whether that is something they could request for their program or division.

Cultural and social issues were also discussed at length in the focus groups. Some participants discussed the desire for a more high-level statement of commitment to accessibility rather than content that exclusively focuses on technical details and checklists, as well as a more joyful and affirmative approach to discussing accessibility. Relatedly, several participants mentioned lack of awareness or commitment to accessibility among colleagues as a major barrier – while many people at NLM know about Section 508, there is not a lot of awareness on how to actually achieve Section 508 compliance and accessibility is often not seen as a priority. Some staff had encountered considerable reluctance to improve accessibility and misconceptions that accessibility is too complicated, requiring them to spend time justifying the efforts rather than actually working on improving accessibility.

On the technical side, lack of specific guidance, especially around audio descriptions and captions, was identified as a major barrier. A lot of details on accessibility implementation are left up to individual contributors, who do not always feel equipped to make those judgment calls on their own. Lack of guidance on which specific tools to use also presented challenges, as did lack of assistance with

interpreting issues identified by tools such as SEO spiders. Several participants described PDF files in particular as being very complex and difficult to work with, as there is not a lot of guidance on the accessibility of complex PDFs, software such as Adobe is cumbersome to use, and PDFs are often used when the content would be better presented as HTML on a web page.

Support

Focus group participants were asked to brainstorm potential improvements to accessibility at NLM on a MURAL board and vote for their favorite three. The top four suggestions for improved accessibility support, which received at least three votes, included:

1. A peer or expert review process for accessibility evaluations
2. A high-level positive statement about accessibility
3. Change NLM culture so accessibility is a priority
4. A staff person appointed for each kind of accessibility format/ area (e.g. video, social media)

Other suggestions that received at least one vote included: IDEA council focus on staff accessibility needs, an NLM 508 working group or community of practice (COP), designated person authorized to sign off on products, small team or designated contact to go to with questions, incorporating accessibility into more discussions, accessible page templates, defining page owners across the website so it's easy to find the right point of contact, more consistent guidance for captioning and audio description, better and more positive promotion of accessibility, and gold standard examples. There were over 50 other suggestions that did not receive votes – these are presented in [Appendix D](#).

Discussion

Survey respondents focused more on technical support whereas focus groups participants prioritized culture change. This divergence may be due to differences between participants and/or the questions and structure of the survey vs the focus groups. The survey was primarily close-ended with only a small number of open-ended questions and most of the questions were focused on technical accessibility methods and experiences, whereas the focus group allowed the participants to talk in more depth about their experiences and challenges and connect with other participants, which may have predisposed focus group participants to take a broader and more socially oriented perspective.

Many of the results, particularly around technical challenges and experiences with the HHS accessibility checklists, confirmed our assumptions about the kind of technical resources that would be helpful in promoting accessibility of NLM web products. A relatively low awareness of NLM and HHS resources such as the NLM accessibility wiki and the HHS accessibility compliance checklists was surprising and point to a need to promote existing resources in addition to developing new ones. The popularity of NLM and NIH trainings and conversations with colleagues was also surprising, especially given a relatively low number of such trainings in recent years and lack of formalized community of practice around accessibility at NLM. These results suggest that expansion of training and accessibility community efforts at NLM would have a major impact on awareness and capacity around digital accessibility among NLM staff.

Our approach to this needs assessment has several limitations. Although the response rate to the survey was fairly high, the sample sizes for the survey and especially for the focus groups were still relatively small. In addition, people who were most committed and interested in accessibility were more likely to respond to the survey and/or sign up for the focus groups, potentially resulting in a non-response bias. These results thus may not be fully representative of the experiences and needs of all NLM staff who do work around digital accessibility. However, they represent the perspectives of the staff who are most likely to use new resources, attend trainings, or take part in initiatives, so the results are still useful when deciding which approaches to prioritize. In the future, a mandatory survey or a survey that includes accessibility as part of a broader set of questions may yield more information about the needs, experiences, and perspectives of staff who may be less knowledgeable or interested in accessibility topics. Social desirability bias may also have impacted the study results. The survey was fully anonymous and avoided asking participants to rate their expertise or level of familiarity with accessibility to counteract this potential bias. The results from the focus groups have also been anonymized, but the risk of social desirability bias is greater since some of the participants knew each other and had worked together.

Recommendations

1. Promote a culture change around prioritizing accessibility at NLM. This can include:
 - A high-level and positive statement about NLM's commitment to accessibility that is easy to find on the NLM wiki and/or website.
 - Integration of accessibility into the work of existing Diversity, Equity, and Inclusion efforts such as the IDEA council.
 - Creation of a working group or community of practice to allow NLM staff working on accessibility to connect with one another. A Microsoft Teams forum could serve as a first step.
2. Develop NLM trainings around accessibility, as many NLM staff rely on NLM/ NIH trainings as their main source of information around accessibility.
3. Increase awareness around existing NLM, NIH, and HHS accessibility resources, including the NLM Accessibility wiki and the HHS checklists. Emails about new and existing resources and greater visibility for the wiki by linking with the NLM At Work wiki could be effective strategies.
4. Provide more clear guidance on which tools staff should use for specific accessibility testing and remediation tasks. Enterprise-wide standardized tools and regular accessibility scanning would be particularly valuable.
5. Develop additional guidance and resources around understanding and solving accessibility issues. The interactive PDF checklist ([Appendix E](#)) can be used as a model for additional resources around other formats such as HTML, audio, and video. The checklist needs to be converted into HTML and should be user tested with a few volunteers to ensure that it is understandable and effective. Other resources such as templates and gold standard examples would also be useful.
6. Clarify the governance around accessibility and make that information easy to find – who is responsible for making decisions and ensuring accessibility in each unit or area?
7. Designate contacts that staff can go to with questions on specific accessibility areas or to request trainings.

8. Revisit and investigate additional suggestions that survey and focus group participants shared after the highest priority issues are addressed.

Appendices

Appendix A: Survey Questions

Thank you for your willingness to provide feedback about your experience supporting web accessibility at NLM. Your responses will be valuable in helping the Public Services Division understand practices and barriers to web accessibility implementation at NLM in order to improve our trainings, resources, and services.

You are eligible to participate in this survey if you are a federal NLM employee and web accessibility is part of your work. Your participation is voluntary and you may leave the survey at any time. The survey should take no more than 10 minutes to complete.

Your responses to this survey are anonymous and no personally identifiable information (PII) will be collected (unless you enter PII into open-ended response questions). All data and results that are reported or shared will be anonymous and cannot be connected to you.

If you have any questions about this survey, please contact Luke Kudryashov (luke.kudryashov@nih.gov).

1. Are you a...

Federal employee

Contractor

2. What is your role? (Select all that apply)

Product owner-manager (a person in charge of daily management of web pages)

Product team member (a web contributor who helps maintain web pages)

Software engineer / Front-end designer

Other (please specify)

3. What accessibility-related function(s) do you perform as part of your job? (Select all that apply)

- Testing/ Analyzing content for accessibility
- Making recommendations for accessibility fixes
- Creating accessibility management plans
- Developing guidelines and standards regarding accessibility implementation
- Evaluating a staff person's accessibility effort
- Reporting on accessibility-related accomplishments in weekly or quarterly reports
- Training or assisting staff in accessibility
- None of the above

Other (please specify)

4. What kind of content do you test/analyze for accessibility as part of your job?

- HTML content (web pages)
- MS Word files
- MS PowerPoint files
- PDFs
- Video/ audio

Other (please specify)

5. Have you used one or more of [HHS's Excel-based accessibility compliance checklists \(link opens in a new window\)](#)?

