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Rachel Volentine

University of Tennessee, Knoxville, rvolenti@utk.edu

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DataONE Search UX Test Results
Rachel Volentine, UXL Manager
Center for Information and Communication Studies
rvolenti@utk.edu
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DataONE conducted a standard usability study of the DataONE search tool (search.dataone.org) for product development. This report discusses the findings and provides suggestions and recommendations for improvement of the tool.

METHODOLOGY

Testing

Testing was conducted during the DataONE Users Group (DUG) meeting on July 18, 2016. Testing took place in a meeting room at the Durham Convention Center in Durham, North Carolina.

Tests were recorded using MORAE Recorder. This software allowed the researcher to record and analyze the participants as they completed the survey and tasks. The researcher sat in the room with the participant in order to gather feedback on the search tool. The researcher also prompted the participants for insight on what they were doing and thinking throughout the tasks.

The researcher used a standard methodology, where participants were given tasks and the researcher watched the participants complete the tasks without helping the participant. Participants were asked to verbalize their thoughts regarding the DataONE search tool during the tasks; additionally, they were given a survey at the end of the tasks. The post-task survey asks the participants to evaluate and detail their experience with the website.

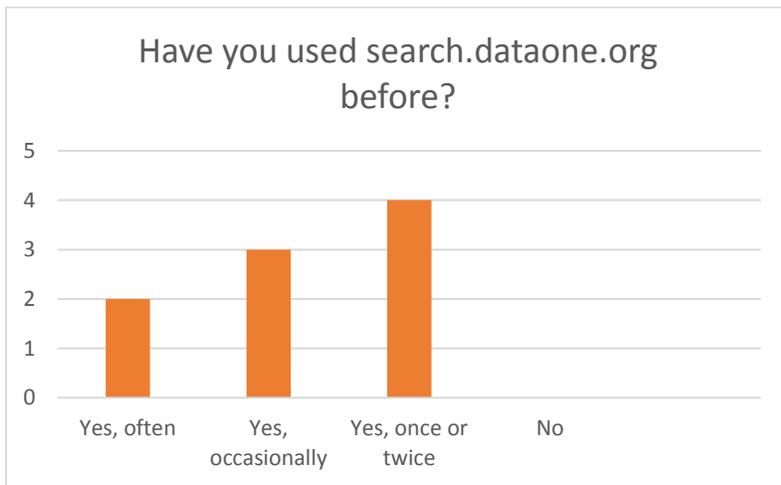
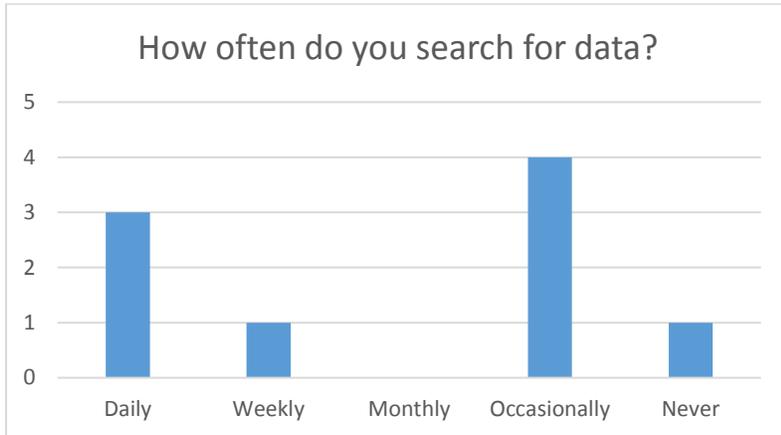
Participants

Nine participants completed the testing. The participants were recruited through e-mail and during the opening presentation of the DUG. Participants signed up for a time slot through a Doodle Poll that was included in the e-mail and presentation. All participants were attendees at the DataONE Users Group Meeting.

