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11-7-2016

## UX Report: Manual Provenance Display UX Test Results

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### Recommended Citation

Volentine, Rachel, "UX Report: Manual Provenance Display UX Test Results" (2016). *DataONE Sociocultural and Usability & Assessment Working Groups*.  
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Manual Provenance Display UX Test Results  
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November 7, 2016

DataONE conducted a usability study of the provenance display in the DataONE Search tool for product development. Testing used 18 mock-ups created in InVision. This report discusses the findings and provides suggestions and recommendations for improvement of the tool.

## METHODOLOGY

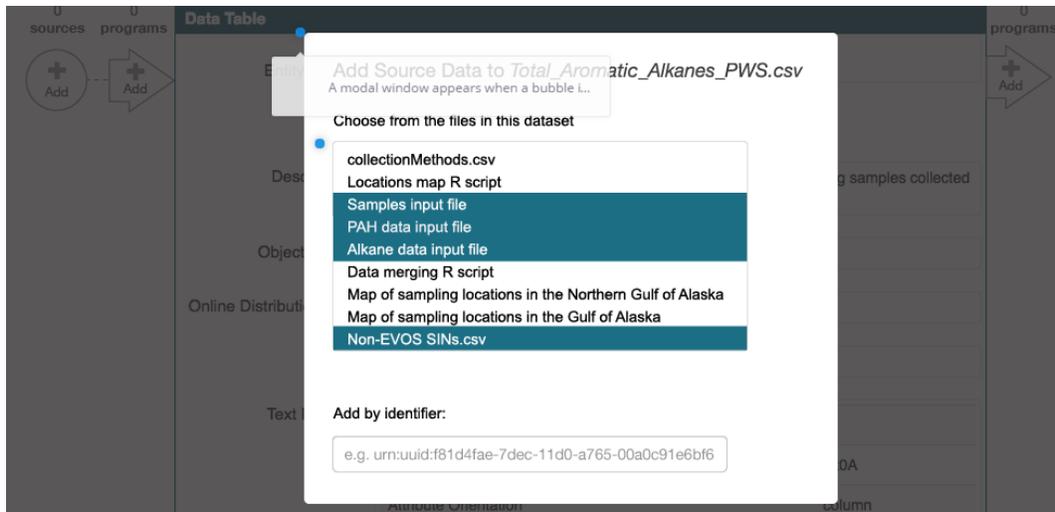
Testing was conducted October 28 through November 4, 2016. Testing took place either in the User-Experience Lab at the University of Tennessee or through WebEx, an online meeting application.

The researcher walked the participant through the mock-ups and asked them for feedback throughout the process. The testing document can be found at the end of the report.

Nine participants completed the testing. The participants were recruited through the DataONE Community Mailing List.

## USABILITY ISSUES

### ***Lack of “Next” Button***



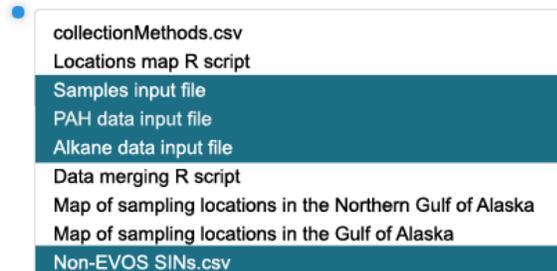
**Issue:** Participants did not know how to move from the pop-up screen to the main screen. There is no obvious way to move forward.

**Recommendation:** Add a “continue” or “next” button to the bottom of the pop-up window that shows the user how to continue with adding provenance features.

