UX Report: DataONE Public Site Test Report: Phase I – Undergraduate Students

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DataONE Public Site Test Report

Phase I – Undergraduate Students

Usability and Assessment Working Group

May, 2011

Executive Summary

The Usability and Assessment Working Group conducted a usability test at the User Experience Lab at University of Tennessee Knoxville from March 22nd to April 4th, 2011. The purpose of the test was to assess the usability of DataONE public website www.dataone.org. The first phase invited undergraduate students to evaluate the website. The second phase plans to invite faculty and graduate students in environmental sciences and related disciplines to participate.

A total of 16 undergraduate students participated in the test. One participant did not start the recording properly, so his/her recording was not usable. The following report only focused on the 15 participants. The session time in the lab lasted approximately from 15 to 32 minutes.

In general all participants found the DataONE site straightforward and easy to use. The test identified some problems in interface including:
- Confusing tab names "News and Events" and "DataONEpedia"
- Too much information in certain pages
- Maps hard to read

This document summarizes participants' interactions with DataONE site when searching relevant information as well as their subjective ratings. A copy of the scenarios and questionnaires are included in the Attachments' section.

Methodology

Session Overview

The session was conducted in the User Experience Lab. Each individual session lasted approximately from 15 to 32 minutes. During the session, participants first filled out a pre-task questionnaire regarding their familiarity with the DataONE project and self-evaluated computer efficacy. Then participants read three test scenarios and were required to accomplish several search tasks associated with each scenario. Participants were also required to vocalize their thoughts during the process. Upon finishing the test, participants filled out a post-task questionnaire regarding their evaluation of DataONE site.

Pre-Task Questionnaire

Before introducing the search tasks, the test administrator first asked the participant to answer two sets of questions by using a 7-point Likert scale (Disagree Strongly to Agree Strongly) (See Attachment A):
- Familiarity with the DataONE project
- Efficacy in using computers

The purpose of measuring participants' computer self-efficacy was to control the effect of efficacy in following task performance.

Search Tasks

A total of three scenarios were provided for participants. Each scenario focused on one particular information part on DataONE website. (see Attachment B for complete test scenarios):
- Scenario one (three search tasks): focusing on basic information about DataONE project
- Scenario two (three search tasks): focusing on information about data management plans
- Scenario three (two search tasks): focusing on information about tools

Post-Task Questionnaire

After the search tasks were completed, the test administrator asked the participant to evaluate the usability issue of DataONE site using a 7-point Likert scale (Disagree Strongly to Agree Strongly) for 19 subjective measures. Examples included:
- Perceived complexity of the system
- Ease of use
- Information presentation
- Information access
- Features of the site

In addition, the participants could write down their thoughts in one open-ended question at the end of the questionnaire.

See Attachment C for the subjective and overall questionnaires.

Results

This section will report results in three parts: pre-task questionnaire, search tasks performance, and post-task questionnaire.

1. Pre-Task Questionnaire

Overall, none of the participants had heard of the DataONE project, nor were any familiar with the project or had visited the website before. In addition, none of participants were directly affiliated nor had someone known affiliated with the project. The "neutral" response possibly indicates "unsure" or "do not know." One participant agreed that DataONE project could be applicable to his/her work.

	Disagree[a]	Neutral	Agree[b]	Mean Rating	Percent Agree
I have heard of DataONE	15	0	0	1.13	0%
I am familiar with DataONE	15	0	0	1.13	0%
DataONE is applicable to my work	10	3	1	2.36	7%

	Disagree[a]	Neutral	Agree[b]	Mean Rating	Percent Agree
I have visited DataONE's website	15	0	0	1.07	0%
I am directly affiliated with the DataONE project	14	1	0	1.20	0%
Someone I know is directly affiliated with the DataONE project	14	1	0	1.20	0%

[a]Disagree: combined answers from "disagree strongly," "disagree," and "disagree slightly."
[b]Agree: combined answers from "agree strongly," "agree," and "agree slightly."

The 11 items of computer self-efficacy was averaged as participants' efficacy level. Participants' self-evaluated efficacy level was high: mean = 6.13 (SD = 0.55, min = 5.18, max = 6.82).

2. Search Tasks

Participants were required to search information on DataONE site for 8 tasks in three scenarios. Table below provides a brief description of the 8 tasks. Appendix B provides the detailed descriptions of the scenarios and tasks.

