

Data Management Working Group

# Harvard Biomedical Data Management Website User Testing Report

Website Subgroup



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# Harvard Biomedical Data Management Website User Testing Report

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## Executive Summary

The Data Management Working Group (DMWG) on the Longwood Medical Area (LMA) maintains a website presence to support biomedical and biological research data management. The website includes data management best practices, training resources, and local support services. DMWG subgroups are created based on research data management needs identified by the group. The Website subgroup maintains the Harvard Biomedical Data Management website, restructuring the website architecture in 2019. The goal of the restructure is to improve usability, accessibility and aesthetics of the website based on the usability testing study.

The group partnered with the User Research Center (URC) at Harvard Library to develop usability testing questions, a script, and training for running testing sessions. A total of nine users completed the usability testing, locating specific information within the contents of the website. Participants conveyed an overall positive view of the website. Feedback focused mainly on the site's navigation, content included on the website, and how the content was presented.

Based on user feedback, the group identified short- and long-term tasks to improve the website overall. While most of the short-term projects have been completed, the subgroup plans to work on numerous "bigger" projects throughout 2020. Incorporating feedback from users and shared expertise from subgroup members will ensure the website remains well positioned to offer educational resources and information to the Harvard biomedical community.

## Introduction

The Data Management Working Group (DMWG) on the Longwood Medical Area (LMA), maintains a website presence to provide a central location for sharing information about best practices and resources for the management of biomedical research data from Harvard Medical School, the Harvard T. H. Chan School of Public Health, the Harvard School of Dental Medicine, and Harvard-affiliated hospitals. DMWG subgroups are created based on research data management needs identified by the group.

The Harvard Biomedical Data Management website provides resources and guidance for research data management planning including assistance with elements of data management throughout the data lifecycle. It provides access to tools and resources such as information on funding agency and institutional requirements, effective management of research data, and preparation for sharing and reuse.

The website was created and curated in 2016-2017 by Jaki Cellini (Research and Instruction Librarian, Countway Library) to serve the Longwood Medical Campus, with guidance from the Data Management Working Group. The goal of the website was originally to provide resources for biomedical data management by linking to other resources, not generate new content. Officially launched in January of 2017, the website is now overseen by the DMWG Website subgroup.

The Website Subgroup maintains the Harvard Biomedical Data Management website by keeping content up-to-date and initiating projects to develop new resources. However, since the launch, it has become evident that new content is unique and useful and data management guidance for people is not available elsewhere. In 2019, the subgroup became interested in restructuring the website architecture and understanding how users currently interact with the website. Therefore, it was determined that qualitative data about user behaviors and attitudes would be beneficial for the group to gather (Rohrer 2014).

With user feedback, the subgroup will understand how to improve the usability and aesthetics of the website. Feedback from users and shared expertise from subgroup members will ensure the website remains well positioned to offer educational resources and information to the Harvard biomedical community.

## Research Questions

We are looking for users who haven't previously used the site to get a better idea of issues that arise when they search. Our basic research questions include:

- How do users locate information on the website?
- Are there items to add or refine?
- Does the website need an information architecture restructure?

- How usable is the website?
- Do we need to change the flow of traffic to the website?
- When should we redirect users to other locations?

## Methodology

The Harvard Biomedical Data Management Website [<https://datamanagement.hms.harvard.edu/>] was the focus for the usability tests.

Partnering with the User Research Center (URC) at Harvard Library (<https://urc.library.harvard.edu/>), the group received advice on usability and best practices in UX. The URC team provided training and templates for the usability testing questions and script (UX @ Harvard Library Wiki; <http://bit.ly/harvardlibraryux>).

To recruit participants, the group compiled a list of post-docs who had recently attended a presentation class at Countway and latest HMS post-doc orientation. An email invitation and survey were sent to the list to invite participation in a usability test. Initially, five people were recruited to participate and were awarded an Amazon Fire 7 Tablet or Echo Dot upon completion. Since the majority of participants were hospital affiliates, two additional HMS on-quad users were included in the group. Two test users were also recorded for the report, leading to a total of nine evaluated tests.

The nine users completed five tasks designed to locate information within the contents of the website. Each test was between 20-30 minutes. Participants were asked to share out loud as much as possible what they were thinking and feeling in response to the tasks.

