# Website Evaluation for Accessibility and Usability
NASA Headquarters Library, https://www.nasa.gov/centers/hq/library

| | CRITERA | +/- | NOTES |
|---|---|---|---|
| **UNDERSTANDABILITY** | The site scope is quickly understood on the homepage | -- | Extent of resources unclear |
| | Each page has a unique, descriptive, and clear page title | + | |
| | Browser window titles are unique and related to navigation | + | |
| | Labels are simple and in terms that users understand | + | |
| | Headings and programmatic labels are clear and descriptive | + | |
| | Abbreviations and acronyms are clear and obvious if used | + | |
| | The purpose of each link is clear based on its anchor text | + | |
| | Clear interaction feedback is available at all times | -- | Confusing image non-links |
| | Calls to action are clear, well-labeled, and appear clickable | + | |
| | Components with the same function are identified consistently (not necessarily identically) | + | |
| | All input fields are programmatically labelled so the user knows what input and format are expected | + | |
| **DESIGN AND PRESENTATION** | Proper markup techniques are used to structure content | + | |
| | Content is presented in a meaningful order and sequence | -- | Some unclear organization |
| | There is a clear visual hierarchy of elements on each page | -- | Home page is confusing |
| | Template, fonts, and color palette are used consistently | + | |
| | Page layout is clear with a sufficient amount of white space | + | |
| | Contrast ratio between text and background is at least 4.5:1 | -- | Link blue against white |
| | Text is legible and able to be resized up to 200% without negatively affecting the ability to read or use content | + | |
| | No images of text are used except where necessary | + | |
| | Headings, bulleted lists, and links are used to help scanning | + | |
| | Keywords and terms are frontloaded in short paragraphs | + | |
| | HTML code is clean, free of errors and uses proper nesting | + | |
| | All images and non-text content have alt text | + | |
| | All content is accessible by keyboard only | + | |
| **NAVIGATION** | Users are able to navigate through the website in a logical sequential order that preserves meaning | -- | Finding/searching for resources causes confusion |
| | The spine navigation and search system appear site-wide with consistent layout and labels on all pages | + | |
| | Navigation options are clear, visible, and scannable | + | |
| | Related topics are located together | + | |
| | The user's current location is always identified | + | |
| | All major parts of the website are accessible from home page | -- | Certain pages seem hidden |
| | Users can easily return to the home page or exit from pages | + | |
| | The back button is always available for return to previous | -- | Some links open new tabs |
| | All links are functional and lead to valid pages without errors | -- | Database link issues |
| | There are multiple ways to access different pages and info | + | |
| | Contact information has a clear path to it site-wide | + | |

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Website Evaluation Write Up

For this evaluation, I will be looking at the NASA Headquarters Library website. Due to the unique nature of this library, I struggled to find a single evaluation tool that would suffice, so I decided to perform my evaluation using a combination of the relevant elements from the Washington State University website evaluation form, which focuses primarily on the usability of the website, and the website accessibility guidelines outlined by the Americans with Disabilities Act. This combined list of criteria, shown on the previous page, allowed me to evaluate the publicly available components of the NASA HQ Library website in regard to how accessible and usable the site is. For each point, I noted whether the requirement was met or not, though I would admit that in many cases, a simple yes or no, even with the options for notes, is not sufficient to address the issue without expanding the evaluation by several pages to be able to include sufficient comments. I hope to address the issues most worth discussing, particularly the major problem points, here in this write up.

The website's biggest strengths are related to its consistency and understandability of design on the majority of pages. Text is generally in short paragraphs that are easy to scan and read with plenty of whitespace, with only a few exceptions, such as the potentially problematic low contrast between the color of links and the white background they are often found on. Labels are simple and relevant to keep users oriented, and content is generally accessible via keyboard-only access and screen readers based on my testing of the site. I also appreciated that while certain aspects of the website are not available to the public, there are extensive bibliographies and several public databases available for outsiders to view and get a better sense of the library's focus and work. Further, the available databases, like the NASA Technical Reports Server, have very accessible search options with dropdowns and similar features that make it clear what possible inputs are for those search fields. On the surface, the website certainly seems like a visually appealing and perfectly usable one, but there are several significant issues related both to design and function that should be addressed.

I would like to begin with the home page of the website, where the unique design causes some usability issues. The layout of the title cards does not necessarily express a logical order and could cause issues for someone navigating the site via accessibility software. It starts off with the mission statement and a link to subscribe to alerts. This is followed with links to several resources and search tools, though the appearance of both a list of selected bibliographies and a separate link to a bibliography search may be a little confusing or redundant. In addition, there is a link at the bottom of the page labelled "Visit the Library," which is in fact a link to the library's "About HQ Library" page (which is linked from the navigation bar but from nowhere else on the home page and which provides important links to information about library services) and only provides information about visiting the library at the very bottom of the page. I fear this may cause confusion to users looking for particular information.