Yes

No

6. How useful were the [HHS Excel-based accessibility compliance checklists \(link opens in a new window\)](#)?

Not at all useful

Slightly useful

Moderately useful

Very useful

Extremely useful

7. What is useful about these HHS checklists? (If you wish to comment)

8. What is NOT useful about these HHS checklists? (If you wish to comment)

9. How have you learned about accessibility in the past? (Select all that apply)

- HHS accessibility resources
- NLM Accessibility Testing and Compliance wiki
- NIH or NLM training
- LinkedIn Learning training
- Section508.gov
- Digital.gov
- W3C / WAI
- WebAIM
- Deque.com
- Used web-browser tools such as WAVE, ANDI, axe
- Worked with a colleague
- None of the above

Other (please specify)

10. What barriers do you face in improving the accessibility of your products? (Select all that apply)

Process is too time consuming

Don't know what tools to use

Know the tools but don't know how to use them

Technical requirements are difficult to understand or interpret

Difficult to keep up with changing requirements

Don't know who to ask for support

Lack of motivation from people I work with

Other (please specify)

11. What accessibility skills, procedures, or other help would make your future accessibility work easier?

12. Approximately how many PDFs has your product team posted for customer use in the past 3 years?

none

1-4

5-9

10-19

20-49

50-99

100 or more

I don't know

13. What method(s) does your product team use to create PDFs? (Select all that apply)

- Save as PDF from Word
- Save as PDF from PowerPoint
- Print to PDF
- InDesign
- Automated with a programming language
- Other (please specify) _____

I don't know

14. What tool(s) do you use for testing, analyzing, and/or remediating documents or web content for accessibility? (Select all that apply)

- Microsoft Office Accessibility Checker
- Adobe Acrobat Pro
- WAVE
- axe
- ANDI
- Browser developer tools

Other (please specify)

15. Is there anything else you would like to share about your work with accessibility at NLM?

Appendix B: Focus Group Agenda

Part 1. Discussion

1. **Introductions:** please share your name, pronouns if you would like, your division, what kind of accessibility related work you do, and why you were interested in participating in the focus group.

2. What **tools, resources, trainings**, etc. have you used to learn about accessibility? What has been most helpful and why?
3. What **challenges** do you face in your accessibility work?
4. What kind of **support** would help you be more effective and/or efficient with the accessibility work that you do?
or:
In the future, a new resource is posted to section508.gov. How would you like to hear about this new resource? (How would you like accessibility information to flow to you?)

Part 2. Exercise: Block out an information resource package

1. **Brainstorm** ideas that would help NLM staff, regarding accessibility supports and resources.
2. **Discussion and ratings** (each participant gets 3 votes).

Appendix C: Survey Free Text Summaries

Suggestions from Survey

From responses to “What accessibility skills, procedures, or other help would make your future accessibility work easier?” and “Is there anything else you would like to share about your work with accessibility at NLM?”

Suggestion	Count	Comments
Tools	6	"I would like a replacement tool since Accenture/Deque tool isn't available. I had appreciate the monthly reports we used to receive.", "Clear guidance on requirements and which tools to use.", "an online resource/database that lists each tool, what it does, and how to link to the tool, perhaps any training available for that tool.", "Several potentially useful products have been suggested, but not purchased... money better spent elsewhere. Policy is not actively campaigned, or supported financially. While there was some clear thresholds once at the HHS level, these were abandoned with a failed replacement of the Accenture web scanning solution, and were not addressed further during the Trump administration. Current HHS guidance is not firm, and action, such as hosting a scanning solution, is not fully supported centrally.", "Enterprise wide access to tools/resources/support for accessibility compliance", "If a site license for JAWS could be worked out, my whole team could use that instead of Windows Narrator, which is not as good."
Guidance	5	"Clear guidance on requirements and which tools to use. Someone we can ask for help that won't refer us to a web page that we've

Suggestion	Count	Comments
		<p>already seen and can't interpret or apply with confidence.", "Friendly identified authority and governance individual familiar with my products who monitors changing requirements, identifies actions needed, and demonstrates new testing and corrections.", "Concrete guidance and solutions/exemplars. Guidance is often general and not specific.", "Policy is not actively campaigned, or supported financially. While there was some clear thresholds once at the HHS level, these were abandoned with a failed replacement of the Accenture web scanning solution, and were not addressed further during the Trump administration. Current HHS guidance is not firm, and action, such as hosting a scanning solution, is not fully supported centrally.", "It would make it easier to focus on what needs to be reviewed/changed if we all had a common HHS defined checklist. In years past, we used an Accenture checklist which was nice since it compared web pages against a defined/approved set of criteria and helped us work towards a common goal. Having this checklist helped to remove some of the uncertainties regarding reviewing pages/files for accessibility issues."</p>
Trainings	4	<p>"Explored some resources once, but I'd like more training or reminders to easy tutorials/guidelines for creating web pages & tutorials.", "brief training courses to learn & help retain information & learn a useful workflow", "Maybe a group meeting that trains folks once a month on different things.", "It would be nice to have a regular, scheduled but brief workshop, maybe on an annual basis, to present those of us with responsibilities in this area with the latest tools and techniques. There is SO MUCH out there on accessibility and it would be good to schedule a 'time out' from regular work to catch up. Honestly, this should probably be required HHS training for content developers but I'm not going to be the one to suggest that. ;-)"</p>
Guides	4	<p>"Explored some resources once, but I'd like more training or reminders to easy tutorials/guidelines for creating web pages & tutorials.", "Easy to follow checklists, tutorials, guides on how to make materials accessible to be used as reference sheets until this becomes a "routine" part of my workflow.", "an online</p>

Suggestion	Count	Comments
		<p>resource/database that lists each tool, what it does, and how to link to the tool, perhaps any training available for that tool.", "It would make it easier to focus on what needs to be reviewed/changed if we all had a common HHS defined checklist. In years past, we used an Accenture checklist which was nice since it compared web pages against a defined/approved set of criteria and helped us work towards a common goal. Having this checklist helped to remove some of the uncertainties regarding reviewing pages/files for accessibility issues."</p>
Workflows	4	<p>"Accessibility should be built into the process flow for adding or editing content to a webpage. Instead, it's often treated as an afterthought.", "They will also spend money for contractors to check 508 compliance, when it's totally unnecessary. It should just be part of normal workflow.", "brief training courses to learn & help retain information & learn a useful workflow", "Integration into the normal development/maintenance of products instead of an after fact."</p>
Staff support	4	<p>"identified in-house specialist available for support in making complex PDF files accessible (including forms, graphics, and tables). Friendly identified authority and governance individual familiar with my products who monitors changing requirements, identifies actions needed, and demonstrates new testing and corrections.", "Someone we can ask for help that won't refer us to a web page that we've already seen and can't interpret or apply with confidence.", "Enterprise wide access to tools/resources/support for accessibility compliance", "Centralized place at NIH that performs this work for all ICs"</p>
Information on NLM specific resources/ products	2	<p>"it's unclear whether following microsoft accessibility prompts will produce a completely 508-compliant document. Are all NLM templates (O365, web) already set for compliance? knowing these answers would help.", "A better understanding of NLM's accessibility resources and how they can be applied to specific NLM products. To be fair, this isn't something that I've sought out so if it does already exist, maybe it just needs to be more visible or</p>

Suggestion	Count	Comments
		communicated directly to those working with accessibility on NLM products."
Templates	2	"I think the most effective tools are templates. Whenever I can use or build an NLM template for something, a lot of the accessibility work is done in the template. I can build accessibility into my routines much more easily when I'm using standard formats. I "get" that people want to be creative, but often simple is better.", "it's unclear whether following microsoft accessibility prompts will produce a completely 508-compliant document. Are all NLM templates (O365, web) already set for compliance? knowing these answers would help."
Reminders	2	"Reminders to make public materials accessible", "Explored some resources once, but I'd like more training or reminders to easy tutorials/guidelines for creating web pages & tutorials."
Reports	1	"I would like a replacement tool since Accenture/Deque tool isn't available. I had appreciate the monthly reports we used to receive."
Understanding/ culture change	1	"It would be helpful if my supervisors/other leaders understood that these are not difficult or onerous requirements. I think they worry too much about 508 compliance and it's much simpler than they think it is. I truly spend more time having to convince others that their suggestions are in line with 508 than actually working to achieve 508 compliance. They will also spend money for contractors to check 508 compliance, when it's totally unnecessary. It should just be part of normal workflow."
Feedback from disabled users	1	"Simpler process for getting feedback from disabled users on how we can improve our efforts."
Examples	1	"Concrete guidance and solutions/exemplars. Guidance is often general and not specific."