Participants signed a simple permission form indicating the DMWG group had the option to record the session, and that the recording would only be seen by people working on the project.

Each participant was recorded, and screen movements captured. Members of the subgroup were assigned user videos to analyze. Each video was reviewed by two subgroup members. To identify key findings and recommendations, the subgroup reviewed comments from the usability survey videos and discussed overarching themes. Themes were then coded into “Easy Tasks” that could be addressed either right away or in the short term, and “Bigger Projects” that would take more time and resources.

## Usability Test

### Introductory Questions

1. Which lab or department are you affiliated with at the Longwood campus?
2. How long have you been there?

3. How do you interact with or collect research data in your work?
4. Are there data management protocols/procedures in place within your lab/department?
5. Have you seen this site before?
  - a. IF YES: What have you done here? Have you used it multiple times? How did you find out about it?
  - b. OR IF NO: What do you think this site is for?

## Usability Test Tasks

Task 1: You heard about an event in July on high performance computing. How can you find the details?

- a) Are there any prerequisites? (THEN) Did you notice this information?
- b) How would you prefer to view upcoming events? (IF NEEDED ASK: In a calendar view, list, etc.)

Task 2: You've collected a large amount of data in your experiment. You need to upload the data set so your teammates can access it. Which tools allow you to do this?

- a) Which of these options would allow you to set different levels of permissions for your team?

Task 3: Your lab has collected a large amount of data from microscopic imagery. You have over 500 high-resolution photos. Which tool can help you organize these files?

- a) What do you think of this page?
- b) Is there anything that could make it more useful?

Task 4: Your PI wants you to find three options for electronic lab notebooks to use in your lab. Find an option that works on Mac and offers local storage.

- a) How was the experience of finding the criteria for the electronic lab notebooks?
- b) On a scale of 1 to 5 (1 being not at all, 5 being very) how overwhelming is this spreadsheet?
- c) What would you suggest we change?

Task 5: You are a researcher at a lab and your PI noticed your lab records have inconsistent date formats in the file names. What's the optimal way to standardize how dates are used in file names?

## Wrap-up Questions

1. What was your overall impression of the website?
2. Were there any parts that seemed confusing?
3. Are there any things you would change or want there to be added?

# Findings and Recommendations

## Summary Results

Participants conveyed an overall positive view of the website. Feedback focused mainly on the site's navigation, select content included, and how the content was presented.

## Key Findings

Key findings include:

1. Users wanted to use images to navigate the site. For example, multiple users attempted to click on the Data Lifecycle image on the homepage to find information related to that heading.
  - User2: "The center image captures my attention. I thought it can help me navigate. For example, if I look for services on storage, I thought if I click here [distribution & storage] it would take me to there, but it doesn't work."
  - User3: "I like this figure, I tried [to click it] to but its inactive. It would help [with navigation]"
2. A majority of users ignored the "Best Practices" menu heading. Comments from users stated they were unsure what would fall under that category. Note: English is not the native language for some participants. Therefore, some of the terminology used on the website could be a barrier for non-English speaking users.
  - User1: "The best practices was not clear for me, the name does not show me what I would find this stuff here. Is it instructions to me?"
  - User 2: "For example when you asked me to find the ELN, I tried one-by-one to find anything on ELN [instead of going to best practices] but I don't have a good suggestion"
  - User3: "If this is my first time to read, I am not going to open best practices. Why should I open?"
  - User6: "Make this more specific, the best practices is so broad. If someone was looking at the website, and they were trying to guess what best practices was, it's not entirely clear."
3. Multiple participants commented on the amount of text on the website pages and made suggestions for how to break up the pages. For example, users wanted to see more lists, icons, headings and bolded information to draw the reader's attention to the important information they are looking for.



- User1: “More bolding information. I don’t want to read all of it, I want to use it.”
- User4: “I like the design of the website, it’s pretty simple. There is a lot of writing, so it could be more ergonomic with icons and less writing.”
- User5: “More headings on things to quickly scan through” It might make it easier to scan through and find what you are looking for.”
- User7: “I like lists to be indented or have large headings to break up the text.”

