Remedial Evaluation

of

ExhibitFiles

A community site for exhibit designers and developers

Prepared for

ASSOCIATION OF SCIENCE - TECHNOLOGY CENTERS

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EXECUTIVE SUMMARY

ExhibitFiles is an online community for exhibit practitioners developed by the Association of Science-Technology Centers (ASTC) with funding from the National Science Foundation (NSF). The website provides an infrastructure for sharing and building knowledge about exhibition development and design practices. After testing, the site officially opened on April 23, 2007. Influenced by learning theories such a Wenger's community of practice (1998) and Web 2.0 concepts, the project team incorporated site features and management strategies to develop and extend the professional networks and the knowledge base of museum exhibition development. This remedial evaluation was conducted by Tisdal Consulting during late 2009 and 2010 to identify changes that could contribute to the site's impact. The overarching methodology was naturalistic inquiry (Lincoln & Guba, 1985), Methods included the development of a program theory Weiss (1998), analysis of the website database (N = 1357), comparison to an association membership database ($N = 830$), an online survey of registered members ($N = 286$), and in-depth interviews with the project team and registered members (N = 18).

Overall, we found that ExhibitFiles had attracted its target audience. Site design features appeared usable and easy to navigate. Respondents wanted improved search functions and places for more discussion across exhibits and exhibitions. Contributions of case studies and reviews appeared on par with other web-based social networking sites. However, among respondents there were some perceptions that there should be more case studies and reviews, more members, and greater levels of participation by registered members. Online survey items with significant positive correlations were frequency of visits, frequency of reading reviews, and the extent to which the site met expectations. This means that more members, content, and more frequent visits have real potential to increase the impact among larger numbers of registered members.

Respondents to both the survey and in in-depth interviews pointed out the importance of receiving email reminders about new items on the site. They saw ExhibitFiles is only one part of the larger professional development picture for exhibit/exhibition professionals. Conferences and workshops were rated as higher impact experiences. But ExhibitFiles was rated at a higher level of impact than membership in the National Association for Museum Exhibition, participating in the Informal Science Education Network (ISEN) listserv, participating in ASTC Connect, using informalscience.org, and using the CAISE website. Respondents saw ExhibitFiles as supporting and extending their professional community by keeping them up-to-date on current trends and providing a place to go for inspiration and to research the work of others in developing new projects. There was no consensus about the value of encouraging a stronger culture of critique of others' work. Respondents did, however, value frankness and openness from contributors about their own challenges and problems.

Recommendation fall into two major areas: (1) revisions to the site design and (2) expansion of the human systems used to manage and build community among members. The highest

priority site revision is improvement of search functions for content and members. Improved search functions support targeted visits to prepare grant applications, find information for new project development, and locate colleagues with whom to discuss ideas and solve problems. The website blog appears a promising place for discussions, and ideal for announcing changes and events in the field. Currently, relatively few users go to the blog on a regular basis. The blog needs to be a more visible element if it is to be used in these ways.

Some respondents recommended that the project team extend the role of core contributors, asking them to contact colleagues to request case studies and reviews for specific sectors of the informal learning field, (e.g., children's museums, history museums, art museums, zoos, gardens, or parks.) Other promising ideas from respondents were to have guest bloggers and set deadlines for the submission of case studies and reviews on specific themes.

Respondents cited lack of time and the priority of other work as obstacles to participation. To overcome these obstacles, recommendations included expanding opportunities for the contribution of brief content, revising favoriting functions, and increasing opportunities for discussions. We also recommend that project team build awareness of the benefits of a coherent and lively professional community among senior managers in institutions and among those who contract exhibit design and development services to support the time it takes to build expertise and community in the field.

INTRODUCTION & BACKGROUND

ExhibitFiles is an online community for exhibit practitioners developed by the Association of Science-Technology Centers (ASTC) with funding from the National Science Foundation (NSF). The website provides an infrastructure for sharing and building knowledge about exhibition development and design practices. This remedial evaluation was conducted by Tisdal Consulting during 2009 and 2010. We formally began the remedial study[1] in October of 2009, reported a summary of findings in June 2010, and conclude with a detailed a final report in September 2010. A summative evaluation will follow.

The remedial and summative studies are closely related sharing data sources and the same overarching questions.
1. How did the design team assume the site would work to produce the intended impacts?
2. To what extent and in what ways do website users value and use the functions provided by the website? What does participation mean to users?
3. To what extent and in what ways do users perceive themselves as members of a community? Is this perception related to a type or level of participation?
4. To what extent and in what ways were these strategies successful in accomplishing the project impacts?