## Select one or more

Add Source Data to *Total\_Aromatic\_Alkanes\_PWS.csv*

Choose from the files in this dataset

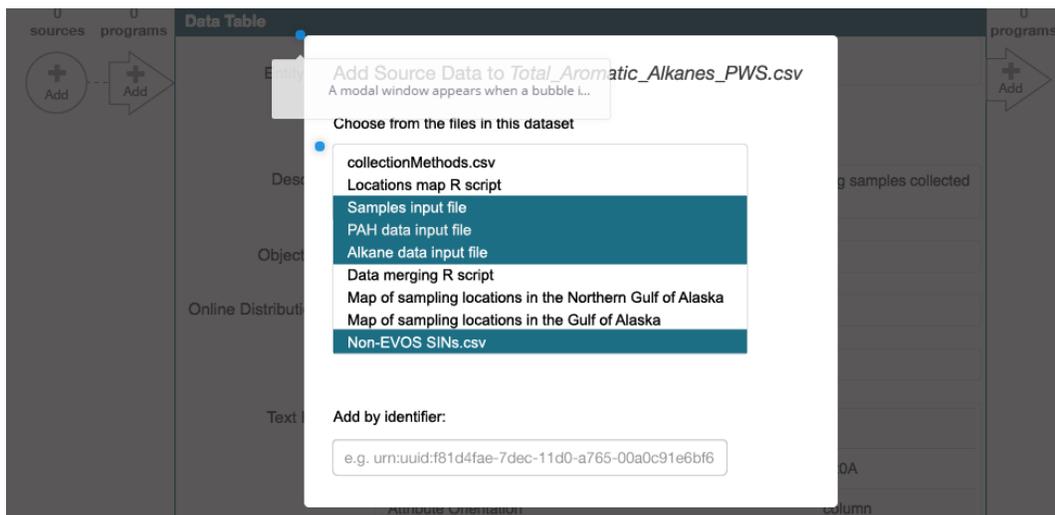


**Issue:** Since users hit one “add” icon there is an inference that they are adding only one file. While they can add multiple files at once, this function may not be obvious.

**Recommendation:** Say “Choose one or more files from this dataset”.

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## Sources vs. Programs



**Issue:** When the user selects sources, they also see programs (R Script). This could lead to error and could create a longer list that is hard to scan.

**Recommendation:** Is there a way to distinguish between sources and programs in the selection list? Participants would prefer to only see sources.

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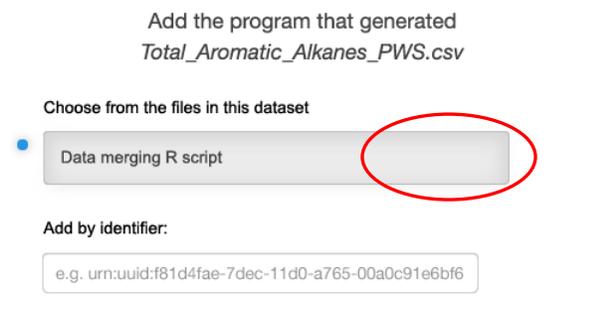
### Drop-down menu

Add the program that generated  
*Total\_Aromatic\_Alkanes\_PWS.csv*

Choose from the files in this dataset

Data merging R script

Add by identifier:



**Issue:** There is no indicator that there is a drop-down menu under “Choose from the files in this dataset.”

**Recommendation:** Add an icon or indicator that shows that there is a drop-down menu.

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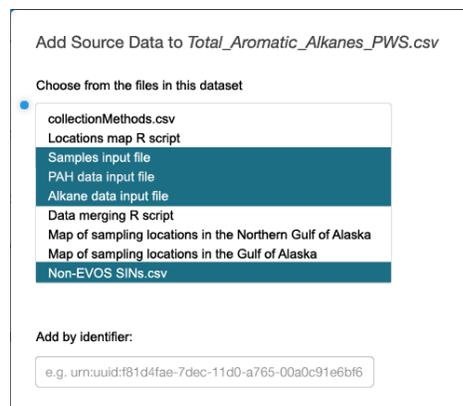
### Number of Files

Add Source Data to *Total\_Aromatic\_Alkanes\_PWS.csv*

Choose from the files in this dataset

collectionMethods.csv  
Locations map R script  
Samples input file  
PAH data input file  
Alkane data input file  
Data merging R script  
Map of sampling locations in the Northern Gulf of Alaska  
Map of sampling locations in the Gulf of Alaska  
Non-EVOS SInS.csv

Add by identifier:



**Issue:** Participants worried that a large number of files could be hard to scan. What would the window look like if there are 30 files in the dataset?

**Recommendation:** Alphabetizing the file list could aid in scanning and a search field could help selection if there are a large number of files.

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## Type of Identifier

Add by identifier:

e.g. urn:uuid:f81d4fae-7dec-11d0-a765-00a0c91e6bf6

**Issue:** It is unclear what type of identifier can be used. Participants were not sure if you could only add data files from DataONE.

**Recommendation:** Specify the type of identifier (e.g., Add by DataONE identifier). A help icon could also be used to add detail.