HHS Checklists

From responses to “What is useful about these HHS checklists? (If you wish to comment)” and “What is NOT useful about these HHS checklists? (If you wish to comment)”

Useful

Concept	Count	Comments
Thorough list of requirements	3	" all the info you can want is available, should you wish to refer to it.", "They give me a sense of security that I'm not forgetting anything."
Possible break points	1	
Simplify workflow	1	"They help make it easier to understand the accessibility guidelines by simplifying the process through utilizing a checklist style workflow."
Clarity	1	"They clarify the rules being applied (i.e., what is needed for the document to be accessible.)"
Making notes	1	"Nice to have a checklist that you can download and review for specific files to review. You can then make notes on the spreadsheet."

Not Useful

Concept	Count	Comments
Too much irrelevant info - overwhelming	2	"all the info you can want is available -- which can be overwhelming, and some of it is not immediately useful", "There are an awful lot of elements included that we don't use in our files, so sometimes going through them I worry that I'm skimming too much to skip over the stuff that is irrelevant to me. I'm not sure if this can be avoided, though. "
No links to WCAG	2	"It would be nice if the WCAG Ref#'s were linked to the actual WCAG web page referenced.", "These checklists could link out to , for

		instance, the WCAG user support guide for each element that helps understand _how_ to remedy the fault..."
Complicated, cumbersome	1	"Since the guideline themselves are a bit complicated, the resulting checklist can be somewhat cumbersome to deal with."
Spreadsheet layout	1	"Being a spreadsheet, the checklists are a little difficult to understand at first until you get used to the layout"

Barriers

From "Other" write-in responses to "What barriers do you face in improving the accessibility of your products? (Select all that apply)"

Barrier	Count	Comments
Accessibility not priority for org/ others	5	"accessibility isnt as high of a priory", "Lack of understanding by presenters and content developers that accessibility should be a consideration from the very beginning. We're working on this!", "range of reactions, caveats, and disinterest", "I also don't feel like I have equivalent colleagues who do the same work and could be a resource.", "I have noticed that leadership does not always achieve accessibility. For example, I receive emails from LO leadership that do not seem to be 508 compliant (for example -- photos are not tagged, and key information is only available in them). Sometimes the contrast is difficult to read. I don't have vision issues and I have struggled."
Lack of access to tools	2	"Web applications are difficult to test without a good screen reader", "Lack of a tool for automated ongoing review, identification and resolution of issues"
Accessibility not part of (primary) duties	2	"not a part of duties at the moment", "It's just one of my many hats, not my primary task and I don't feel I have the time required be excellent at it. "

Barrier	Count	Comments
Things not working properly	1	"My webpage doesn't show up in Google searches even though it has meta tags."
Lack of training	1	"I wasn't trained in this area, so I lack current knowledge"
Hard to remember about it	1	"forgetfulness as it doesn't come to mind when I make web-pages & tutorials"
Other	1	"other staff follow-up"
Lack of established workflow	1	"It does not seem like there is any schedule for review of content to ensure accessibility, and I have not found it to be part of the process flow for adding or editing content either."

Appendix D: Focus Group Suggestions

Group votes	Suggestion	Author's top 3	Comments
5	Peer or expert review process	Y	Dan: OCCS does code reviews; this could be similar. Perhaps we could find someone in OCCS to teach us how to conduct. A process for every job, though, would be a difficult challenge.
4	Statement about accessibility (high level; positive)	Y	Dan: PSD management tepid in the past; go through Kathel's IDEA group?
3	Change NLM culture so that accessibility is a priority	Y	Dan: I like the concept of "Free the willing," meaning, find the people whose beliefs and actions are the change that the organization

Group votes	Suggestion	Author's top 3	Comments
			<p>needs; then help them and highlight their work. People don't like it when you try to change them, but will change if they see it's advantageous to them. This is a paraphrase from Peter Senge; also, from Systems Thinking and the Gap between Aspirations and Performance,</p> <ul style="list-style-type: none"> • If you can connect places where people are operating in the new-cultural way, with an ability to solve problems that are really bugging people, you will have something that you can grow and shape. Instead of centering the change process around 'culture change,' center it around something that is useful and happening now, that people care about. Instead of getting resistance you will get something you can accelerate, shape, and influence. • And go to that place and say, "Hey, that's pretty cool! Do you want to do more? What more would you want to do?" Honor the people who are committed. Go where the energy is already moving and help them.
3	Appoint person for each kind of thing, e.g. video, social media	Y	Dan: Not bad per se, for providing help; but could be interpreted as the SuperHero model, find someone to do the work.
2	IDEA council: Focus on what staff needs are	Y	Dan: Referral to Kathel's IDEA group
2	NLM 508 working group / Community of Practice	Y	Dan: New MS Teams area that is a discussion forum similar to the Visualization CoP?

Group votes	Suggestion	Author's top 3	Comments
2	Someone authorized to sign off on products	Y	
1	Have small team or designated contact we can go to with questions	Y	
1	Make accessibility a part of more discussions	Y	
1	Implement more page templates; e.g., for job listings) that are already accessible (i.e., using forms to fill in content)	Y	Dan: Ying Sun of the OCCS Web Team set a goal to have "the first round" of pages converted to USWDS by the end of calendar year 2022. How can we help her team?
1	Define page owners across the website, so it's easy to find the right point of contact	Y	Dan: I have this inventory with names, except for NCBI. Can my product inventory file become a staff-facing browser-and-SQL-based resource similar to GSA's Enterprise Digital eXperience inventory? Could be used by OCPL, OCCS Web Team, OCCS Analytics Team, for work, content promotion, content syndication storefront, accessibility compliance...
1	More consistent guidance for captioning and Audio Description scripting	Y	Dan: NLM has OCPL staff proficient in video; it seems NLM is held back in leveraging this on social media, etc.
1	Letting people know they have help with accessibility issues in whom to contact	Y	

Group votes	Suggestion	Author's top 3	Comments
1	Better and more positive promotion of accessibility	Y	
1	"Gold standard" examples	Y	
0	An accessibility "trainer" who can provide training to staff	Y	
0	Help with decision-making when issues become complex	Y	
0	Have as many "good" and "bad" examples as possible	Y	
0	Just in time tutorial (simple text fine) for each type of resource	Y	
0	Call-A-Buddy program	Y	
0	More training / information sessions to create more visibility	Y	
0	Have all staff make it a priority; e.g., have supervisors mention it	Y	

Group votes	Suggestion	Author's top 3	Comments
0	Good software that holds my hand through the process	Y	
0	Build culture: awareness and celebratory events	Y	
0	Centralized support team/services	Y	
0	Checklists that are comprehensive and authoritative	Y	
0	Single point of contact for questions	Y	
0	Experts on certain products, instead of each person being an expert on each	Y	
0	Ask staff members submitting images for the website, social media, etc. to include alt text	Y	
0	is there NLM organization home?	Y	
0	Create wiki page guide	N	