## Recommendations

As mentioned, themes were coded into “Easy Tasks” that could be addressed either right away or in the short term, and “Bigger Projects” that could take more time and resources.

### Easy Tasks

Task	Timeline & Delegation	Notes
Make the prerequisites clickable and higher up on the page	Ongoing Assigned to: Julie	As applicable
Similar or upcoming events included with event information	Ongoing Assigned to: Julie	As applicable
A newsletter for events	Done	This had already been implemented
Most users like the calendar view, but should also include a full list	Done	A full list of upcoming events has been made the default for looking at events
ELN Matrix vendor headings need updated links	Done	
Matrix images are links but need additional instruction for people to click on them to explore	Done	The ELN and Repository Matrix pages have been updated with a sentence to point it out

## Bigger Projects

Task	Timeline & Delegation	Notes
Conform to accessibility guidance and requirements from Harvard**	Ongoing Website Subgroup	<ul style="list-style-type: none"> <li>Ethically important and deadlines from Harvard University</li> <li>Generate PDFs from documents with structural markup</li> <li>Links should open into new tabs</li> </ul>
Full class names in the title of the event	2020 Winter Website Subgroup  Assigned to: TBD	<ul style="list-style-type: none"> <li>This is an Open Scholar issue</li> <li>To be addressed at migration</li> </ul>
Color coding for different events (departments, types of class etc.)	2020 Winter Website Subgroup  Assigned to: TBD	<ul style="list-style-type: none"> <li>This is an Open Scholar issue</li> <li>To be addressed at migration</li> </ul>
Include more information on the repository site with use cases for each tool	2020 Winter Countway DSSC  Assigned to: TBD	<ul style="list-style-type: none"> <li>Evaluate the current repository options and comparison grid</li> <li>Expand content to include more use cases and scenarios for when someone would choose to use a specific repository</li> </ul>
Review usability and content within the ELN Matrix	2020 TBD ELN Subgroup  Assigned to: TBD	<ul style="list-style-type: none"> <li>Explore filter options, by discipline or general</li> <li>Explore the option to select a few options and compare side by side</li> <li>Need to review the language to make sure it's relevant (ex. Macintosh)</li> </ul>

<p>Explore image management resources</p>	<p>2020 Winter Countway DSSC</p> <p>Assigned to: TBD</p>	<ul style="list-style-type: none"> <li>• Expand and include a link to image storage in the repositories page, linking to image management</li> <li>• Include other image management options, OMERO is only available to HMS</li> </ul>
<p>Lots of text, but little useful information, want to know more about how to use the website/tool</p>	<p>2020 Winter Website Subgroup</p> <p>Assigned to: Mary</p> <p>Assigned to: Julie</p>	<ul style="list-style-type: none"> <li>• To be addressed at migration</li> <li>• Include pros and cons like the data transfer, repositories and ELN Matrix</li> <li>• Explore additional file naming resources, including options for bulk renaming</li> <li>• Make the examples of the file naming conventions more prominent on the page through indentation or highlighted to make it easier to copy and paste</li> </ul>
<p>Evaluate menu structure and interactive data lifecycle image</p>	<p>2020 Winter Website Subgroup</p> <p>Assigned to: TBD</p>	<ul style="list-style-type: none"> <li>• To be addressed at migration</li> <li>• The menu option “Best Practices” should be reworked</li> <li>• Review site map</li> <li>• Structure the website based on data workflow, with each step in the process including resources</li> </ul>

\*\*The URC has resources to help including a “Easy Checks for Accessibility” checklist ([https://urc.library.harvard.edu/files/harvardlibraryux/files/accessibilitytraining\\_easychecks.pdf](https://urc.library.harvard.edu/files/harvardlibraryux/files/accessibilitytraining_easychecks.pdf))

## Platform

Additionally, the group recommends migrating the current website from OpenScholar to a Drupal 8. This migration is prompted by Harvard Medical School Information Technology implementing Drupal 8. While Harvard Web Publishing (HWP) supports OpenScholar, their services may require departmental funds. Alternatively, HMS IT offers free support for platforms inside their scope and has already committed to working with the Data Management Working Group on providing a new Drupal site.