## Location of Save

The screenshot shows a 'Data Table' form with the following fields and values:

- Entity Name: Total\_Aromatic\_Alkanes\_PWS.csv
- Description: Combined dataset from PAH, Alkane and Sample tables documenting samples collected after the Exxon Valdez oil spill in Prince William Sound, AK
- Object Name: Total\_Aromatic\_Alkanes\_PWS.csv
- Online Distribution Info: urn:uuid:c4c610c9-460a-45a0-8039-6a50e149f8d6
- Size: 2655568 byte
- Text Format:
  - Number of Header Lines: 1
  - Record Delimiter: #x0A
  - Attribute Orientation: column
  - Simple Text
  - Field Delimiter: .

At the bottom of the form, there are 'Cancel' and 'Save' buttons. The 'Save' button is highlighted in purple.

**Issue:** Not all of the participants saw the Save button at the bottom of the screen. There is a chance a user could leave the page without saving. Some participants expected that when they added the sources, programs, or derivations they would be saved (saving was implied).

**Recommendation:** When someone leaves the page without saving, add a pop-up that reminds me to save. Participants would prefer that their work is automatically saved, though that may not be possible.

## Program

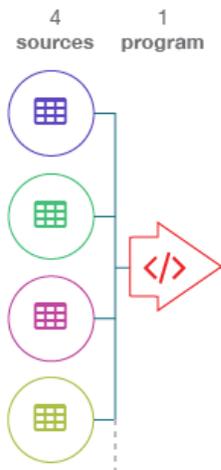


**Issue:** Not all the participants knew the difference between source and program. Most participants were able to figure it out based on the pop-up windows for adding sources and programs, but without the aid of the pop-up windows, users may struggle to understand the provenance display.

**Recommendation:** Add a help icon on the metadata page that provides a definition and examples of programs and sources/derivations.

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## Colors of Icons

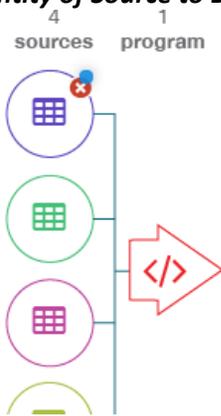


**Issue:** Many participants thought the colors had meaning. Participants liked the color (rather than black and white) but they thought the color represented a different type of file.

**Recommendation:** Associate a color and icon for each type of data file (program, data file, map, etc.). For example, all programs are red.

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### Identity of Source to Delete



**Issue:** While participants liked the delete button design, they cannot tell which source they are deleting. In this mock-up, a user would have to know in which order they added the sources to delete the correct one.

**Recommendation:** Assuming the creator could hover over the icons to see additional information, the delete button may be better suited on that window rather than the icon.

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### Accidental Deletion

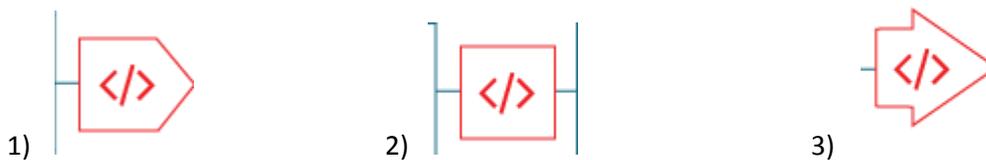


**Issue:** Participants worried they could accidentally delete a source.

**Recommendation:** Add a pop-up that asks if the user is sure they want to delete the object.

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### User preference



**UX Recommendation:** Participants were asked which icon they preferred for the program display. Seven of the nine participants preferred the arrow (#3). Two participants liked the square better (#2). Recommend staying with the original arrow design. Participants liked that the arrow indicated direction.

## **CONCLUSION**

Overall, participants liked the provenance display. They thought the left-to-right layout matched most people's reading habits and timeline structure. The "add" buttons and work flow were intuitive. The participants said they would start by adding sources and then work their way across the screen to the right. They said it made sense to start with the "older" (source) material and then work their way to the "new" (derived) material. They also liked that you could start with any part of the provenance; so, for example, if you were most comfortable with the source program you could start there before adding sources. Even if a user had little knowledge of provenance before interacting with the interface, they would be able to use the interface to figure it out.

The main UX issue discovered during testing was how to navigate through the pop-up windows. There was no obvious method to move between the main window and the pop-ups and the lack of a "next" button disrupted the work flow. The location of the "save" button might present some issues in production. The button is not located near the workflow, and users could easily miss it. Participants thought "save" should be built into the pop-ups so once you added the programs or sources they were saved. Participants thought the delete option was intuitive, but wanted to make sure you could see the file information before deleting an item.