Group votes	Suggestion	Author's top 3	Comments
0	Create recording with how to instructions	N	
0	Develop an ideal site map for the website that defines its structure	N	
0	Do an analysis of all images on the website to make sure they have proper alt text	N	
0	Ensure consistency and title sizes, fonts, etc.	N	
0	Ensure all URLs are logical to boost SEO and help users find what they're looking for	N	
0	Encourage staff members to define what exactly they mean when referring to 508 compliance	N	
0	Ensure bread crumbs on the website accurately portray where you are in the structure	N	
0	Using motivation for thinking about	N	

Group votes	Suggestion	Author's top 3	Comments
	accessibility early and development of projects		
0	NLM @Work wiki	N	
0	NLM's statement on commitment to accessibility	N	
0	Start with guidance by format	N	
0	Assign responsibility by format	N	
0	Basic tools Dash worksheets for staff to follow to create accessible content	N	
0	Embed guidance in NLM's templates "like PPT"	N	
0	Make clear and advertise "gate keepers quote for 508	N	
0	Accessibility office hours	N	
0	Intro "Just the basics" training for contractors	N	

Group votes	Suggestion	Author's top 3	Comments
0	Prepackaged lessons for staff meetings	N	
0	Centralized office with review services	N	
0	Increase feasibility of accessibility topics and resources; e.g., advertise more	N	
0	Simple checklists for new people in very plain language	N	
0	Easy to use software would be great, but topic is very new to me, so people or more training would help to reprogram me so that it is a priority	N	
0	Well known SMEs on accessibility	N	
0	Access to people who do a task all the time	N	
0	Videos that show you how to use the software's built-in accessibility features	N	

Group votes	Suggestion	Author's top 3	Comments
0	People advocating across NIH for support	N	
0	Centralized wiki for NLM-WIM that keeps us on the same page	N	
0	Contract specialists familiar with 508 requirements	N	
0	Communities of practice groups for particular software	N	
0	Standard staff access to software	N	
0	Point person for compliance on each unit	N	
0	Ways to report clearly non-accessible pages/products	N	
0	PMAP language	N	
0	Resources for all NLM (not just LO for example)	N	
0	Plain language expectations	N	

Appendix E: Interactive PDF Accessibility Checklist (Prototype)

Does your PDF include:

- Color
- Links
- Images
- Tables
- Forms
- Time-based media (audio, video) or animated content

Best Practices

1. The Document Properties > Description “Application” or “PDF Producer” displays “Adobe LiveCycle Designer”
 - a. Solution: If it does, please contact your Section 508 program team for guidance.
 - b. Tags: all
2. The Document Properties > Security > “Content Copying for Accessibility” displays “Allowed”
 - a. Solution: If it doesn’t, update the security settings to display “allow” for “content copying for accessibility.”
 - b. Tags: all
3. The Accessibility Full Check (Tools > Accessibility > Full Check/ Accessibility Check) does NOT display “Scripts – Needs manual check” under the “Page Content”
 - a. Solution: If it does, use web and applications checklist in addition to the PDF checklist.
 - b. Tags: all
4. If no method exists to correct content to meet Section 508 accessibility requirements, an alternate version is provided.
 - a. Solution: If no method exists to correct content and an alternate accessible version is not provided, contact your Section 508 program team for alternate content options.
 - b. Tags: all
5. If document links to or embeds another file, these files also been reviewed using this checklist.
 - a. Solution: Review linked or embedded files using this checklist.
 - b. Tags: all

Layout and Formatting

1. “Yes” is displayed next to “Tagged PDF” under Document Properties > Description > Advanced.
 - a. Notes: Tags allow screen reader and other assistive technology users to interact with and navigate through the PDF. Without tagging a PDF may be difficult or impossible to use for many assistive technology users.
 - b. Solution: If the PDF was created from a Microsoft Office Word or PowerPoint document, it is easier to create the tags in the original document and save it as an accessible PDF. [Microsoft-Create accessible Office documents](#). If that is not an option, tag the PDF in Adobe Acrobat by going to Tools > Accessibility > Add Tags to Document. This will automatically tag the PDF but manual touchup may be required, especially if there are complex layouts or page elements. [Adobe-Creating Accessible PDFs](#)

- c. Standards: [WCAG 1.3.1](#), [WCAG 4.1.1](#)
 - d. Tags: all
- 2. Tags are used to structure content in a valid manner.
 - a. Notes: Tags may be present but inaccurate or insufficient. For example, decorative elements may incorrectly be tagged as figures or elements may be missing tags. Read through the tags and verify that each element is labeled with the correct tag by using the Full Check/ Accessibility Check tool (Tools > Accessibility > Full Check/ Accessibility Check) or the Reading Order tool (Advanced > Accessibility > TouchUp Reading Order > Show Order Panel). [Adobe-Creating Accessible PDFs](#)
 - b. Solution: If tags are applied incorrectly, edit the tags as necessary using the Tag Panel > Tag Tree.
 - c. Standards: [WCAG 1.3.1](#), [WCAG 4.1.2](#)
 - d. Tags: all
- 3. Non-standard tags (if present) are mapped appropriately in the Role Map.
 - a. Notes: Non-standard tags should be used only if none of the standard tags apply.
 - b. Solution: If non-standard tags are necessary, they should be mapped to the most similar standard tag using Tags pane > Options > Edit Role Map > New Item > Add Role. [Tagged PDF Non-Standard Structure Type](#)
 - c. Standards: [WCAG 1.3.1](#), [WCAG 4.1.2](#)
 - d. Tags: all
- 4. Tags are used appropriately to designate headings.
 - a. Notes: Headings should be tagged as headings (<H1>, <H2>, etc) rather than as paragraphs (<P>) or other elements. This can be checked using the Touchup Reading Order tool (Advanced > Accessibility > TouchUp Reading Order > Show Order Panel). [WCAG-Providing Headings](#)
 - b. Solution: Edit the tags as necessary using the Touchup Reading Order tool.
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: all
- 5. Heading tags are provided in the appropriate sequence (<H1>, <H2>, <H3>, etc).
 - a. Notes: Headings should be tagged in the correct order – the highest order heading (usually at the beginning of the document should be H1, the next level subheadings should be H2, followed by H3, etc. without skipping levels). This can be checked using the Touchup Reading Order tool (Advanced > Accessibility > TouchUp Reading Order > Show Order Panel). [WCAG-Providing Headings](#)
 - b. Solution: Edit the tags as necessary using the Touchup Reading Order tool.
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: all
- 6. If Table of Contents lists are present, tags used appropriately to structure them (<TOC>, <TOCI>).
 - a. Notes: The entire table of contents should be tagged as <TOC>, each individual entry should be tagged as <TOCI>. Lists of figures, tables, and bibliographies can also be tagged using <TOC> and <TOCI>. This can be checked using View > Navigation Panels > Tags. [Level Access-PDF Table of Contents](#)
 - b. Solution: Change the tags as necessary using the Tags panel.