		Descriptions
Scenario 1: DataONE basic info	**Task 1**	What is DataONE project?
	Task 2	Who are DataONE current partners in California?
	Task 3	Give two events on April 29th.
Scenario 2: data management plan info	**Task 4**	List three "data documentation" practices under "Best Practices"
	Task 5	What is data management plan?
	Task 6	List components of data management plan included in JPL community
Scenario 3: tools info	**Task 7**	Give two example tools for data acquisition and modeling
	Task 8	What is the technical expertise requirement for ArcGIS Desktop tool?

a. Time on task and Success rate

		Time on Task[a]	Success Rate[b]
Scenario 1: DataONE basic info	**Task 1**	1.10	1
	Task 2	3.10	0.87
	Task 3	2.38	1
Scenario 2: data management plan info	**Task 4**	2.89	0.67
	Task 5	1.43	0.93
	Task 6	2.56	0.4
Scenario 3:	**Task 7**	2.72	0.86

		Time on Task[a]	Success Rate[b]
tools info	**Task 8**	1.69	0.73

[a]Time on task: measured in minutes
[b]Success rate: calculated by (# of participants successfully accomplished the task) / (# of participants)

The average time spent on all three scenarios was 17.19 minutes (SD = 3.48, min = 11.75, max = 23.77). Based on "time on task" and "success rate", task performance of eight tasks is reported individually as following:

- Task 1 and task 3 in scenario 1 generally required less time and had a high success rate. Although task 2 in scenario 1 required more average time to finish, it also had high success rate. Therefore, basic information about DataONE on website was relatively easy to locate.
- Task 5 in scenario 2 needed few time and had a high success rate, whereas task 4 and task 6 in the same scenario required more time and had a low success rate. The results indicated that locating information about data management plans was relatively difficult.
- Task 7 in scenario 3 required more than 2 minutes but also had a higher success rate; task 8 required less than 2 minutes with a lower success rate. Thus, participants could locate information about tools on the site as long as they spent more time in looking for it.

b. Interactions and thoughts about the website to locate the information

MORAE software was used to record both participants' interaction with the website (how they located the information) and their think-aloud data (thoughts about finding the information). Results from MORAE recordings are reported below.

- Task 1 about the meaning of DataONE was mentioned by most participants as an "easy task". Participants began in either "about DataONE" page or "DataONE Organization" page and found the information pretty quickly.
- Task 2 required participants to find the DataONE current partner that is located in California. Some participants directly went to "Partners" page and found the information; some went to "DataONE organization" or "about" page first, and then turned to "Partners"; one participant used "Search" box at home page and located the information. Generally, participants evaluated task 2 as an easy task, but two participants mentioned that the map shown in "Partners" page was too small to read clearly.
- Task 3 required participants to report two events scheduled on April 29th. The correct information was located under "Events Calendar." Eight participants checked "News and Events" first; two participants checked "Training Events" first; one participant used the search box on the home page but did not find the information; only two participants directly opened "Events Calendar" page in first try. Although most participants thought this was an easy task, some thought that "News and Events" was a confusing tab. There was only news on the page after clicking "News and Events", so the tab should be named as "News."
- Task 4 asked for information about "Best Practices." The information was located under "DataONEpedia." Six participants began with "Data Management Plans"; three participants used the search box on home page

but did not find the information; two participants went to "Learn" home page; two participants found the information when accomplishing another task; only two participants directly clicked "DataONEpedia." It was obvious that most participants could not associate "Best Practices" information with the tab "DataONEpedia". P4 and P12 mentioned that this piece of information was hard to find; P1 commented that the information was "hidden" and difficult to find; P16 admitted that it took a lot of time to find answers to this question.

- Task 5 asked about the definition of data management plans. Twelve participants directly went to "Data Management Plans" page, which gave the correct information. Most participants mentioned this was an easy task.
- Task 6 required information about data management plan information in one particular community. Eleven participants located the right page for the information; four participants tried the search function but did not find the relevant information. The reason for low success rate of this task was that although most participants found the right page, they did not locate the correct information in the texts. P10 thought it was hard to find the information.
- Task 7 asked participants to list two example tools under one particular category. The information was located under "Tools" title on "DataONEpedia" page. Six participants directly clicked "DataONEpedia" link; four tried to search but did not find the relevant information; four participants clicked other links first and then turned to "DataONEpedia" page; one participant skipped the task. P1 mentioned that this information was hidden and he could not think "DataONEpedia" was associated with tools information.
- Task 8 asked for particular information about a specific tool. Ten participants used the search function either on home page or on "DataONEpedia" tools search box; four browsed pages and found the information; one gave up the task. P1 commented that the search box [under "tools"] was easy to find information and information in the page was easy to follow.

Overall, most participants finished all eight tasks within the required time. One common pattern across all participants was consistently using "Home" tab to back to home page when beginning a new task. The availability of "Home" tab in every page seemed to be convenient and useful for users. In addition, most participants showed confusion about the tab "News and Events" regarding what to expect to find. Similarly, "DataONEpedia" is another confusing tab name, which was difficult to expect to find information about tools and data best practices. Participants also need to read a whole page of texts to locate relevant information for the question. It was observed that it was relatively easy to get to the right page, but it took a certain amount of time to find the information hidden in the long texts. This is especially the case for Task 6.