Below we outline the reasoning behind this recommendation:

- Our local IT can not provide support for our OpenScholar website or any customizations we might want to integrate
- The DMWG has no departmental budget to pay for HWP services
- HMS IT offers free support for Drupal
- HMS IT can develop custom features that would increase the navigation of a new website
- Conforming to the new Drupal layout would better integrate us into the look and feel of HMS/LMA resources

## Limitations

Limitations for this usability test include type of tasks included and small sample size. However, according to Rubin, Jeffrey, and Chisnell (2008) typical usability tests include between 4-5 participants, and then increasing to eight if you feel “uncomfortable,” so our sample size of seven is within the standard best practice range.

The tasks focused on very specific questions and areas of the website. Also, some of the terminology and language used in the tasks may have hindered the performance by participants. For example, users were unsure of the topics they would find under the ‘Best Practices’ menu heading. Also, the task about ‘Electronic Lab Notebooks’ had users locate an option that is ‘Mac compatible’ but the matrix spells out “Macintoshes.” Users found the local storage option really quick, but not the capability with Macs. Lastly, one user needed clarification on the word “optimal” during the task on date formats. These observations reiterate the need for simple, clear language during the usability tests and script dialogue.

## Conclusion

The results from the usability study will be used to guide the restructure of the Harvard Biomedical Data Management website through 2020. The restructuring will include moving the content into the Harvard Medical School new Drupal 8 platform from the current OpenScholar implementation.

The short-term tasks that have been completed include: distributing a newsletter for events, showing a full list of events in addition to the calendar view, updating the ELN Matrix vendor heading links, and including instruction for users to click on the matrix images to explore further.

The subgroup plans to work on the numerous “bigger” projects throughout 2020, including suggestions from both the usability test and also ideas from the subgroup members. The subgroup is currently exploring moving platforms from Open Scholar to Drupal 8, which is the platform to which many Harvard groups are migrating. A site map of the hierarchical structure has been created for the Open Scholar site and this will be used to inform the structure on the new platform. Below are other projects that have been identified as needing more time and resources to complete:

- Conform to accessibility guidance and requirements from Harvard
- Full class names in the title of the event
- Color coding for different events (departments, types of class etc.)
- Include more information on the repository site with use cases for each tool
- Review usability and content within the ELN Matrix
- Explore image management resources
- Lots of text, but little useful information, want to know more about how to use the website/tool
- Evaluate menu structure and interactive data lifecycle image

Feedback from users and shared expertise from subgroup members will ensure the website remains well positioned to offer educational resources and information to the Harvard biomedical community.

## References

Rohrer, Christian. "When to use which user-experience research methods." *Nielsen Norman Group* (2014). <https://www.nngroup.com/articles/which-ux-research-methods/>

Rubin, Jeffrey, and Dana Chisnell. *Handbook of usability testing: how to plan, design and conduct effective tests*. John Wiley & Sons, 2008. ISBN: 978-0-470-18548-3

## Appendices

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## Appendix A Recruitment Email

Hello,

The Data Management Working Group requests your participation in a short usability test of our website. You'll receive a gift for your participation. Choices include Amazon Fire 7 Tablet and Amazon Echo Dot.

### ***What will I be doing for the study?***

You will be asked to do five simple tasks using our website over the course of 30 minutes. You will be asked to think aloud and describe your actions. Your movements on the screen and your voice will be recorded.

### ***When and Where?***

**The study will only take 30 minutes, so please indicate 30 minute blocks of time during which you are available:**

#### **Countway Library Suite 219**

- **Monday, June 10th:** 10am-4pm
- **Tuesday, June 11th:** 12pm-5pm
- **Friday, June 14th:** 12pm-5pm
- **Monday, June 17th:** 10am-4pm

### ***How can I participate?***

Please complete this form with your contact information and preferred date and time: [Usability Test Signup](#)

Best,

Julie Goldman

--

Julie Goldman

Research Data Services Librarian

Countway Library #242

Harvard Medical School

[julie\\_goldman@harvard.edu](mailto:julie_goldman@harvard.edu)

## Appendix B Consent Form



### **Harvard University User Study Acknowledgement** *Consent to Participate in User Studies*

I agree to participate in the studies conducted and recorded by Harvard University staff.