- c. Standards: [WCAG 1.3.1](#)
 - d. Tags: all
- 7. If lists are present, tags are used appropriately to structure sub-lists (at minimum, <L> and).
 - a. Notes: The entire list should be tagged as <L> and each individual list item should be tagged as . <LBody> can also be used for nested lists. This can be checked using View > Navigation Panels > Tags. [WCAG-Using List tags](#)
 - b. Solution: Change the tags as necessary using the Tags panel.
 - c. Additional resources: [Level Access-PDF Table of Contents](#)
 - d. Standards: [WCAG 1.3.1](#)
 - e. Tags: all
- 8. Tables are NOT used to construct layout.
 - a. Notes: Table tags should be used only to present tabular data not for layout purposes. Information that is organized sequentially or is self-explanatory, rather than categorized, should not be tagged as a table. Check if table tags are used for layout by using View > Navigation Panels > Tags. [Level Access-The Trouble with Tables](#)
 - b. Solution: If the table is used for layout purposes not for presenting data, all the table's tags should be removed from the Tags structure using the Tags panel. Make sure that all content is still tagged appropriately (ex. headings, paragraphs, figures, lists).
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: all
- 9. The reading and navigation order is logical and intuitive.
 - a. Notes: The reading/navigation order is the order in which screen readers and other assistive technologies will present content to the user. This order should generally match the visual order. For complex layouts (ex. side panels), the reading/ navigation order should make sense but does not have to be left-right, top-bottom. Order can be checked by going to View > Navigation Panes > Tags or the Touchup Reading Order tool (Advanced > Accessibility > TouchUp Reading Order > Show Order Panel). [WCAG-Ensuring Correct Tab and Reading Order](#)
 - b. Solution: If the reading/navigation order doesn't follow the visual order and doesn't make sense, the elements should be reordered using the Tags panel or the Touchup Reading Order tool.
 - c. Standards: [WCAG 1.3.2](#)
 - d. Tags: all
- 10. All meaningful content appears in the Tags pane.
 - a. Notes: All meaningful content (anything that isn't a purely decorative element) should have a tag. If content is not tagged, screen reader and other assistive technology users may not be able to read or interact with that content. Tags can be checked by going to View > Navigation Panes > Tags.
 - b. Solution: If any meaningful content is missing a tag, add the appropriate tag in the Tags panel (Tag Panel > Tag Tree).
 - c. Standards: [WCAG 1.3.2](#)
 - d. Tags: all
- 11. Vital content from a header, footer, or watermark is provided in the document.

- a. Notes: There is conflicting guidance on this issue from WCAG and PDF/UA. Generally, the first occurrence of identical headers, footers, or vital watermarks should be tagged as text (ex. paragraph), whereas additional occurrences should be marked as artifacts so they do not interfere with screen reader use of the document. In cases of unique headers and footers such as section or page numbers that don't match the document page numbers, this may be vital information that should be tagged as text to be made accessible to screen readers. [Level Access-PDF Accessibility Q&A](#)
 - b. Solution: If headers, footers, or watermarks provide vital content, they should be tagged appropriately by going to View > Navigation Panes > Tags. Alternatively, the vital content could be repeated in the body of the document, and the header, footer, or watermark can be marked as an artifact.
 - c. Standards: [WCAG 1.3.3](#)
 - d. Tags: all
12. Content that is repetitive or decorative is changed to an artifact.
- a. Notes: Screen readers ignore content that is marked as an artifact, so this should be done to any content that is not meaningful (ex. decorative borders) or is repeated more than once (ex. identical headers). This can be checked by going to View > Navigation Panes > Tags. Anything marked as an artifact will not appear in the Tags panel.
 - a. Solution: If the decorative or repetitive content is not tagged as an artifact, go to Tag Panel > Tag Tree and edit the corresponding tag. [Adobe-Tagging Content as an Artifact](#)
 - b. Standards: [WCAG 1.3.4](#)
 - b. Tags: all
13. Instructions do NOT rely on shape, size, or visual location (ex. "Click the square icon to continue", "Instructions are in the right-hand column").
- a. Notes: Instructions based on visual characteristics alone make it difficult or impossible for people with visual disabilities to use the document. These instructions could also be implicit (ex. assuming that users will understand that a green arrow symbol means "continue").
 - b. Solution: Rewrite instructions to rely on non-sensory elements in addition to the sensory characteristics (ex. label the button or field with text). [WCAG-Providing Textual Identification](#)
 - c. Standards: [WCAG 1.3.3](#)
 - d. Tags: all
14. Instructions do NOT rely on sound (ex. "A beeping sound indicates you may continue").
- a. Notes: Instructions based on sound make it difficult for deaf and hard of hearing people to use the document. This is unlikely to happen in a PDF document since sound is rarely used.
 - b. Solution: Rewrite instructions to rely on non-sensory elements in addition to the sensory characteristics (ex. provide the amount of time users should wait until proceeding). [WCAG-Providing Textual Identification](#)
 - c. Standards: [WCAG 1.3.3](#)
 - d. Tags: all
15. Text and images of text have a contrast ratio of at least 4.5:1.

- a. Notes: High levels of contrast ensure that people with low vision and color blindness can read and use the document. Color contrast can be checked using the Full Check/ Accessibility Check tool (Tools > Accessibility > Full Check/ Accessibility Check). However, images of text will not be checked using this tool and will require a manual review (ex. using a color picker tool in a program like Photoshop or PowerPoint in combination with [WebAIM-Contrast Checker](#)).
 - b. Solution: Edit the foreground and/or background colors to reach a contrast of at least 4.5:1. [WebAIM-Contrast Checker](#) can be used to find an acceptable color combination (use WCAG AA guidelines for normal or large text as applicable).
 - c. Standards: [WCAG 1.4.3](#)
 - d. Additional resources: [WebAIM-Contrast and Color Accessibility](#)
 - e. Tags: all
16. The document is readable and functional when the text is set to reflow.
- a. Notes: Test by going to View > Zoom > Reflow. The document should display in a single column taking up the full width of the page. Make sure all meaningful elements are still present in reflow, the order makes sense, and functionality is preserved. Reflow allows people with low vision to zoom in and more effectively read the document.
 - b. Solution: Correct issues as necessary. If an element is missing, make sure it has the proper tag using Tag Panel > Tag Tree (note that anything marked as an artifact will not appear in reflow). If elements are out of order, change the reading order using the TouchUp Reading Order tool (Advanced > Accessibility > TouchUp Reading Order > Show Order Panel).
 - c. Standards: [WCAG 1.4.4](#)
 - d. Additional resources: [Adobe-Reading PDFs with reflow](#)
 - e. Tags: all
17. The “Scanned Page Alert” does NOT appear when the document is opened. The Tools > Accessibility > Full Check > Document category does NOT say “Failed” for “Image-only PDF” or “Tagged PDF”.
- a. Notes: If the PDF fails any of these checks, it will be very difficult or impossible to use for blind users and users with other disabilities.
 - b. Solution: If this PDF was created using a different program such as Microsoft Office Word or PowerPoint, it is more efficient to return to the original file, run the Microsoft Accessibility Checker, fix any errors, and save the file as an accessible PDF. [Microsoft-Improve accessibility with the Accessibility Checker](#) | [Microsoft-Create accessible PDFs](#). If this is not possible, these issues can also be fixed in Adobe Acrobat Pro. To fix an image only PDF, use Optical Character Recognition (OCR) to convert the image into text by going to Document > OCR Text Recognition > Recognize Text Using OCR. Select “All Pages”, click “OK”, select “Edit” under Settings, and select “Formatted Text and Graphics” in the PDF Output Style. Check and fix any suspect OCR by going to Document > OCR Text Recognition > Find First OCR Suspect. To fix an untagged PDF, go to Advanced > Accessibility > Add Tags to Document. Check that the tags are correct by going to Tag Panel > Tag Tree. [WCAG-Performing OCR on a scanned PDF](#)
 - c. Standards: [WCAG 1.4.5](#)
 - d. Tags: all