Another confusing aspect of the website is the relationship between images and links. This is most notable on the homepage, where most of the content cards contain a link, but are primarily visually identified by an image. When the mouse hovers over the image, the mouse icon indicates the ability to click on the image, and the bar with the link is highlighted. This would typically suggest to the user that they can click on the image and go to the link described by the image's label. I myself, even after spending considerable time on the website, continue to fall into that trap. Clicking the image, however, only opens the full image file, an outcome which is both unexpected and relatively unnecessary. This issue extends to other images on the website as well. For example, on the "Search Resources" page, for each database described and linked, there is an image of the system's logo above the heading which may lead users to believe that they can click on those images to go to the databases when in fact they cannot. It is rather common for logo links, where clickable, to bring you to the homepage of that site, so it may frustrate and confuse users when clicking on those images only to open a larger image file.

To continue on the topic of links, even more egregious than confusing clickable images is the number of broken links found throughout the website. Several links throughout the website give "page not found" errors, including the links to the NASA Technical Reports Server (because the link URL is https://ntrs.nasa.gov/search.jsp instead of https://ntrs.nasa.gov/search, a very simple fix), and the link to the White House Office of Management and Budget

on the "Policy Resources" page. In addition, the link to the NASA Galaxie search system, which is highlighted on the homepage, either does not load at all or gives an error that the browser cannot connect to the relevant server. This system may simply not be available for public access, but if that is indeed the case, such restrictions should be made clearer to users either before they click on the link or when they do click the link but before they wait for an inaccessible site to load. Having multiple broken and unclear links throughout the website is problematic for users needing to find information and can hurt confidence in the site and its resources.

Finally, I would like to discuss the navigation of the NASA library website. The navigation bar located on the left of the screen is very simple, easy to scan, and outlines the most important pages on the site. However, the simplicity of the navigation combined with the ambiguity of certain labels could potentially pose usability problems for individuals visiting the website. For example, the difference between "Find Publications" and "Search Resources" is unclear, which does not help users figure out where they need to go. Further, the fact that there are only a few links in the navigation bar without any sub-categories may confuse users looking for certain pages or trying to figure out where each tab may bring them. This can also make it difficult to retrace their steps when trying to find a page or link that is buried deeper in the website architecture.

Based on the results of this evaluation, my primary recommendation for the future of the NASA HQ Library website would be to fix the broken links. This is arguably the easiest and most immediately necessary fix in order to ensure the full functionality of the website. Even if there are still design issues, the website features should function without errors, and most of these errors can be fixed simply by editing the link address without having to touch content or design, which would be a much larger endeavor. I would follow this change with an update of the links in the navigation bar to make the labels clearer and more distinct from one another and perhaps add links to some pages that are important but may be hard to find. This would go hand in hand with an update to the labels and organization on the home page so the progression through content is more logical and understandable to users visiting the site.

Of course, the fact that the library site is part of the larger NASA website limits changes to a certain extent; for example, the format of the navigation and the home page is used consistently across different NASA departments, and losing that consistency would be a major hit to the design of NASA's web presence. However, renaming pages, adding links, or editing the content on the home page cards can be done within the constraints of the organization-wide design standards. Unfortunately, I recognize that changing the handling of clickable images according to my evaluation notes would also be an incredible undertaking, because such cases are likely handled identically across all NASA web pages. Indeed, while it would be a large and difficult change, it may be worth the consideration of the developers to determine how usability might be impacted by making certain images working links. Consistency for those already familiar with the NASA website in a broader capacity may be more important than serving the intuition of outside visitors to the site, particularly because the NASA HQ Library primarily serves NASA employees, not the public. Proper functionality (in regard to broken links, for example), is the most important factor to consider when making recommendations for future updates to the website.

This evaluation focused primarily on the technical aspects and specifications of the NASA library website rather than the content, but it should be noted that the content seemed well-written, relevant, accessible, and extensive. Due to the limited public access to the library's site and resources, my lack of expertise to speak on the subject of NASA information and operation, and the unique focus of the site that made it difficult to find a relevant evaluation metric related to content, I believe such an evaluation would be best left to another party. However, I believe that focusing on general usability and accessibility of the website in regard to navigation, design, and ease of understanding to outside parties revealed the strengths and weaknesses of the site. Indeed, despite the reputation of NASA and the initial visual appeal of the website, my evaluation has revealed several areas that negatively impact user experience and should be considered for future improvement to the library website.