Participants completed a short demographic questionnaire at the beginning of the test. We asked, "What is your role or association with DataONE?" Three participants are member node coordinators; two participants work for a repository that is considering becoming a member node; and four participants have worked for DataONE (CCIT, leadership team, student intern, and steering committee).

Three of the participants are in the information sciences; three are in the computer sciences or data sciences; and two are ecologists.

We asked participants, “How often do you search for data?” Four participants search on a daily or weekly basis, and four participants occasionally search for data (Figure 1). All participants have used the DataONE Search before (Figure 2).



Tasks

Participants were given seven tasks in order to observe how they interact with the search tool and to identify any usability or functionality issues they encountered. For descriptions on how participants engaged with each task, please refer to the Task Results section of this paper. The entire usability test can be found in Appendix 1 at the end of this report.

On average participants took 16 minutes to complete the test. The test ranged from 10 minutes to 20 minutes.

TASK RESULTS

Task Results

Table 1 shows the success rate of the tasks. If a field is left blank the participant did not successfully complete the task. All participants were able to complete Task 1 (signing in), Task 4 (searching), and Task 7 (searching). Only two participants successfully completed task 3, finding a member node profile.

Table 1. Task Completion

| | Task 1 | Task 2 | Task 3 | Task 4 | Task 5 | Task 6 | Task 7 |
|----|--------|--------|--------|--------|--------|--------|--------|
| P1 | S | S | | S | S | S | S |
| P2 | S | S | S | S | S | S | S |
| P3 | S | S | | S | | S | S |
| P4 | S | | | S | S | S | S |
| P5 | S | | | S | S | | S |
| P6 | S | S | S | S | S | S | S |
| P7 | S | | | S | S | S | S |
| P8 | S | S | | S | S | S | S |
| P9 | S | S | | S | S | | S |

Table 2 shows the time on task per participants. The time includes successful and non-successful completion of tasks. Even though all participants were able to complete task 4, it took the longest time on average.

Table 2. Time on Task (in minutes)

| | Task 1 | Task 2 | Task 3 | Task 4 | Task 5 | Task 6 | Task 7 |
|-------------|------------|------------|------------|------------|------------|-----------|------------|
| P1 | 2.1 | .7 | .4 | 1.6 | 2.4 | 0.1 | .7 |
| P2 | 1.3 | 1.3 | 1.1 | 4.5 | 1.8 | .2 | .5 |
| P3 | 4.4 | 1.8 | 2.8 | 3.4 | 2.4 | .2 | 1.9 |
| P4 | 1.4 | 1.2 | .4 | 4.5 | 1.2 | .3 | 1.7 |
| P5 | 3.9 | 1.1 | 2.8 | 2.8 | 1.1 | 2.4 | 1.4 |
| P6 | 1.1 | .2 | .5 | .7 | 3.0 | .1 | .5 |
| P7 | 2.6 | 3.0 | .4 | .8 | 1.2 | .1 | .7 |
| P8 | 1.4 | 1.3 | 2.9 | 4.1 | 2.4 | .1 | 2.2 |
| P9 | 1.3 | 1.6 | 1.6 | 3.4 | 3.9 | .3 | 1.8 |
| <i>Avg.</i> | <i>2.1</i> | <i>1.4</i> | <i>1.4</i> | <i>2.8</i> | <i>2.1</i> | <i>.4</i> | <i>1.3</i> |

The first task asked participants to sign-in to the search. All participants were able to sign into the search; however, a few participants did not know their passwords, so they used the researcher's account. Participants liked the emphasis on ORCID. Participants were confused about the link between the "sign in with your university or institution account" and the examples listed. Participants thought they were two different options.

The second task asked participants to create a group. The task read, “In the DataONE Search you can create groups in order to grant multiple users permission to edit, publish, or archive your data. Find the page that allows you to create groups.” Six participants completed the task. At first it was not obvious where “groups” would be located, but they were able to locate them under their profile. Participants would like the “My Groups” to be included in the profile drop-down menu.