18. The document has a meaningful title indicating its purpose under Document Properties > Description > "Title" AND Document Properties > Initial View > Window Options > Show is set to "Document Title".
 - a. Notes: Meaningful titles allow screen reader users to quickly and easily navigate between documents without having to read the document itself. Examples of meaningful titles include "Tax Form 1040" or the title of the article contained in the document. Examples of titles that are not meaningful include random strings of characters or generic titles such as "document 1". The document title is not the same thing as the file name.
 - b. Solution: Change the title to be more meaningful in Document Properties and set "Show" to "Document Title".
 - c. Standards: [WCAG 2.4.2](#)
 - d. Additional resources: [WCAG-Specifying the document title](#)
 - e. Tags: all
19. Page headings and labels for form and interactive controls are informative.
 - a. Notes: Headings and labels should not be duplicated (ex. "More Details", "First Name") unless the structure provides adequate differentiation between them.
 - b. Solution: Change uninformative or duplicate headings and labels to be more informative and unique (ex. change multiple "More Details" headings to "Biology", "Chemistry"; change multiple "First Name" fields to "Customer First Name", "Spouse First Name").
 - c. Standards: [WCAG 2.4.6](#)
 - d. Tags: all
20. The document displays the appropriate language under Document Properties > Advanced > Reading Options > Language.
 - a. Notes: The language property allows screen readers to read the text in the correct language. Without this property, a screen reader may use the wrong set of speech rules resulting in incomprehensible content.
 - b. Solution: Select the appropriate language in the field if missing or incorrect.
 - c. Standards: [WCAG 3.1.1](#)
 - d. Additional Resources: [WCAG-Setting the default language](#)
 - e. Tags: all
21. If some of the page content is in a language different from the main language of the page, this content is identified through the Properties of the affected tag(s) under the Tag tab > Language.
 - a. Notes: This allows screen readers to correctly switch between languages when reading content written in different languages.
 - b. Solution: Update the Language properties for the appropriate tags as necessary.
 - c. Standards: [WCAG 3.1.2](#)
 - d. Additional resources: [WCAG-Specifying the language for a passage or phrase](#)
 - e. Tags: all

Functionality

1. All functionality is available using the keyboard.
 - a. Notes: Test if you can do everything you can with a mouse (ex. focus on elements, activate elements, follow links, fill out forms) using only a keyboard. Use standard keyboard controls (Tab, Shift + Tab, and/or arrow keys to move between elements;

Spacebar or Enter to activate elements) to test. Make sure you can type in all open-text form fields. Functionality that cannot be accomplished by a keyboard (ex. free hand drawing) is exempt from this requirement.

- b. Solution: If form controls are not keyboard accessible, use Advanced > Accessibility > Run Form Field Recognition to automatically detect form fields and edit them as necessary using “Properties” in the context menu for each field. [WCAG-Providing interactive form controls](#). If links are not keyboard accessible, edit them by selecting the text, accessing the context menu, and selecting “Create Link.” [WCAG-Providing links](#).
 - c. Standards: [WCAG 2.1.1](#)
 - d. Tags: all
2. The navigation order of links, form elements, etc. is logical and intuitive.
 - a. Notes: When you tab through the PDF, does the order in which elements are reached make sense or does it jump around in a way that may be confusing?
 - b. Solution: Edit the order of focusable elements in the Tag panel (Tag Panel > Tag Tree) to be more logical and intuitive. [WCAG-Ensuring correct tab and reading order](#)
 - c. Standards: [WCAG 2.1.1](#); [WCAG 2.4.3](#)
 - d. Tags: all

The items below are usually not applicable to PDFs

3. All functionality is operable without requiring specific timings for individual keystrokes.
 - a. Notes: This is generally true for PDFs unless the PDF is using advanced scripts requiring custom keystrokes.
 - b. Solution: Use standard keyboard controls for all functionality.
 - c. Standards: [WCAG 2.1.1](#)
 - d. Tags: all
4. You can navigate to and from all navigable page elements (ex. embedded objects, links, form fields) using only a keyboard without getting locked or trapped at one particular page element.
 - a. Notes: This requirement is not fulfilled if keyboard navigation gets stuck at an element and mouse use is required to move away to other elements in the document. This is also generally true for PDFs.
 - b. Solution: Remove or edit the controls for the element creating the keyboard trap.
 - c. Standards: [WCAG 2.1.2](#)
 - d. Tags: all
5. Keyboard focus moves to and returns from elements appropriately (ex. the opening or appearance and closing of dialogs).
 - a. Notes: This should be true if standard PDF elements are used.
 - b. Solution: Edit the control by going to “Properties” in the context menu for the field. [WCAG-Providing interactive form controls](#)
 - c. Standards: [WCAG 2.4.3](#)
 - d. Tags: all
6. It is visually apparent which element has the current keyboard focus (i.e., as you tab through the page, you can see where you are).
 - a. Notes: This should generally be true for PDFs if the correct elements and tags are used.
 - b. Solution: Ensure that the form element or link are correctly specified.

- c. Standards: [WCAG 2.4.7](#)
 - d. Tags: all
- 7. When a page element receives focus, it does NOT result in a substantial change to the page, the spawning of a pop-up window, an additional change of keyboard focus, or any other change that could disorient the user.
 - a. Notes: This is generally true for PDFs unless custom scripts are used.
 - b. Solution: Update the action to occur on element activation (mouse click or keyboard activation) rather than on focus, or remove the custom script altogether.
 - c. Standards: [WCAG 3.2.1](#)
 - d. Tags: all
- 8. If there is a time limit, the user is given options to turn off, adjust, or extend that time limit.
 - a. Notes: Real-time events (ex. an auction), situations in which the time limit is absolutely required, and time limits greater than 20 hours are exempt from this requirement. This is usually not an issue for PDFs.
 - b. Solution: Remove the time limit unless it is absolutely required or the limit is greater than 20 hours.
 - c. Standards: [WCAG 2.2.1](#)
 - d. Tags: all

Color

1. Color is NOT used as the sole method of conveying content or distinguishing visual elements.
 - a. Notes: If color is used as the only way to convey information, many color blind and visually disabled users may not be able to access that information. Color can be used but should be accompanied by other means of conveying the information, for example text labels (each section of a pie chart being labeled with the corresponding text rather than a separate legend that requires color differentiation to interpret), shapes (green check box and red x, rather than only green and red colors; links being underlined in addition to a change in color), and patterns (values being represented by different patterns as well as colors on a bar chart). When possible, text labels should be used as they are more broadly accessible (color blind users will be able to differentiate between shapes or patterns but blind screen reader users will not, unless text alternatives are provided).
 - b. Solution: Add other non-color based means of conveying the information.
 - c. Standards: [WCAG 1.4.1](#)
 - d. Additional resources: [WCAG-Ensuring that information conveyed by color differences is also available in text](#) | [WCAG-Ensuring that additional visual cues are available](#) | [WCAG-Using color and pattern](#)
 - e. Tags: color

Links

1. All links are properly structured using the <Link> tag with a nested <Link-OBJR> tag?
 - a. Notes: Check using the tag tree (Tag Panel > Tag Tree). Proper tagging allows screen reader users to interact with and follow the link.
 - b. Solution: If the PDF was created from a Microsoft Office Word file and you have access to the original Word file, make sure the link is created using the built-in Word “Link” tool and save the file as a tagged PDF. [Microsoft-Create accessible PDFs](#). If this is not an