Participants liked the color and icons but they thought the color represented a file type. Associating a certain color with a file type (program, data file, map, etc.) will help users easily make connections between the items.

Future usability testing may be needed once the site is launched, and usability testing throughout its lifecycle will provide on-going support.

Provenance Display

UX Test November 2016

Participant: \_\_\_\_\_

- 1) What is your understanding of provenance? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Provenance is the origin, lineage or source of data. It's a record of its derivation history—both retrospective and future derivations.

- a. For these mock-ups we are looking at examples for adding provenance to your dataset. In order to see these mock—ups you would be signed into the search.
  - b. Does that make sense?
- 2) Open <https://invis.io/KV1LGXIN6>.
- a. You are looking at a Dataset. This is the dataset that the following provenance mockups are a part of.
  - b. Click on the right arrow to move to the next mock-up.
- 3) This is a screen of the provenance display.
- a. Describe what you are seeing

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- i. Can you describe the relation between each item?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- b. What do you think a source is?

- i. A source is the where the data came from.

- c. What do you think a program is?

\_\_\_\_\_  
\_\_\_\_\_

i. A program is a program or input that was used to create the data (R, MatLab, etc.)

d. What do you think a derivation is?

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i. A derivation is a data set that used this data set in its creation.

e. If you wanted to add a source to your data table, where would you click? Is that clear?

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f. Click on the right hand side to move to the next mock-up

4) If you clicked on the source “add” you would get this pop-up.

a. Describe what you are seeing

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i. You can select multiple files in your dataset at once. You can also add an identifier for another file from a dataset.

b. In this example you’ve selected to add 4 files as source data for your table.

c. Click on the right-hand side to move to the next slide.

5) In this mock-up you see the same provenance display but this time you’ve added 4 sources.

a. Anything you don’t understand? Any questions?

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b. Is it clear how you’d save the sources you added? \_\_\_\_\_

c. Next you want to add a program. Click on the right-hand side to move to the next slide.

6) In this mock-up you see the window to add a program to the provenance.

a. For right now you can only add one program at each program spot. We hope that in later versions we’ll be able to add multiple scripts to each program spot.

b. Any questions

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7) In the next mock-up (click to the right) you can see the drop down menu that will be shown in the program window.

- a. Click to the right of the screen to move to the next mock-up.
- 8) This mock-up shows the provenance display after you've added a program.
- a. Any questions  

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  - b. Next if you want to show the programs that used your data table you can click on the right-hand programs "add".
  - c. Click on the right of the screen to move to the next mock-up.
- 9) This mock-up shows the program window.
- 10) If you click on the right of the screen you can move to the provenance display once you've added the program.
- a. Any questions?  

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  - b. Is the save button obvious?  

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- 11) If you want to add a derivation, you would click on "add".
- a. Click on the right side of the screen to move to the next mock-up.
  - b. This shows the "add derived data" window.
  - c. Any questions?  

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- 12) You've selected two files as derivations. If you click on the next mock-up you can see what the provenance display looks like once you've added those.
- a. Comments? Questions?  

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- 13) That's say, for example, you realized that one of your sources is not correct. You accidentally added an extra file. How do you think you'd delete it? Is there a particular spot you'd expect to find a delete button?  

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- a. Click on right side to get to the next mock-up.
  - b. This shows that if you hovered over a source or other program/derivation you'd get a little red "x".
  - c. Is that function what you'd expect? Anything you'd change?
- 
- 

14) You've finished adding provenance information to your data set. You must hit save in order to keep the changes.

- a. Click on the right side to see the public view of the provenance features.
  - b. The public will not see the "add" features.
  - c. A user could hover-over any of the provenance features and get a short summary of the source, program, or derivation.
  - d. Any questions?
- 
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15) One last thing. If you wanted to add provenance to a program in your data set. The provenance display will look slightly different.

- a. Click on the right-hand side to move to the next slide.
  - b. This shows your original R scrip with the options to add inputs and outputs.
  - c. What are your thoughts?
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- i. A program cannot have additional programs

16) When you click to the next mock-up you see the "add source data" window. In this example you are selecting 4 files as sources for your R Script.

- a. When the file is possibly a program (not a data table or image, for example), the user can select this checkbox to mark it as a program in the prov graph.

17) In the next mock-up you can see what the provenance display looks like once you've added inputs.