ExhibitFiles opened April 23, 2007. Prior to this it, the site was populated with content and tested with a group of Core contributors. The features of the online community included the capacity of users to upload case studies and reviews in specified formats. Visitors to the site were encouraged to register to use all the site functions. Registered created a profiles of themselves. They could upload information, comment on case studies and reviews, mark case studies and reviews as favorites, and select other registered user as contacts. While the site was funded through a NSF grant to the ASTC, the site was open to all exhibit practitioners including those working in and with art, history, and children's museums.

The *About ExhibitFiles*, section of the website presents the goal of the site and the rationale for its development.

> ***The goal of ExhibitFiles is to provide the people who make museum exhibits with convenient access to resources that can be used to improve our work. ExhibitFiles is a creation of the Association of Science-Technology Centers, an international organization of science centers and museums.***

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[1] A summative evaluation study was funded as part of the original grant. The remedial evaluation was funded as part of a supplemental funding request submitted in August 2008 and funding confirmed in October 2009. Project team member interviews conducted before that date were part of the preparation for both remedial and summative studies.

We developed ExhibitFiles to preserve and share experiences and materials that are often unrecorded, temporary, and hard to locate. Museum exhibitions change, so does staff, and knowledge is often lost. We think it's important to build on what others have done and learned, and to open our work to comment and review. (Association of Science-Technology Centers, 2008)

The opening of this site was the result of an ongoing design process taking place in the rapidly changing context of ideas about Web 2.0. This term refers to web applications that support user generated content, social networking, and collaboration. The web designer noted the influence of Maeda's *Laws of Simplicity* (2006) on the development of the user interface and site organization making it uncluttered, intuitive, and free of heavy prompts and help functions typical of earlier web applications. Many important websites with user-generated content came online during the time which ExhibitFiles was being conceptualized, developed, and tested. ExhibitFiles was funded in December 2005. Facebook had opened in February 2004, YouTube in February of 2005, and Twitter opened to the public in July 2006. As the site designer explained,

> *The web was becoming more user-centric. . . . The idea [is] that anybody in ExhibitFiles out of the 1100 plus members can author something. It's a very large distributed blog format in its most basic sense, with the focus, of course, on exhibits and exhibitions. And that's really the power of it, and that's -- that's a very simple concept. And it's also a concept that's fueled this whole Web 2.0 revolution . . . it's the individual publishing, rather than an organization publishing.* **(EXF1_DI_PT_Cases 4-1_051510)**

As we interviewed the project team members, we learned that during the development process the team unearthed additional and better theoretical lens and conceptual frameworks. Case studies developed for the NSF funded project and book *Are We There Yet? Conversations about Best Practices in Science Museum Exhibits* (McLean & McEver, 2004) provided a model of documenting best practices. The project team began with a concept of archiving exhibition development cases. This original conception was influenced by Web 2.0 with user generated content to grow into the idea of a community of users sharing knowledge and resources.

Learning theories based on communities of practice also influenced the design of ExhibitFiles. As one member of the project team explained, "We aren't just creating an archive; we are creating a connection and a community" (EXF1_TDI_PT_Cases 1_2_072308)." This theory appeared well-suited to Web 2.0 strategies.

> *Communities of Practice presents a theory of learning that starts with this assumption: engagement in social practice is the fundamental process by which we learn and so become who we are. The primary unit of analysis of this process is neither the individual nor social institutions but rather the informal "communities of practice" that people form as they pursue shared enterprises over time.*

> *In order to give a social account of learning, the theory explores in a systematic way the intersection of issues of community, social practice, meaning, and identity. The result is a broad conceptual framework for thinking about learning as a process of social participation. (Wenger, 1998)*

Brown's (1999) conception of digital learning as part of a learning ecology also informed thinking about ExhibitFiles.

> *Knowledge has two dimensions, the explicit and the tacit. The explicit dimension deals with concepts, the know-whats, whereas the tacit dimension deals with know-how. Know-how is best manifested in work practices and skills. Since the tacit lives in action it comes alive in and through doing things and in participation with each other and the world. As a consequence, tacit knowledge can be distributed between people in terms of a shared understanding that slowly emerges from working together, a point that we will return to. (p. 3)*

Project directors formed an ExhibitFiles Team. This team included the project directors, core contributors, site designers and software developers, and an ASTC staff member. The role of core contributors was to provide feedback during development and to populate the site with case studies and reviews before opening. After opening, the core contributors were encouraged to continue developing case studies and reviews and to continue sparking discussion through their comments on the site.