- option, create the link in Adobe Acrobat Pro by selecting the text, accessing the context menu, and selecting “Create Link”. [WCAG-Providing links](#)
- c. Standards: [WCAG 1.3.1](#); [WCAG 2.1.1](#); [WCAG 4.1.2](#)
 - d. Tags: links
2. The purpose of each link (or form image button) can be determined from the link text alone, or from the link and its content (ex. surrounding paragraph, list item, table cell, or table headers).
 - a. Notes: Screen reader users can access a list of all links in a document, so providing descriptive links helps screen reader users find relevant links more efficiently. Otherwise, users may get a list of twenty “click here” links and have to spend a long time finding the right one.
 - b. Solution: Update the link text to convey the purpose of the link (ex. change “click here” to “search PubMed”). If it is necessary to provide description beyond what can be included in the text label of the link, an /Alt entry can be used (View > Navigation Panels > Tags > Link tag > context menu > Properties > TouchUp Properties > Tags tab > Alternate Text). [WCAG-Providing replacement text using the /Alt entry](#)
 - c. Standards: [WCAG 2.4.4](#)
 - d. Additional resources: [WCAG-Providing link text that describes the purpose](#)
 - e. Tags: links
 3. Links (or form image buttons) with the same text that go to different locations are readily distinguishable.
 - a. Notes: Since screen reader users can access a list of all the links in the document, users will generally assume that links labeled with the same text will lead to the same location.
 - b. Solution: Change the text of the link to clearly describe the different locations (ex. “Find on PubMed”, “Find on Google Scholar”). Alternatively, if it is necessary to keep the link text the same, the /Alt entry can be used, which will replace the link text with the specified alternative text for screen reader users (View > Navigation Panels > Tags > Link tag > context menu > Properties > TouchUp Properties > Tags tab > Alternate Text). [WCAG-Providing replacement text using the /Alt entry](#)
 - c. Standards: [WCAG 2.4.4](#)
 - d. Tags: links
 4. Color is NOT used as the sole method to distinguish links from surrounding text OR the contrast between the link and the surrounding text is at least 3:1 and an additional differentiation is provided (ex. an underline appears) when the link is hovered over or receives keyboard focus.
 - a. Notes: In a PDF, it is easiest to make sure that the links are appropriately tagged and default (or more accessible) styling for links is maintained, as the default styling will include an underline.
 - b. Solution: Make sure the links are properly tagged by selecting the text, accessing the context menu, and selecting “Create Link”. [WCAG-Providing links](#). If they are and still are not underlined or otherwise indicated, change the appearance of the link to include an underline or other visual non-color indicator by going to Tools > Edit PDF > Link > Add or Edit, double-clicking the link rectangle, and going to the “Appearance” tab in the “Link Properties” dialog box. [Adobe-Create a link](#)
 - c. Standards: [WCAG 1.4.1](#)

- d. Tags: color

Images

2. All images and form image buttons have appropriate, concise alternative text.
 - a. Notes: Full check (Tools > Accessibility > Full Check/Accessibility Check) will catch empty alternative text but check that the alternative text provided is meaningful. Alternative text should be 1-2 sentences providing sufficient detail for someone who cannot see the image to understand its purpose. You can check alt text using: Order Panel icon in left nav bar > Page through document; alt text should be super-imposed on images. You could also use the Touchup Reading Order tool (Advanced > Accessibility > TouchUp Reading Order > Show Order Panel).
 - b. Solution: If there are any missing or inadequate alternative texts, add or edit a short description by going to Tools > Advanced Editing > TouchUp Object Tool > TouchUp Properties > Tag > Alternative Text. [WCAG-Adding alt text](#)
 - c. Additional Resources: [HHS-Testing for alt text](#) | [HHS-Editing PDF Image Tags](#) | [WebAIM-Adding alt text](#) | [WebAIM-Artifacts](#) | [W3C-Images Tutorial](#)
 - d. Standards: [WCAG 1.1.1](#)
 - e. Tags: images
3. All images that do not convey content, are decorative, or with content that is already conveyed in text are changed to artifacts.
 - a. Notes: This can be checked using the Touch Up Reading Order tool (Advanced > Accessibility > TouchUp Reading Order > Show Order Panel). Images that have been tagged as artifacts will not show a tag.
 - b. Solution: If the image is not tagged as an artifact, go to Tag Panel > Tag Tree and edit the corresponding tag. [Adobe-Tagging Content as an Artifact](#)
 - c. Additional Resources: [WCAG-Hiding decorative images](#) | [W3C-An Alt Decision Tree](#)
 - d. Standards: [WCAG 1.1.1](#)
 - e. Tags: images
4. Equivalent alternatives to complex images provided in context or on a separate (linked and/or referenced) page.
 - a. Notes: This is necessary only if the meaning of the image cannot be adequately conveyed in 1-2 sentences.
 - b. Solution: If there are any complex images that require more than 1-2 sentences to adequately describe (and the description is not already present in a caption or document text), a long description should be added either in a caption or surrounding text or by adding a link to another page or document with the description. [WCAG-Long description in link](#) | [WCAG-Long description with reference](#) | [WCAG21-Long description in text](#)
 - c. Standards: [WCAG 1.1.1](#)
 - d. Tags: images
5. Images of text or that include text (ex. logos) have that text as part of the alternative text description.
 - a. Notes: Check the same way as checking presence and quality of alt text.
 - b. Solution: if any images of text don't include that text in the description, update the alternative text to include the text in the image by going to Tools > Advanced Editing >

TouchUp Object Tool > TouchUp Properties > Tag > Alternative Text. [WCAG-Adding alt text](#)

- c. Standards: [WCAG 1.1.1](#)
 - d. Tags: images
6. Non-text content (ex. images) that use color also use patterns to convey the same information.
- a. Notes: This primarily applies to data visualizations that use colors to differentiate between elements.
 - b. Solution: Update the images to include patterns in addition to colors. [WCAG-Using color and pattern](#)
 - c. Standards: [WCAG 1.4.1](#)
 - d. Tags: images

Tables

1. Table tags are used for tabular data.
 - a. Notes: Table tags allow screen reader users to understand and navigate through tabular data. Make sure that everything that looks like a table and has tabular data is properly tagged as a table. Check using View > Navigation Panel > Tags.
 - b. Solution: If the document was created using Microsoft Office Word or PowerPoint, use the built-in Microsoft tables tool for the table. Otherwise, add <Table>, <TR>, <TH>, and <TD> tags in Adobe Acrobat Pro by going to View > Navigation Panel > Tags. [WCAG-Using table elements](#). You can also use the [Table Editor](#).
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: tables
2. Data table headers are appropriately identified (ex. <TH> for simple tables, header attribute for complex tables).
 - a. Notes: Headers must be not only marked visually but also tagged as <TH> for screen reader users to be able to understand the content and relationships described in the table. Check using View > Navigation Panel > Tags.
 - b. Solution: Change the <TD> tags for each of the header cells to <TH> in View > Navigation Panel > Tags. [WCAG-Using table elements](#). You can also use the [Table Editor](#). For complex tables, use header attributes. [Level Access-Tagging complex tables](#)
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: tables
3. Data cells are associated with their headers (ex. scope for simple tables, headers and IDs for complex tables).
 - a. Notes: Check that the headers are properly marked using the [Table Editor](#) (Advanced > Accessibility > TouchUp Reading Order > Table Editor).
 - b. Solution: Use the Table Editor to change headers and structure as necessary. For complex tables, use header attributes. [Level Access-Tagging complex tables](#)
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: tables
4. If there are merged cells, RowSpan or ColSpan are used appropriately.
 - a. Notes: Check that row span and column span are properly marked using the [Table Editor](#) (Advanced > Accessibility > TouchUp Reading Order > Table Editor).

