

## **User Needs Assessment for the Adaptive Management Portal**

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**Paper Abstract:**

This paper will introduce the reader to the processes a team of individuals from Management, Forestry, Consultants, and Computer Science backgrounds employed to gather user needs/ requirements for a Forestry Portal. The paper will first inform the reader on the background and objectives of the Forestry Portal Project and then discuss the lessons learned and future steps in conducting this study.

## **User Needs Assessment for:**

### **Adaptive Management Portal (NSF Grant 9983518)**

#### **Paper Objectives and Introduction:**

The ultimate success of a not-for-profit website, portal or application is often judged by its usability. The now famous assumption, “*if we build it, they will come*” is one of the primary questions at the center of usability studies. The benefits of conducting usability studies can be astounding. A report prepared by a senior usability specialist at Compuware Corporation found that the general rule of thumb in the cost benefit ratio for usability is \$1:\$10-\$100, meaning that if the organization spends \$1 on usability studies or techniques, a benefit of between \$10-\$100 will be realized. (Donahue, 1999)

This paper will introduce the reader to the processes a team of individuals from Management, Forestry, Consultants, and Computer Science backgrounds employed to gather user needs/ requirements for a Forestry Portal. The paper will first inform the reader on the background and objectives of the Forestry Portal Project and then discuss the lessons learned and future steps in conducting this study.

#### **Background**

Supported by a National Science Foundation grant, personnel from the Forest Service, Bureau of Land Management and Fish and Wildlife Service of the Pacific Northwest have joined forces with faculty and graduate students from the Oregon Health and Science University to develop a web-based portal for Pacific Northwest forestry information. The content of this portal will focus on forest ecosystem research and management. The agencies are faced with information management challenges similar to other organizations. Namely,

- ❑ increasingly diverse user base in interests, disciplines, and points of view,
- ❑ growing numbers of data and information users,
- ❑ very large amounts of information being generated and archived at multiple locations, and
- ❑ Complexity in content and structure of information.

Initial activities of this three-year project focused on determining the needs and desires of the Portal’s future users. For the Portal, probable users include researchers, educators, resource managers, policymakers, non-governmental organizations and the public.

#### **Our Objective**

Our aim in conducting user-oriented interviews is to determine attributes for successful development, implementation and operation of the Adaptive Management Portal. “Attributes” can be defined as features of an information or communication system (electronic or not) and processes that our targeted users need or desire to better enable them to achieve their goal; be it locating information, posting research findings, managing information, manipulating information, or providing legal defense. The objective of this user needs assessment is to elicit and document users’ needs and desires. Needs and desires can be related to the technical, organizational, semantic or business aspects of the information management system and process. Examples of each:

- ❑ Technical – need to search multiple, disparate collections simultaneously.
- ❑ Organizational – need to allocate resources adequate to implement the technology.
- ❑ Semantic – need to have available list of terms from which to search.

- ❑ Business – need convenient method of payment for retrieved information.

## **Our Process**

Interviews in the fall of 2001 were conducted to gather user requirements for the Adaptive Management Portal design and operation.

The target group was defined as local forest communities of the Pacific Northwest, specifically those on the management side of the public and private Forestry sector. Various members of the user community were interviewed including policymakers, land managers, academic researchers, and the public.

Interviewees were asked to provide either responses to general inquiry regarding their information seeking and gathering behavior, or were asked to articulate an actual case of a recent information inquiry they conducted (scenario). Several aspects of the users' information process were targeted for discovery including;

- ❑ purpose of the information inquiry,
- ❑ desired content and structure (formats, scale, etc.),
- ❑ what vocabularies and fields are used for searching,
- ❑ methods for determining quality prior to retrieval,
- ❑ what IM tools were used during inquiry, retrieval and re-archiving process, and
- ❑ at what point in the inquiry process person-to-person contact is required.

In all, approximately 45 interviews have been conducted in person and by phone. All members of the Portal development team participated in the process, e.g., by reviewing the results from the interviews and suggesting follow-up questions. This full-team involvement is particularly important to assist with interdisciplinary (computer science, business management and biological science) collaboration and communication.

Periodically, the team reviewed and synthesized desires and needs expressed by the targeted users (interviewees). Desires and needs can be viewed as the lessons the team has learned during the interview process. Again, lessons learned can fall under one or more of four aspects – technical, organizational, semantic and business.