The third task asked, “Using DataONE Search, find the Member Node Profile for Minnesota Population Center. How many data uploads do they have?” Only two participants successfully completed the task. Most participants filtered the search by member node, but then did not know where to go. If the participant gave up on the task, the researcher explained where the member node profile was located and asked for comments. Most participants said that if they had not been told about the profile, they never would have known about it. They liked the idea of the member node icon taking the user to the profile. They also liked the idea of including the profiles on the summary page or its drop-down menu.

The fourth task focuses on the search’s filters. It asks, “Find a data set on water temperature in North Carolina.” While all participants were able to complete the task, there was disconnect between the search filters and the map. The map created distrust. The participant would limit the search to North Carolina through the map, but the results would include results outside the geographic boundaries. While participants guessed it was because the data set was housed in a North Carolina repository, it created distrust in whether the participant was getting the best search results. Participants also struggled to clear the map filter. Since the map filter is located on the right-hand side of the screen while the other filters are on the left, it was not always obvious the map was still engaged.

The fifth task asks, “How many TERN metadata files are in DataONE search?” Since all the participants had learned about member node profiles in task 3, all but one participant successfully completed the task. Most participants limited the search to TERN through the member node filter and then used the search results to answer the question. Half the participants also checked TERN’s profile to confirm that each data set only included one metadata file.

The sixth task asked participants to clear all filters. Seven participants completed the task. The two participants that did not complete the task cleared the individual filters and did not see the map filter.

The final task asked, “Find a data set created by Michael Liddell that contains data collected in the Daintree Rainforest.” Most participants searched for author in the creator filter and Daintree in the basic search box. Participants were much more confident in the search results for this task compared to task four.

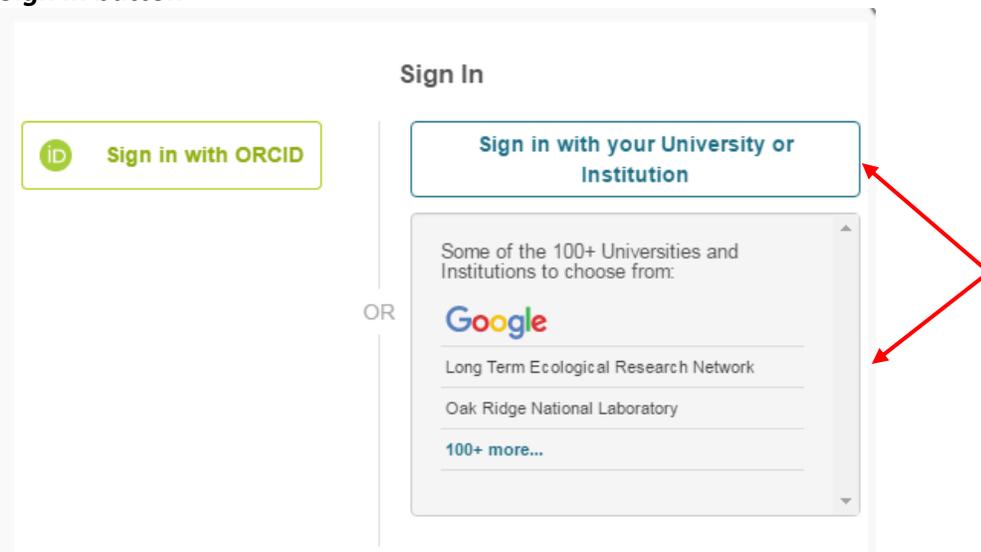
Survey Results

At the end of the tasks participants were asked four open-ended questions: what did you like best, what did you like least, what would you change, and any additional comments. Their comments can be found in Appendix 2.

Overall, participants liked the search interface. They thought it is aesthetically pleasing and the filtering is helpful. Some participants liked the map, while others did not. Some participants wanted additional map features, such as the ability to see the entire world or being able to visualize search results on the map. Participants wanted to change how you login with Google, where groups is located, and how you access member node profiles. All these issues will be addressed in the usability issue section below.