In July 2008, the project directors developed a revised set of project impacts consistent with new guidelines from NSF (Friedman, 2008). While these impacts closely paralleled the initial outcome statements, they also reflected a greater understanding of the nature of online communities developed by the project team and a better understanding of the potential of the community. They also included the team members' own growing understanding from iterative testing and review of site features. The revised impacts included the following:
- Impact 1: ISE professionals will generate and share knowledge about exhibition development practices by participating in an online community.
- Impact 2: ISE professionals will develop individual knowledge about successful and unsuccessful exhibition development practices.
- Impact 3: ISE professionals will develop a web of social connections and contacts to allow them to call on or consult colleagues (personally or through text-based resources) with expertise in specific areas related to exhibition development.
- Impact 4: ISE professionals involved in exhibition development will make use of ExhibitFiles to inform their work. (Pollock & McLean, 2008)

In July 2008, as part of the preparation for the summative evaluation of ExhibitFiles, we took a snapshot view of the first year of the website's growth (Tisdal, 2008A). We based this analysis on the records available from the website database and Google Analytics. The number of registered users by end of the first 12 months far exceeded initial target. The target number

was 100 users, and 613 individuals registered on the site by March 31, 2008. The target number of visits was 1000 visits per month by the year one anniversary. The site reached 1,640 visits the first month it opened and continued growth through the snapshot date of July 14, 2008.

The targeted number of case studies was 40 by the year one anniversary. During the first year the website was open by March 31, 2008, 60 case studies were available online. By the snapshot date (July 14, 2008), 71 case studies were online. The target number of reviews was 20 by the year one anniversary. During the first year the website operated, users published 42 reviews. Monthly contributions showed steady growth in the number of total reviews throughout the year. This level of activity points to successful strategies used to initiate and facilitate the publication of case studies and reviews (Tisdal, 2008A).

Some other indicators showed participation at lower levels than desired. The project team targeted an average of five comments per registered user by the year one anniversary. The evaluators did not have data on this indicator, but a cursory examination of the website indicated that commenting may not yet be a well-established practice outside of a group of frequent users. Hoadley & Kilner (2005) point out the importance of this function.

> ***Conversation is the most effective mode of knowledge transfer and generation, because the personal connection and back and forth nature of conversation provide the greatest context for information [1]. The challenge of the knowledge building community is to generate conversations that draw out meaningful knowledge, not aimless chatter. . . . Moreover, a clear sense of shared purpose within the community fosters a culture of productive conversation, where everyone involved understands that the goal of every conversation is to support the purpose, not just talk for talk's sake (p. 34).***

Finally, and perhaps most importantly, the project team intended that users make use of the knowledge from reviews, case studies, blog, and social connections in their work. Hoadley & Kilner (2005) stress that online communities fail if they do not have clear and practical uses for their members. In the formative evaluation report (Randi Korn & Associates, 2007), there was some indication that this was an issue with ExhibitFiles.

> ***As interviewees discussed the value of contributing to ExhibitFiles, it became clear that they were unsure of the purpose of ExhibitFiles and offered suggestions that would radically change the intent of the Web site. For example, a few interviewees suggested that the case studies be reformatted to be less narrative and more standardized with searchable fields in a database format. These interviewees thought project management details such as the exhibition's development costs, fabrication costs, square-footage, timeline, key staff, etc., should be included for each case study and emphasized the importance of standardized information to enable users to search the case studies by specific exhibition parameters (e.g., size, cost). Conversely, a few***

others thought ExhibitFiles should be less formal and more like a listserv or blog in which users could post a question or a quick comment rather than writing an article. Finally, one interviewee thought ExhibitFiles should be more like an online journal with an editorial board and reviewers to evaluate content before it is posted (p. 2).

As the site design emerged, the project team envisioned a range of uses. These included generating creative ideas, serving as a benchmark for innovation, documenting successful and unsuccessful practices, and helping people know whom to call to discuss a design challenge. During initial meetings, project directors discussed the prospect of using the exhibition development process in Kathleen McLean's *Planning for People in Museum Exhibitions* (1993, p. 51) to provide explicit examples of where and how the ExhibitFiles could be used in practical work. To the project team, some sites uses appeared obvious but these uses were not entirely clear to those visiting the site.