## **Lessons Learned:**

As a result of conducting user interviews, a list of features and processes were identified (listed in the summary table section of this paper). Team members can now take the user requirements and use them to identify activities and attributes that are required to develop and operate the Portal. These activities and attributes can then be prioritized based on their importance to the overall success of the project, the level of effort and associated costs required, their feasibility and the risk involved in implementing them. Any attributes and activities not addressed are documented for later consideration.

The user community expressed a great amount of interest and excitement for the Portal. Most users rely on the Web to some degree for their information requests although the majority of the interviewees still rely on their personal contacts as their first step for information retrieval. Users generally employ various quality measurements to judge the credibility of a site namely, author's background, citations used, institution of origin.

Generally speaking, users are looking for an easy-to-use Portal that would provide them with verifiable, credible information for their research and management needs. The Pacific Northwest region is quite

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large and extensive, therefore the Portal development managers will have to employ great care in making the content applicable to a wide variety of subjects and information should always remain current and thorough . Users are looking for both raw data and analytical results and would like to search for information using a variety of keyword options. Most users are Internet-savvy but still require some form of human interaction when it comes to assisting them if any questions arise. Users would like the Portal to be available and accessible “24x7.”

A Portal that would gather and collaborate disparate islands of information into one site is highly desirable and required. For example, a Forest Entomologist for the Division of Forestry in Anchorage, Alaska says that very little information on the Web pertains to the maritime forests of Southeast Alaska. From the perspective of this user, there is a great void in information pertaining to the Alaska region.

We learned that often no records for the specific place of interest exist, so people would like to be able to search for documents about places that are similar to the ones of direct interest. The definition of similar may vary depending upon the question. For example, one may want to know similar with regard to climate and terrain or similar with regard to size of community. Most frequently, field biologists, foresters and other subject matter experts prepare reports, often synthesizing literature with spot observations or inventories and model results. Usually, these are for specific projects or watersheds, but always about a specific place. Their work then is usually to find out what is already known about a specific place, either in general or about a specific topic, such as the fish or the vegetation or the recreation setting. We identified 28 topics or domains that are frequently the source of information searches.

We learned that most of the agency personnel use a variety of location identifiers, some of which are used in common and some of which vary by agency, or even within an agency. On the other hand, four land classification systems are used, with as many as three different kinds used within one agency. Each federal agency seems to have its own road and trail classification and naming conventions.

**Summary Table:**

User comments and requirements were summarized, divided into high-level categories and listed below. It is interesting to note that quite a few of these requirements are general enough to potentially be applicable to the development of Portals from other disciplines.

As we progressed along in the interview process, we noticed many of the requirements were repeated amongst several interviewees. This repetition is good news for Portal developers as it displays that users are generally interested in similar features.

USER NEED	DESCRIPTION
<b>Ease of Use</b>	<ul style="list-style-type: none"> <li>➤ Users are looking for a well organized, fast, efficient, intuitive, free and easy to access Portal.</li> <li>➤ Users are looking for a web-based filing system that provides the Velcro to store and retrieve documents for re-use.</li> <li>➤ Novice portal users would like to be able to use the Portal with relative ease and training. Users would like ‘how to’ documentation to be provided.</li> <li>➤ Users look at document references to broaden their search and determine content and quality.</li> <li>➤ Users would like to be able to browse for documents about related topics but do not want their mailboxes to be automatically flooded with those</li> </ul>

	documents; instead they would like to be prompted about their further interest.
<b>Credible</b>	<ul style="list-style-type: none"> <li>➤ Proven credibility is important to users.</li> <li>➤ At the present time, many users rely on personal contacts for information.</li> <li>➤ Users determine quality by researcher and institution. A few determine quality by looking at the science behind the document through research protocols and peer reviews.</li> <li>➤ Bibliographies/ references are important.</li> <li>➤ Users suggest a short background of the author and his or her affiliated organization be made available.</li> <li>➤ Users do not want to have discussion rooms associated with the Portal, they want it to provide an easy way to store and access reliable “gray literature.”</li> </ul>
<b>Applicable</b>	<ul style="list-style-type: none"> <li>➤ Users want to search for documents about a place.</li> <li>➤ Often no records exist for the place of interest so users would like to ask about similar places.</li> <li>➤ Users would like to be able to access incomplete, ongoing research activities.</li> <li>➤ Researchers seek raw data.</li> <li>➤ Decision makers seek assessment.</li> <li>➤ The users of the AMA portal come from a wide variety of backgrounds and regions. Accordingly, a wide range of subjects should be covered in depth and effectively.</li> </ul>
<b>Personal Contact</b>	<ul style="list-style-type: none"> <li>➤ Site needs to employ multifaceted communication strategy (i.e. addresses, contact names, phone numbers and titles should be made available).</li> <li>➤ Users would like a list of discipline experts to be provided.</li> <li>➤ Users would like to be able to search by people. Questions they would like to be able to answer include: “who is working on this and how do I contact him?” “What is Lynn working on? What hypotheses is she studying?”</li> </ul>