USABILITY ISSUES

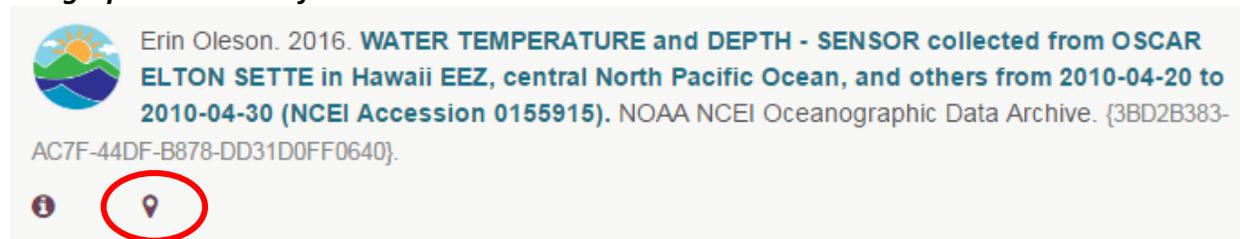
Sign in button



Issue: Some participants did not realize the association between the blue sign in button and the examples below. A few participants tried to click on Google in the list and only found the sign-in button when they clicked on 100+ more link, though they never made the connection between that link and the above sign in button.

Recommendation: Make the connection between the sign-in button and the examples more obvious. This could include outlining the examples box in the same blue color or enabling the examples box to also be clickable and take the user to the same sign in page.

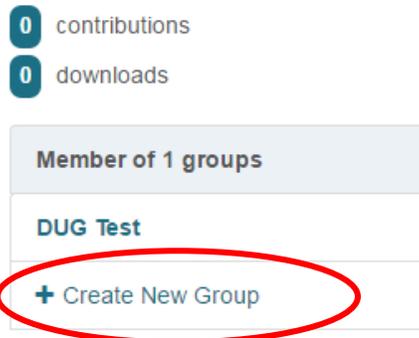
Geographic location of search results



Issue: Participants would like to be able to view search results on the map. Currently a result will show that it is associated with a geographical location, but there is no way to jump to that location on the map.

Recommendation: When participants click on the location icon the map jumps to that geographic region. You could also provide a button that allows participants to show all search results on the map.

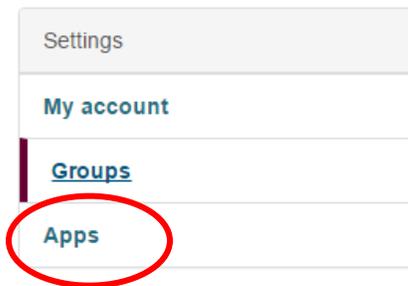
Create New Group Link



Issue: The “Create New Group” tab on the profile page does not work.

Recommendation: Fix the link.

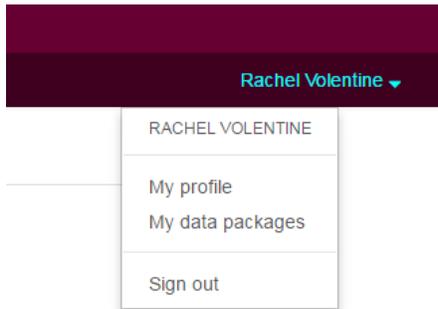
Apps



Issue: Participants did not know what “Apps” meant. Usability principles encourage the use of descriptive and unique headings that describe the content on the page. Currently, the word “app” does not appear on the page it describes.

Recommendation: Consider re-labeling the page. If the page is only going to display tokens then “tokens” may be a better page name.