In addition, developers set the target number of five contacts per registered user by the year one anniversary. As of July 14, 2008, after the anniversary date, the average number of contacts selected by the 793 registered users was 1.1, well below the target level. The project team needed feedback from users about why individuals chose to comment or not comment, what cued users to favorite items, and how users perceived and used the contacts function. This feedback would be used to inform decisions about increasing participation in these areas. As Butler, Sproull, Kiesler, & Kraut (2008) found, users participating in online communities have differentiated roles based on different benefits. At this point in time, feedback from ExhibitFiles members was needed to inform the project team about the reasons users did and did not comment and find what a realistic level of participation overall.

All of these discussions indicated that a remedial evaluation would be useful to support decisions about ongoing website revisions related to both the technical and human design elements. The remedial evaluation also provided the opportunity to develop an explicit program theory (Weiss, 1998, p. 55) and a deeper understanding of the patterns of use and perspectives among the members of this online community.

One important revision, Bits, was implemented in early 2010 (Pollock, 2010, February 5), during data collection for the study. This new feature allowed members to upload a question or comment along with a photo or a video. The rationale was to provide an additional way to participate by contributing content that required less development time than case studies and reviews. We presented and discussed preliminary findings with the project team in June of 2010 at which time decisions about the priorities among site revisions were made. Information about the need for technical improvements also influenced priorities. After that date and prior to the date of this report, the project team made several changes. These included the ability to pull information into to member profiles from other social networking sites such as LinkedIn, the addition of sorting features to improve the ease of locating of member pages, improved search features, and increase browser compatibility and boosted speed (Pollock, 2010B).

Deeper understandings in this detailed report will inform ongoing decisions about both site design and management.

METHODOLOGY & METHODS

Methodology

The overarching methodology of this remedial evaluation is naturalistic inquiry (Lincoln and Guba, 1985; Wolf & Tymitz, 1977). Naturalistic inquiry aims to provide a holistic understanding of a phenomenon by looking at it from multiple perspectives and through multiple methods. While naturalistic inquiry is often associated with qualitative data collection and analysis method, we are using both quantitative and qualitative methods in this study. In naturalistic inquiry, data collection and analysis are iterative processes. We analyzed data using variety methods (both quantitative and qualitative). These are described in the methods section. Each set of data was compared with previous data sets to direct the focus of subsequent data collection. Findings were developed by synthesizing evidence across methods and sources.

Methods

We used three primary methods to collect data for this study: analysis of records, in-depth interviews, and an online survey. Table 1 shows numbers of respondents and sampling technique by method. In general, the population sampled was registered members of ExhibitFiles, that is, the ExhibitFiles registered member database. We selected purposive samples (Miles & Huberman, 1994) for the in-depth interviews. This means that we identified respondents based on important characteristics useful to understanding the questions of the study. We interviewed members of the project team who could provide insight into the program theory. We selected respondents for in-depth interviews by level of participation. A list of in-depth interviews, with source citations used in the findings section, is included in Appendix A. Requests to take the online survey were sent to all registered members for whom email address were available. Therefore, those who responded were a sample of the population of registered members.

Table 1. Data Source Table

Source	Number of Cases	Sampling Method
NAME Membership Database (February, 2009)	830	Population
ExhibitFiles Registered Member Database (November 9, 2009)	1357 (1339)	Population of Registered Members (Usable email addresses)
In-depth Interviews -- Project Team	5	Purposive Sample
In-depth Interview with Registered Members	13	Purposive Sample
ExhibitFiles Registered Member Online Survey	286	Population Sample

Analysis of Records

We analyzed two databases in this study to understand the nature and levels of participation in ExhibitFiles. One database was the November 2009 membership list of the National Association for Museum Exhibition (NAME). NAME is a Standing Professional Committees of the American Association of Museums (AAM). Information included member's names, addresses, and institutional affiliations for 803 individuals. Email addresses were not included as we had anticipated. This meant that we could not conduct an online survey of NAME members to compare to ExhibitFiles Members.

We also analyzed the ExhibitFiles database captured on November 11, 2009 with a total of 1357 registrations. After eliminating institutional registrations for *ExhibitFile*s and duplicate registrations (where possible), there were 1339 individuals included in the analysis of registered ExhibitFiles members. Data elements included ID number, date joined, name, location, email address, and numbers of case studies, reviews, favorites, and comments. We used first and last names and institutional information to identify shared membership between two groups. Since individuals used variations of their names, we matched names through manual inspection of files.

