

Center for Changing Landscapes, University of Minnesota

Digital Atlas Data Support – Tool Developers

A summary report of findings from interviews with online
tool developers for NRRRI's Digital Atlas Project

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Introduction

The Data Support process for the Digital Atlas project is intended to solicit information on natural resource decision making and digital tool development. The effort has been divided into distinct phases to connect with different key-stakeholder segments. Overall, the research is intended to identify barriers and opportunities that influence decision makers' and natural resource managers' use and application of digital mapping tools in management decisions. By gathering information early in the process, Atlas developers should be able to create a tool that is more useable and used for natural resource exploration and decision making.

The first phase of the Data Support process was interviews with developers of other online tools. Interviews were conducted with developers of tools like the Atlas or other online tools that could serve as models for the Atlas. Interviews allowed for in-depth exploration of concepts and ideas related to barriers and opportunities for use and creation of online decision making tools.

This report summarizes key findings and considerations from the discussions with other online tool developers.

Methods

Interviews with developers of other online tools were intended to explore developer experiences and motivations, to identify strategies for engagement with users in the development of online tools, and to garner recommendations for the Atlas tool.

Interviews were conducted in April, 2017. Seven potential participants were contacted via email (Appendix A). Six of the seven participants who were contacted agreed to set up a time for an interview or directed researchers to an alternative contact (Appendix C). A semi-structured interview script and set of questions (Appendix B) were used to guide discussions over the phone. Interviews lasted 20-30 minutes. Researchers took notes as the interviews progressed. All interviewees offered to provide further information and to be a contact for developers. Interviewees were told that their name and organization would be shared, but that findings would be aggregated and summarized, and that specific findings would not be attributed to specific individuals.

Findings Summary

The following section describes key findings from the interviews with online tool developers. While the interviewees are not anonymous (Appendix C), the findings are an aggregated summary not attributed to any individual or organization. Interviewees were asked a series of questions (Appendix B) about their role in the development of the tool, the motivation for developing the tool, the intended users, challenges faced, and recommendations to other developers. Findings sections include:

- participant roles,
- motivation to develop the tool,
- intended users and participation of users in development of the tool,
- user response and training, and
- evaluation and tracking.

Participant roles

Interviewees had a variety of roles and responsibilities related to their online tool or tool development. Most individuals were involved in the original development of the tool, and all were currently involved in the up-keep and management in some way. Some interviewees had primarily logistic, administrative, or coordinating roles, while others had primarily technical or data-management roles. All participants noted multiple partners and participants in the development and maintenance of the online tools. Many were stewards of tools that officially “belonged” to another organization, often a federal government agency.

Motivation to develop the tool

When asked about the initial motivation to develop the online tool, all participants described the desire to make information more accessible and useable by an intended audience. In some cases, the intent was to modify national or regional data to be applicable at a more local scale, and in turn, support local decision making. Other motivations included developing a platform for users to enter their own stories and data or to more easily tell the “story” of resource management challenges from the organization’s perspective.

Intended users and user participation in development

Interviewees were asked to identify the intended user of the tool. Responses included: legislators, scientists, farmers, researchers, resources managers, and non-scientist community leaders. Some tools had one primary user audience, but most had multiple user audiences in mind.

Most respondents reported limited user involvement in the initial development of the tool, or informal user involvement only, but most groups tested the tool with potential users prior to release. Some groups involved users throughout development with a formal advisory council or a user-liaison representative.

User response and training

The respondents were asked about users’ responses to the tool and what training was provided to users. Most interviewees reported overall positive response by users to their tools, however, very few

had a formal or user-accessible process to collect feedback. That said, all interviewees reported the importance of user feedback in improving and updating the tool. The scale of response and updates varied – some reported that users helped identify minor typographic errors and color scheme improvements, while other interviewees reported that user feedback significantly shifted the messaging and promotion of the tool, or in some cases the function of the tool.

Most interviewees had provided some training – primarily through online videos or as demonstrations during other group convening events. Most respondents did not know if these support strategies were effective and had not received feedback. That said, the general impression was that in-person or “live” online trainings were more effective than stagnant videos, and that participants valued being able to complete a training and leave “with something to hold in their hands” (e.g., training materials).