<b>Searches</b>	<ul style="list-style-type: none"> <li>➤ Using place name as a keyword is important and using spatial location information is generally not used.</li> <li>➤ Most users (and providers) don't use controlled vocabularies to search or archive. Some stated that they would like to use cv's if it was an accepted standard and readily available. Most users employ their personal knowledge to develop keywords for cataloguing and searching.</li> <li>➤ Users would like to be able to search in a variety of ways, including: keywords, creator, location, timeframes, author and forest type, by bibliographies, institution specialists etc. Large categories should be broken down into smaller subtitles and more defined searches.</li> <li>➤ Users commonly search by activity. Examples here include tree planting, thinning, burning invasive species, stream restoration, research and campground maintenance.</li> <li>➤ Users search for documents by specific people.</li> <li>➤ Users look for information in many formats including: reports, maps, decision records, photographs and data summaries.</li> <li>➤ Users would like the ability to choose between the browse and search functions.</li> </ul>
<b>Available</b>	<ul style="list-style-type: none"> <li>➤ Users would like good customer service. If the information is not available on the Portal and a user calls an Information Agent, a deadline needs to be set as to when the user can expect a reply.</li> <li>➤ Users would like the Portal to be available 24x7.</li> </ul>
<b>Format</b>	<ul style="list-style-type: none"> <li>➤ Users need to print, view and copy detailed maps, documents, PDF files, presentations, photographs and analytical results.</li> <li>➤ Users would like to access full text documents.</li> <li>➤ Users would like the ability to re-archive documents locally and some use bibliographic cataloguing systems.</li> <li>➤ Users prefer the level of detail to be a white paper.</li> <li>➤ Users would like a bulleted summary of page content to be provided.</li> <li>➤ Users would like to be able to choose whether they want to view large graphic files.</li> </ul>
<b>Current Information</b>	<ul style="list-style-type: none"> <li>➤ Users would like information to be date stamped and email updates of new or altered content should be sent if user requests it.</li> </ul>
<b>Thorough</b>	<ul style="list-style-type: none"> <li>➤ Users would like hypertext links to be made available if the user requires more in-depth information on a topic.</li> </ul>

## Next Steps

The interviews that have been conducted thus far are one step in a longer requirements process. Work that preceded this interview process was centered on:

- ❑ identifying the primary user group for this technology, namely the natural resource manager;
- ❑ identifying the primary activities to be supported by the portal, namely providing and seeking forest information in the form of documents and reports; and
- ❑ beginning the process of identifying the domains of interest for keywords that will be used to describe and to search for documents.

Ongoing work includes trial use of the prototype technology by field personnel and continued selection and evaluation of controlled vocabularies for the domains of interest.

The intent of the user interview method was to further incorporate user needs directly into the system design so that main decisions concerning architectural and functional requirements could be made based on user input. Developers and Project Managers will now have to meet to prioritize the user requirements and determine which are feasible and which are not.

Interviews of individuals and small groups of individuals continue as we move the Portal from being a “good idea” to demonstrations (where we are now) to prototypes, and finally to implementation. An implementation prototype of the Portal should be ready for use this spring. The target for full implementation on several of the sites is June, 2003.

Once the prototype is operational, tests will be conducted with focus from the Eastern Oregon and Washington regions. Through focus groups, we hope to uncover whether users’ priorities are in line with design and whether users’ requirements are being met. A facilitator will conduct the focus group and managers and developers will learn and observe from users’ comments. Throughout the entire process, users will play a central approach in the production of the Portal.

## **REFERENCES**

Donahue, George M. (July 27, 1999) *Usability is Good Business*

Ivy Hooks and Kristin Farry, (2001) *Customer-Centered Products, Creating Successful Products through Smart Requirements Management*, Amazon

Joseph S Dumas and Janice C Redish, (1993) *A Practical Guide to Usability Testing*, Ablex Publishing Corporation