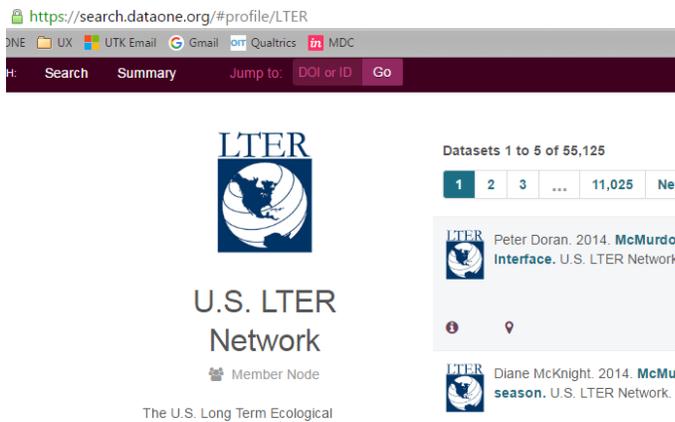
Group Pages



Issue: Participants had a hard time getting to the “Groups” page. It was not clear that the group page was associated with the profile→settings.

Recommendation: In the profile drop-down menu consider adding a “My Groups” link along with the profile and data packages links. This is in addition to the current group page under settings.

Member Node Profile



Issue: In order for a user to get to a member node profile page, they must search for the member node, click on a search result, and then click on the member node logo. Participants thought the process was inconvenient, and unless you previously knew the profile existed you would never find it.

Recommendation: Consider creating a new path to member node profiles. One option is linking the member node profile to the member node icon. This would allow users to access the profile from the search results. Another option is adding member node profiles to the summary either on the page or a drop-down menu. One or both of these options could be implemented.

Page title of summary

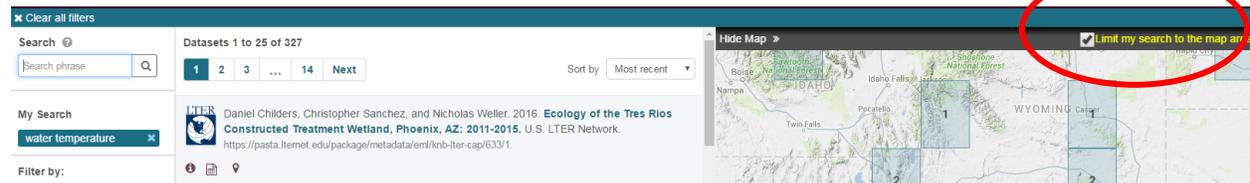


Summary of Holdings

Issue: A couple of the participants opened the summary page when searching for the member node profile. When they opened the page, they were unsure what they were looking at. While they assumed the page included a summary of all DataONE holdings, the page contents were not described. The title “summary of holdings” is not a descriptive title. Summary of what holdings? Users must assume the holdings means the summary of the DataONE search holdings not a subset.

Recommendation: Provide more detail to the page title. Specify exactly what holdings the page contains.

Map filter



Issue: The map filter does not show up with the other filters. Users may not realize they have the map engaged or may not clear the map along with the other filters when starting a new search.

Recommendation: Include a filter indicator along with other filters under “my search”. For example, a filter that says “map engaged” or states the latitude and longitude lines of the map box.

Collapsible metadata fields

People and Associated Parties

Origin

Investigator

Access Control

Is Public

Submitter

Rights Holder

Read Permission

Authoritative MN

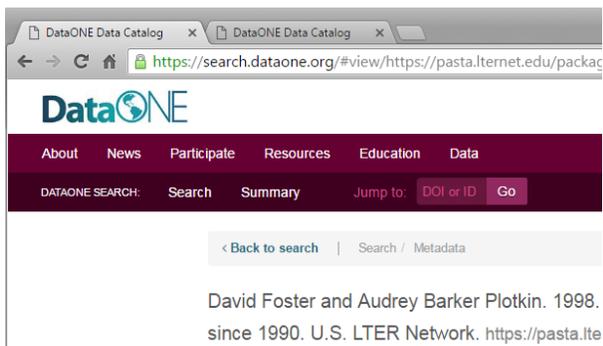
Other

Format Id

Issue: A couple of participants expressed interest in collapse metadata fields. If the user expanded the fields as desired, it would create less scrolling.

Recommendation: Consider making the metadata fields collapsible. Especially if additional metrics are added to the page, a shorter page length will improve usability.