Tool evaluation and tracking

Interviewees were asked if there had been any evaluation of the tool and how/if they were tracking use. All respondents were tracking use in some way. Most were using Google Analytics or analytic tools provided via the hosting platform (e.g., Drupal). Interviewees found these analytic measures interesting but limited. For example, while they knew the number of users, new users, and frequency of returning users, they did not know anything about the users’ experiences – whether they were using the information to make decisions or “just playing around”.

Some groups had done formal evaluation, primarily through focus group sessions with users. However, most respondents had not done an evaluation, but were interested and saw the value of doing so. Multiple respondents had non-specific plans for future evaluations that would be used to inform updates and modifications to the tool.

Recommendations

The following section describes key recommendations from the interviews with online tool developers. While the interviewees are not anonymous (Appendix C), the recommendations are an aggregated summary not attributed to any individual or organization. Recommendations include:

- document the tool development and track usage,
- identify users and users' needs
- provide training and respond to feed-back, and
- explore non-traditional models

Document the tool development and track usage

Documentation was a significant recommendation of interviewees, both in development and during use of the online tool. Participants noted the challenges of staff changes and how helpful it was to have the development process well documented so new technicians could access the institutional knowledge. Other participants commented on the difficulties of tracking the user experience. Specifically, some participants discussed the pros and cons of having users access the tool via social-media sign in versus setting up a unique account for that tool. While access via a social media account (i.e., Facebook or Twitter) was perceived as easier for some users, developers and tool managers felt limited in their ability to track specific user experiences. Further, participants noted the importance of users being able to return to where they left off in a project, and that this may be more easily accomplished through a unique, non-social media sign-in.

Participants also noted the importance of either having in-house technicians that could respond to tool issues or to consult with developers that could be readily available and would remain consistent over the life of the project. In particular, respondents noted the importance of having individuals in the same-time zone as the users, and if possible also local for in-person meetings and interfacing.

Interviewees also noted that documentation was important for “version control” – being able to quickly know which data sets had been updated and which ones were live and being used for the tool.

Overall, documentation was the most strongly stressed recommendation for Atlas developers.

Identify users and users' needs

A frequently repeated and strongly stressed recommendation by interviewees was to take the time to identify who the intended users of the tool are and what their needs are. Participants noted that the investment in time up front would save time in developing, testing, and refining the tool. One developer, who had used extensive user engagement in the development of a particular tool, described wanting to be as efficient as possible and saw upfront engagement as the best path to that efficiency. Another participant discussed how their work-group had had trouble settling on one target audience and in the end had tried to design a single tool for two different target audiences. Their perspective was that the end result was too simple for one audience and too complex for the other – serving neither well.

Other participants noted the value of identifying users' needs early in the development process. For example, one developer found that people were not reading large clumps of text and were spending much more time than anticipated on certain tasks required to use the tool. As a result, they “chunked”

the process into a larger number of shorter segments that required less scrolling, thus making it feel more accessible to users. Another interviewee said that during beta testing they realized that many users would not have the internet capabilities to access the tool in the time-frame that would make the information most relevant, and the development process had to be revised accordingly. That said, a participant also warned of the possibility of user-creep, i.e., that the tool might become known to non-intended users and interpreted in ways that were not anticipated. For example, one tool intended for informing land-owner decision making is now being used in a semi-regulatory capacity, which was not the purpose of the resource.

Some participants recommended having different access for different users depending on their needs. For example, technicians and researchers could have access to a deeper level of information and functions than other users.

Finally, some participants described the need to consider when a tool might be used. Participants noted spikes in tool usage after focusing events (i.e., media campaigns, seasonal flux, storm events), and recommended that Atlas developers try to anticipate these events so they can best be prepared.

Provide training and respond to feed-back

While most interviewees had not formally tracked the impact of training efforts, most stressed the importance of providing guidance and support for users. Many had used online videos and suggested embedding the videos in the tool in association with the relevant potential question or issue (i.e., people may struggle with how to print a map, so have a “print a map” tutorial available associated with the print button).

In-person trainings were generally seen as most effective, and respondents recommended taking advantage of events when users were already gathered (i.e., conferences, workshops, professional meetings) to demonstrate the tool.

Further, participants noted the importance of being prepared to update and modify the tool based on user training experiences and feedback. There was a clear message that the development work would not be done upon release of the tool.

Explore non-traditional models

As mentioned above, most interviewees stressed the importance of considering the user of the tool and the user experience. Some participants noted the value of considering non-traditional models as examples of online interfaces. For example, one participant used the real-estate site Trulia as an effective geographic information based interface. Another participant mentioned Survey123 as a model for gathering and sharing user-generated data. Respondents noted that “looking up to date” on the internet is important to users, and that what “looks up to date” changes quickly, and the tool may need to be up-dated accordingly.