- b. Solution: If they are not, right click the cell in Table Editor, select “Table Cell Properties”, and set the Row Span and/or Column Span attributes as necessary. [Tagged PDF-Irregular table](#)
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: tables
5. Are data table captions and summaries used where appropriate?
- a. Notes: When necessary to understand the table, captions and summaries clearly connected to the table should be used.
 - b. Solution: Add descriptive captions and summaries to tables where necessary.
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: tables

Forms

1. Form input elements have tool tips that identify their purpose and match the associated text label.
 - a. Notes: The tool tips provide information about the purpose of the form field to assistive technology such as screen readers. Check that the tool tip text matches the field’s visible text label by going to Tools tab > Prepare Form tool, right clicking a form field, and selecting “Properties”. If a field is required, this should be specified in the tool tip. [WebAIM-Ensure Every Form Field Has a Descriptive Tooltip](#)
 - b. Solution: Add or edit the tool tip in “Properties” as necessary.
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: forms
2. Related form elements and elements with multiple labels are grouped appropriately (ex. group name identified as part of the tool tip of the element, radio buttons have the same name).
 - a. Notes: Check by going to Tools tab > Prepare Form tool, right clicking a form field, and selecting “Properties”. Every radio button in the same group should have the same name. The tool tip should also be the same for every radio button in the group and should include the group name. The “Radio Button Choice” value in the “Options” tab in the “Properties” window should match the visible text that appears next to the radio button. This allows screen reader and other assistive technology users to be able to accurately understand and fill out the form. [WebAIM-Ensure Every Form Field Has a Descriptive Tooltip](#)
 - b. Solution: Edit the “Name”, “Tooltip”, and “Radio Button Choice” values in the “Properties” window as necessary.
 - c. Standards: [WCAG 1.3.1](#)
 - d. Tags: forms
3. Required form elements or form elements that require a specific format, value, or length provide this information as a text description.
 - a. Notes: Providing this information helps users – especially those with cognitive or visual disabilities – more quickly, easily, and accurately complete the form. Include information such as date format (“mm/dd/yyyy”), when a question is required (“required” rather than an asterisk, which may not be read by a screen reader), and character limits.

- b. Solution: Add information about required form elements and required formats as a text description in the tool tip by going to Tools tab > Prepare Form tool, right clicking a form field, and selecting "Properties".
 - c. Standards: [WCAG 3.3.1](#); [WCAG 3.3.2](#)
 - d. Additional resources: [WCAG-Providing labels for interactive form controls](#) | [WCAG-Indicating required form controls](#)
 - e. Tags: forms
- 4. Sufficient labels, cues, and instructions for required interactive elements are provided at the beginning of the form or set of fields via instructions, examples, and/or properly positioned form labels.
 - a. Notes: Related fields need to provide a group name (ex. "Gender: Female").
 - b. Solution: Add or edit written labels and instructions as necessary to be sufficiently descriptive.
 - c. Standards: [WCAG 3.3.2](#)
 - d. Additional resources: [WCAG-Providing descriptive labels](#) | [WCAG-Providing labels for interactive form controls](#) | [WCAG-Indicating required form controls](#)
 - e. Tags: forms
- 5. If there are form validation errors, they are presented in an efficient, intuitive, and accessible manner. The error is clearly identified. Quick access to the problematic element is provided. The user is allowed to easily fix the error and resubmit the form.
 - a. Notes: If validation errors are provided, check that they are clear and easy to understand, including identifying which field caused the error and what the error is. For example: "Invalid date/time: please ensure that the date/time exists. Field [Date you are available] should match format mm/dd/yyyy".
 - b. Solution: Edit the validation error messages as necessary using content menu for the form control > Properties > Format tab > Format Category > Options. Also specify the required format in the "Tooltip" in the "General" tab. [WCAG-Indicating when user input falls outside required format or values](#)
 - c. Standards: [WCAG 3.3.1](#)
 - d. Tags: forms
- 6. If an input error is detected, suggestions are provided for fixing the input in a timely and accessible manner.
 - a. Notes: If input error messages are provided, they should include information on how to fix the error.
 - b. Solution: Edit the validation error messages as necessary using content menu for the form control > Properties > Format tab > Format Category > Options. Also specify the required format in the "Tooltip" in the "General" tab. [WCAG-Indicating when user input falls outside required format or values](#)
 - c. Standards: [WCAG 3.3.3](#)
 - d. Tags: forms

Generally not applicable to PDFs

- 7. When a user inputs information or interacts with a control, it does NOT result in a substantial change to the page, the spawning of a pop-up window, an additional change of keyboard focus, or

any other change that could disorient the user unless the user is informed of the change ahead of time.

- a. Notes: This is generally true for PDFs unless custom scripts are used.
 - b. Solution: Update the action to occur on form submission (mouse click or keyboard activation of an “Enter” or “Submit” button) rather than on input OR inform the user of the change ahead of time. Alternatively, remove the custom script altogether.
 - c. Standards: [WCAG 3.2.2](#)
 - d. Additional Resources: [WCAG-Providing submit buttons](#)
 - e. Tags: forms
8. If the user can change or delete legal, financial, or test data, the changes/deletions can be reversed, verified, or confirmed
- a. Standards: [WCAG 3.3.4](#)
 - b. Notes: This is generally not applicable to PDFs unless custom scripts are used.
 - c. Solution: Make sure there is verification before a user is able to submit legal, financial, or test data, if there is a custom script to enable submission within the document.
 - d. Tags: forms

Time-based Media and Animated Content

1. Animated content has an alternative or is described in text
 - a. Notes: Same procedure as evaluating alt text for images.
 - b. Solution: If no or inadequate alt text is provided, describe the content in the text or add alt text by going to Tools > Advanced Editing > TouchUp Object Tool > TouchUp Properties > Tag > Alternative Text. [WCAG-Adding alt text](#)
 - c. Standards: [WCAG 1.1.1](#)
 - d. Tags: time-based media
2. Automatically moving, blinking, scrolling, or auto-updating content (ex. multimedia, animation, dynamic content) that lasts longer than 5 seconds can be paused, stopped, or hidden by the user.
 - a. Notes: Moving, blinking, and scrolling is okay if it lasts less than 5 seconds or if a mechanism is available to pause, stop, or hide the content. (Note that this mechanism should also meet accessibility requirements including keyboard accessibility).
 - b. Solution: Since PDFs don’t provide a lot of control over animated content, it is best to avoid embedding animated content and link to external multimedia if necessary rather than embedding it.
 - c. Standards: [WCAG 2.2.2](#)
 - d. Tags: time-based media
3. If time-based media is present or embedded, it has been reviewed using the Time-Based Media worksheet.
 - a. Solution: Review embedded or linked multimedia using the HHS Time-Based Media worksheet.
 - b. Standards: [WCAG 1.1.1](#), [WCAG 1.2.#](#)
 - c. Tags: time-based media
4. If there is audio that automatically plays for more than 3 seconds, a mechanism is provided to stop, pause, mute, or adjust volume.

- a. Solution: Since PDFs don't provide a lot of control over audio content, it is best to avoid embedding audio content and link to external multimedia if necessary rather than embedding it.
 - a. Standards: [WCAG 1.4.2](#)
 - b. Tags: time-based media
5. Content (including in embedded videos) does NOT flash more than 3 times per second.
- a. Notes: Flashing more than 3 seconds is permitted if the flashing content is sufficiently small (341 x 256 CSS pixels) AND the flashes are of low contrast and do not contain high levels of red. Content that flashes more than 3 times per second can trigger seizures. [WCAG-Tool to ensure flash threshold](#)
 - b. Solution: Edit the content to remove or reduce the flashing, reduce the size of the content as a proportion of the page, or remove the content.
 - c. Standards: [WCAG 2.3.1](#)
 - d. Tags: time-based media