Control Click Function



Issue: If a user uses the short cut “Control + Mouse Click” to open a new tab, the search opens a new tab and also opens the page in the current page.

Recommendation: Fix this bug. Users are opening a new tab in order to save the content of their current page.

Data Attribute

Search 

Search phrase 

Filter by:

  Data attribute

density, length, etc. 

  Data files

  Member Node

Cornell Lab of Ornithology - e...

Dryad Digital Repository

EDAC Gstore Repository

ESA Data Registry

[Show 28 more](#) 

  Creator

  Year

  Identifier

  Taxon

  Location

Issue: Some of the participants did not know what a “data attribute” was. The participant can hover-over the term and get a definition, “the attribute name/definition from a data table,” but participants were not clear what that meant.

Recommendation: Provide a definition of data attribute that provides more detail. Consider including an example. Additionally, if most users are not familiar with the term “data attribute” you may be able to move that filter option lower on the list. Put the more frequently used filters higher on the list.

CONCLUSION

Overall, participants liked the design and interface of the DataONE Search. Participants remarked that the search has been continually improving since it was first released.

The filters, search results, and metadata pages are all easy to use and understand. While participants liked the design of the map, they had some issues with its use. It is not always clear when the map is engaged and it is hard to clear its results. The map also creates distrust when either the user receives results that do not seem to be in the geographic region or when the number of search results do not match the number presented in the map.

Some of the new search features, such as the member node profile and group pages, are not accessible. Without prior knowledge it is unlikely a user would find the member node profile or group pages. Creating links between the member node icon and its profile page will help new users discover the pages.

APPENDIX 1

DataONE Search Tasks

- 1) Sign-in to the search.

- 2) In the DataONE Search you can create groups in order to grant multiple users permission to edit, publish, or archive your data. Find the page that allows you to create groups.

- 3) Using DataONE Search, find the Member Node Profile for Minnesota Population Center. How many data uploads do they have?

- 4) Find a data set on water temperature in North Carolina.

- 5) How many TERN metadata files are in DataONE search?

- 6) Clear all filters.

- 7) Find a data set created by Michael Liddell that contains data collected in the Daintree Rainforest.

APPENDIX 2

What did you like best about search.dataone.org?

- The filters are useful but I use the search bar the most. I like the map and the clean look of the records.
- I like the map display
- Many filtering options, pretty interface.
- access to so many datasets; I like the map and the list view
- Member node summary page once you know how to get to it
- Aesthetics
- Easy to filter and add/remove additional filters
- There are a lot of useful filters / facets which help to focus the results set. I like the overall visual design of the interface. Typography is large and clear, use of whitespace is good.
- The layout of the areas of the interface is clear and organized.

What did you like least about search.dataone.org?

- Not obvious where (or that I could) create a group.
- Behavior of the back button is inconsistent.
- I would like to have had a way to 'map' the search result set; similar to a hotels.com 'Map View'
- Too fine control on mousing needed to expand down arrows
- Map
- Menu structure not intuitive
- When returning to the main search page, the results pane is slow to reload. I didn't see a suggested term in the location filter on the first try, but then they appeared when I tried it again.
- The map is not as intuitive/easy to use as the other parts of the interface.

If you could change one thing, what would you change?

- Make a clear all button
- CTRL+Click to open new tab doesn't work right
- Back button
- see #2
- labeling
- Logos link to MN profiles pages
- Login with Google more straightforward
- Can't think of anything right now.
- To clarify that the map is part of the 'filter'; i.e. it needs to be reset when performing a new search.

Any other comments?

- Would like to be able to zoom out in the map and see the entire world at once; would also like a way to change the relative width of the record pane and the map pane. Would also like the record to show # of metadata files and ancillary files (like shapefiles) attached to a record, even if there is no associated data.
- It's a bit slow
- The search keeps improving! Good work!
- The filters are helpful for the searches; however, the relationships between the terms and how the selections of the filters would affect the research is not always clear.