Appendices

Appendix A: Email Contact Script

Dear ****

Greetings. My name is Vanessa Perry and I am a graduate student at the University of Minnesota in the Twin Cities. I am working with the Natural Resource Research Institute of the University of Minnesota Duluth in an effort to develop a comprehensive Natural Resource Atlas for Northeast Minnesota. Specifically, I am talking with developers of other online natural resource decision-making tools to collect information that may be helpful for the developers of the Atlas in their earlier phases of development.

I am writing to you today regarding the ***other tool***. I would like to schedule a 15-20 minute phone conversation to discuss the process of the developing ***tool***, how users were involved in its development, and what you have learned from users since the release of the tool.

Would you be able to share some insight with me about the tool? If so, could we schedule a phone conversation in the next couple of weeks? Alternatively, if there is a better person for me to consult, could you help make that connection?

I have provided a bit more information about the Atlas project below. I look forward to hearing back from you.

Best,

Vanessa

The Natural Resource Research Institute of the University of Minnesota Duluth is developing a comprehensive Natural Resource Atlas for Northeast Minnesota. The Atlas will be a web-based tool and database that will help turn the ever-increasing amount of available data into useful information. It will facilitate informed communication and decision making by industry, agencies, non-profits, and the general public.

The Atlas will use a flexible Geographical Information System that will allow the complexity of environmental issues to be thoroughly investigated from multiple viewpoints. Information about geology, biology, ecology, water quality, climate, landscape, infrastructure, demography, and sociology will all be included. The Atlas will help to highlight the interdependencies between these different data through various approaches that include visualization through maps, graphical and tabular summaries, and the application of statistical methods. In addition to providing relevant information for natural resource related questions and issues, the Atlas will include a Decision Support System. This system will

engage natural resource managers early to understand their specific needs. The result will be an effective and more objective approach to their decision making process.

Potential uses for the Atlas include: the identification of mineral, forestry, water and tourism opportunities; the identification of areas that should be considered for restoration or enhanced protection; and providing scientifically sound data to industry, agencies, and the public to ensure transparency during the life cycle of current and proposed developments.

Appendix B: Interview script and questions

Thank you for taking the time to speak with me today. As I mentioned in my email, I am a graduate student at the University of Minnesota in the Twin Cities. I am currently working with the Natural Resource Research Institute of the University of Minnesota Duluth in an effort to develop a comprehensive Natural Resource Atlas for Northeast Minnesota. Specifically, I am talking with developers of other online natural resource decision making tools to collect information that may be helpful for the developers of the Atlas in their earlier phases of development. I have a few questions today about your experience working on the development of the *****tool****.

1. To start, please tell me a little about your role in the development of this tool.
2. What was the initial reason for developing this tool?
 - What are the primary intended uses and users of the tool?
3. How did you involve potential users in the tool development process?
 - What limited or motivated stakeholder involvement?
4. What has been the user response to the tool?
 - What modifications have you made based on that response?
5. What training (if any) did you provide for users?
 - What ongoing training and support (if any) is available?
6. Have you evaluated how and how much the tool has been used? If so, how?
7. Based on this experience, what have you learned about best practices for tool development?
8. What recommendations would you have for developers of a new tool (describe tool and potential user)?
9. Demographics

Appendix C: Interview Participants

Tool	Agency/ org	name of contact	phone	email
Texas Water Explorer	The Nature Conservancy	Ryan Smith	(512) 623-7243	ryan_smith@tnc.org
Wisconsin Geotools	University of Wisconsin-Madison	Janet Silbernagel	608-262-4510	jmsilber@wisc.edu
GLOS (Great Lakes observing system)	GLOS	Becky Pearson	734-742-2176	bpearson@glos.us
Great Lakes Monitoring dashboard	Illinois-Indianan Sea grant	Paris Collingsworth	312-886-7449	pcolling@purdue.edu
Runoff Risk Advisory Forecast	NOAA	Mark W. Jenks, DATCP	(608) 224-4507	Mark.Jenks@wisconsin.gov
Climate Change Response Framework - Forest Adaptation	Northern Institute of Applied Climate Science (NIACS)	Danielle Shannon	(906) 482-6303 ext. 25	dshannon@mtu.edu