3. Post-Task Questionnaire

After task session completion, participants rated the site for a total of 15 subjective measures and provided any comments they had in one open-ended question (See Attachment C).

a. Subjective measures

See table below.

Post-Task Questionnaire [scale: strongly disagree (1) to strongly agree (7)]

#	Questions	Disagree[a]	Neutral	Agree[b]	Mean Rating	Percent Agree*
1	This site was missing critical features that would be very useful to me	10	2	2	2.79	14%
2	This site was exactly what I needed to carry out my tasks	1	1	12	5.57	86%
3	It was difficult to complete my tasks effectively because some of the features I needed were not available	11	1	2	2.43	14%
4	This site contains appropriate features for my purposes	0	0	14	6.07	100%
5	It was easy to locate information on this site	2	2	10	5.14	71%
6	I could get to information quickly and easily	1	1	12	5.57	86%
7	It was easy to access information that I needed	1	1	12	5.57	86%
8	The overall purpose of this site was easy to determine	1	2	11	5.50	79%
9	I needed help accessing and understanding this site	13	1	0	1.93	0%
10	It is easy for me to learn how to use this site	1	0	13	6.07	93%
11	This site that give me access to information that I need are convenient and easy to use	1	0	13	5.71	93%
12	The information that I needed was displayed in an understandable layout	1	0	13	5.64	93%
13	The information was presented in a useful and understandable format	2	1	11	5.71	79%
14	There was so much information, it was difficult to sort through it	9	1	4	3.07	29%
15	The information was located in so many different places; it was hard to know how to use this site effectively	5	4	5	3.86	36%

[a]Disagree: combined answers from "disagree strongly," "disagree," and "disagree slightly."
[b]Agree: combined answers from "agree strongly," "agree," and "agree slightly."

The 15 questions can be grouped into several categories regarding different aspects of usability issues of the site.

- Feature availability (Q1, Q2, Q3, and Q4): most participants agreed that the site included necessary features to task completion
- Locate and access to information (Q5, Q6, Q7, and Q15): most participants agreed the easiness to locate information. However, regarding locating

information (Q2 and Q15), some participants did not agree that the site provided convenience and effectiveness in locating information.

- Understanding the site (Q8): most participants showed understanding of the site
- Learn or help needed for the site use (Q9 and Q10): almost all participants thought the site was easy to use and did not need any help.
- Information on the site (Q11, Q12, Q13, and Q14): most participants showed agreement on easy information use, understandable information layout, and information presentation. However, almost one third of participants thought there was too much information to sort through.

b. Open-ended question

Nine participants provided comments in the open-ended question. Overall, participants thought that this site was easy to use and to navigate; had good organization; was well designed. Participants also mentioned several specific places to improve: a lot of information and too wordy; hard to read maps; rename "News and Events."

Conclusion

Most of the participants found the DataONE site easy to use. Some recommendations are given to improve user experience. Continuing to work with users (i.e., real lay persons) will ensure a user-centered website.

Recommendations
- Tab "News and Events" may need to change to "News", because the contents on this page only include news of DataONE. Having "News and Events" confused users about its difference from other two tabs "Event Calendar" and "Training Events"
- Tab "DataONEpedia" needs to change. The contents under "DataONEpedia" are not consistent with the name and the name does not tell users what they might expect to find under the tab
- The search box should be available in each page, not just on home page
- Maps and images on the site should include "enlarge" function
- Reorganize and may need bullet points or link in some pages that have long texts. The changes make it easier for users to read and capture the important points on the page

Appendix A – Pre-Task Questionnaire

Here are a number of characteristics that may or may not apply to you. **Circle a number from 1 to 7** to answer your responses to **ALL** of the following questions for each of the listed activities. *Please take your time and read the instructions completely.* The numbers are used in this way:

Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly
1	2	3	4	5	6	7

1. I have heard of DataONE.   1 – 2 – 3 – 4 – 5 – 6 – 7

2. I am familiar with DataONE.   1 – 2 – 3 – 4 – 5 – 6 – 7

3. DataONE is applicable to my work.   1 – 2 – 3 – 4 – 5 – 6 – 7

4. I have visited DataONE's website.   1 – 2 – 3 – 4 – 5 – 6 – 7

5. I am directly affiliated with the DataONE project.   1 – 2 – 3 – 4 – 5 – 6 – 7

6. Someone I know is directly affiliated with the DataONE project.   1 – 2 – 3 – 4 – 5 – 6 – 7

Computer Self-Efficacy Questions

Here are a number of characteristics that may or may not apply to you. **Circle a number from 1 to 7** to answer your responses to **ALL** of the following questions for each of the listed activities. *Please take your time and read the instructions completely.* The numbers are used in this way:

Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly
1	2	3	4	5	6	7

I feel confident…

1. Understanding terms/words relating to Internet software.   1 – 2 – 3 – 4 – 5 – 6 – 7
2. Moving the cursor around the monitor.   1 – 2 – 3 – 4 – 5 – 6 – 7
3. Making selections from an online menu.   1 – 2 – 3 – 4 – 5 – 6 – 7
4. Using the Internet to gather data.   1 – 2 – 3 – 4 – 5 – 6 – 7

5.	Learning advanced skills within a specific Internet program.	$1 - 2 - 3 - 4 - 5 - 6 - 7$
6.	Engaging in an online discussion group.	$1 - 2 - 3 - 4 - 5 - 6 - 7$
7.	Searching for information on the World Wide Web.	$1 - 2 - 3 - 4 - 5 - 6 - 7$
8.	Working on a personal computer.	$1 - 2 - 3 - 4 - 5 - 6 - 7$
9.	Using online chat to communicate with others.	$1 - 2 - 3 - 4 - 5 - 6 - 7$
10.	Using instant messaging to communicate.	$1 - 2 - 3 - 4 - 5 - 6 - 7$
11.	Learning to use a variety of programs (software).	$1 - 2 - 3 - 4 - 5 - 6 - 7$

Appendix B –Task Scenarios

We would like you to find information on a science project website. We will provide you some imaginary scenarios for the tasks. There is no right or wrong answers to each question. Try your best to find the answers. If not, just leave it blank.

Please say out loud what you are thinking about when searching for the information. When you are ready to begin, click the red "start" button.

Scenario 1: You're working on a research project that requires large datasets. You've heard that the DataONE initiative could be useful to your project and you've been directed to the website. Find the answers to the following questions on the DataONE website and record them on the paper provided.
1. What is the DataONE project?
2. Who are the DataONE current partners in California?
3. What are the two events on February 11th?

Scenario 2: Since your project requires large datasets, you want to know the best way to manage them. Find the answers to the following questions on the DataONE website and record them on the paper provided.
1. What are the three "data documentation" practices provided in "Best Practices"?
2. What is a data management plan?
3. What are components of data management plan included in JPL community?

Scenario 3: DataONE provides tools to help you manage large datasets. Find the answers to the following questions on the DataONE website and record them on the paper provided.
1. Give two example tools used for data acquisition and modeling.
2. What is the technical expertise requirement for ArcGIS Desktop tool?

Appendix C – Post-Task Questionnaire

Here are a number of characteristics that may or may not apply to you. **Circle a number from 1 to 7** to answer your responses to **ALL** of the following questions for each of the listed activities. *Please take your time and read the instructions completely.* The numbers are used in this way:

Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly
1	2	3	4	5	6	7

1.	This site was missing critical features that would be very useful to me.	1 – 2 – 3 – 4 – 5 – 6 – 7
2.	This site was exactly what I needed to carry out my tasks	
3.	It was difficult to complete my tasks effectively because some of the features I needed were not available.	1 – 2 – 3 – 4 – 5 – 6 – 7
4.	This site contains appropriate features for my purposes.	1 – 2 – 3 – 4 – 5 – 6 – 7
5.	It was easy to locate information in this site.	1 – 2 – 3 – 4 – 5 – 6 – 7
6.	I could get to information quickly and easily.	1 – 2 – 3 – 4 – 5 – 6 – 7
7.	It was easy to access information that I needed.	1 – 2 – 3 – 4 – 5 – 6 – 7
8.	The exact purpose of this site was easy to determine.	1 – 2 – 3 – 4 – 5 – 6 – 7
9.	I needed help accessing and understanding this site.	1 – 2 – 3 – 4 – 5 – 6 – 7
10.	It is easy for me to learn how to use this site.	1 – 2 – 3 – 4 – 5 – 6 – 7
11.	This site gives me access to information that I need are convenient and easy to use.	1 – 2 – 3 – 4 – 5 – 6 – 7
12.	The information that I needed was displayed in an understandable layout.	1 – 2 – 3 – 4 – 5 – 6 – 7
13.	The information was presented in a useful and understandable format.	1 – 2 – 3 – 4 – 5 – 6 – 7
14.	There was so much information, it was difficult to sort through it.	1 – 2 – 3 – 4 – 5 – 6 – 7
15.	The information was located in so many different places; it was hard to know how to use this site effectively.	1 – 2 – 3 – 4 – 5 – 6 – 7

Any other comments:

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