I understand and consent to the use and release of the recordings made today. I understand that the information and recording is for quality assurance purposes only and that my information will not be used for any other purpose. I relinquish any rights to the recording and understand the recording may be copied and used by Harvard University without further permission.

I understand that participation in this usability study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the session with the study administrator.

Please sign below to indicate that you have read and you understand the information on this form and that any questions you might have about the session have been answered.

Date: \_\_\_\_\_

Print Your Name:

\_\_\_\_\_

Sign Your Name:

\_\_\_\_\_

## Appendix C Usability Test Script

### HMS Data Management Website

#### SET UP

**BRING UP <https://datamanagement.hms.harvard.edu> AND MINIMIZE IT**

Hi, [PARTICIPANT NAME]. My name is [YOUR NAME], thank you for coming in today.

If you would, I'm going to ask you to sign a simple permission form for us. It just says that we have your permission to record you, and that the recording will only be seen by the people working on the project.

**GIVE THEM CONSENT FORM AND A PEN.**

**START THE SCREEN RECORDER & VIDEO RECORDING**

Which lab or department are you affiliated with at the Longwood campus? How long have you been there? How do you interact with or collect research data in your work? Are there data management protocols/procedures in place within your lab/department?

Great. Before we get started I would like to go over what you will be doing today. We're going to look at an HMS website about research data management. I'll have you complete some basic tasks while on the website. I will ask you to share out loud as much as possible what you're thinking and feeling in response to these things, and if it's ok with you, I will observe you and take some notes. Is this alright with you?

Okay, so one thing that I want to make clear is that we are testing the HMS website, not you. There is no right or wrong way to go about the tasks so don't worry about making mistakes or about saying the wrong thing. We're doing this to improve the site, so we need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people naturally use the websites as well as their honest reactions. But if you still have any questions when we're done I'm happy to answer them.

**BRING UP THE WEBSITE**

Do you have any questions so far?



Okay, we're going to have a look the HMS Data Management site. Have you seen this site before? **IF YES:** What have you done here? Have you used it multiple times? How did you find out about it? **OR IF NO:** What do you think this site is for? You can scroll around but don't click on anything yet.

I'm going to read you some tasks and I'd like you to use the site to complete them. I'd like you to refrain from using the search box while completing the tasks. Is that okay?

There are no right or wrong answers. And as you're using the site, please narrate what you're doing. This will be really helpful for us. Do you have any questions for me? Okay, let's get started.

### **Tasks (do not need to say the number)**

**Task 1:** You heard about an event in July on high performance computing. How can you find the details?

- a) Are there any prerequisites? (THEN) Did you notice this information?
- b) How would you prefer to view upcoming events? (IF NEEDED ASK: In a calendar view, list, etc.)

**Task 2:** You've collected a large amount of data in your experiment. You need to upload the data set so your teammates can access it. Which tools allow you to do this?

- a) Which of these options would allow you to set different levels of permissions for your team?

**Task 3:** Your lab has collected a large amount of data from microscopic imagery. You have over 500 high-resolution photos. Which tool can help you organize these files?

- a) What do you think of this page?
- b)** Is there anything that could make it more useful?

**Task 4:** Your PI wants you to find three options for electronic lab notebooks to use in your lab. Find an option that works on Mac and offers local storage.

- a) How was the experience of finding the criteria for the electronic lab notebooks?
- b) On a scale of 1 to 5 (1 being not at all, 5 being very) how overwhelming is this spreadsheet?
- c) What would you suggest we change?

**Task 5:** You are a researcher at a lab and your PI noticed your lab records have inconsistent date formats in the file names. What's the optimal way to standardize how dates are used in file names?

Fantastic! Thank you so much for all of your feedback so far, this is incredibly helpful. Now that you have gone through the entire site, I just want to ask you a few wrap-up questions before we end the session.

1. What was your overall impression of the website?
2. Were there any parts that seemed confusing?
3. Are there any things you would change or want there to be added?

Ok great, so that is all of the questions I have for you. Is there anything else that you'd like to share about this site?

Do you have any questions for us?

Thank you for your participation! Your feedback will be helpful for the next iteration of this project.

**STOP THE SCREEN RECORDER**

**GIVE THEM CHOICE OF GIFT: Fire 7 Tablet or Echo Dot**