In-Depth Interviews with ExhibitFiles Team Members – Program Theory Development

To provide a framework for this study, we developed a Program Theory based on five in-depth interviews with the ExhibitFiles Team Members conducted between July 28, 2008 and May 15, 2009. As Weiss (1998) points out, "For evaluation purposes, it is useful to know not only what the program is expected to achieve but how it expects to achieve it " (p. 55). She explains,

Much evaluation is done by investigating outcomes without much attention to the paths by which they were produced. But evaluation is increasingly being called upon not only to answer the question 'Did the program work?' but also 'What made it work? Why was it successful or unsuccessful?" (p. 55)

Weiss makes a clear distinction between formal theory (e.g. constructivism, behaviorism, relativity) that provides an overarching framework for a body of research or a field of study and program theory. Program theory is specific to each development project or entity.

By theory, I don't mean anything highbrow or multi-syllabic. I mean the set of beliefs that underlie action. The theory doesn't have to be uniformly accepted. It doesn't have to be right. It is a set of hypotheses upon which people build their program plans. It is an explanation of the causal links that tie program inputs to expected program outputs, or as Bickman (1987) has put it, 'a plausible and sensible model of how the program is supposed to work." (p 55)

Another reason for using this approach is that ExhibitFiles is part of a NSF funded group of projects aimed at building a more coherent and connected field of informal science education research and practice. All these projects have significant elements online and several focus on building social connections and community. Examples of other projects include Center for the Advancement of Informal Science Education (CAISE) and Informalscience.org. An aim of this evaluation was to use methods that could provide bridges across these efforts to understand what strategies and methods are effective in the ongoing effort of field building.

Online Survey of ExhibitFiles Users
We conducted an online survey of all registered ExhibitFiles members to collect data to describe the demographics of the users (including work roles), identify how users found out about the site, and to understand how they participated in the site and to what extent participation influenced their work. In addition, to explore professional networks, we asked respondents to identify colleagues they would consult to solve problems or get advice about exhibit/exhibition development issues. The online survey included both open-ended and closed-ended items.

We sent an email request to take the survey to 1339 individuals on January 21, 2010 and reminder on February 9, 2010. The survey closed on February 15, 2010. Of this total of 1339 requests, 286 responded for a response rate of 21.4%. Closed-ended items were analyzed using descriptive and inferential statistics. Open-ended items were coded by identifying similar responses and grouping them using natural language of the participants.

In-depth Interviews with Registered Users
We conducted 13 in-depth interviews with registered members. Respondents were purposely selected based on their level of participation. We classified the 1339 registered members into to three groups by level of participation.

- High = contributed at least one case study or review, commented and used favorites

- Medium = no case studies or reviews but commented or used favorites more than once
- Low = no participation

We sent 41 requests for interviews and were able to arrange 13 interviews.

Ethical Treatment of Respondents

All respondents for this study were over 18 years of age. Prior to all interviews and survey participation, the purpose of the evaluation was explained. In addition, levels of risks and confidentiality were described. For respondents involved as core users and/or members of the project team, the small size of the respondent pool was noted so they were made aware of limited levels of anonymity due to their roles in the project. No names are associated with quotes in this report. For telephone and face-to-face interviews verbal consent was obtained. Consent was obtained for all recorded interviews. For online surveys, informed consent was included as part of the request to participate.

CHARACTERISTICS OF RESPONDENTS

Based on the known characteristic of both groups, the online survey sample of respondents appears to be fairly representative of the population of all registered ExhibitFiles users. In the database of actual registered members (*N = 1357*), 40.1%, joined ExhibitFiles in 2007, 35.6%, joined ExhibitFiles in 2008, and 24.3%, joined ExhibitFiles in 2009. Among survey respondents (*N = 286*), 41.3%, joined in 2007, 35.0% joined in 2008, and 23.8% joined in 2009 (Tisdal, 2010A). The online survey sample also appears to reflect a fairly consistent number of high-level participants when compared to the database of actual registered members. Table 2 shows this comparison.

Table 2. Comparison of Percentages of Types of Participation for All Registered Members and Survey Respondents

Type of Participation	All Registered Members (*N = 1357*) Percent	Survey Respondents (*N = 286*) Percent
Published at lease one case study	6.7	10.4
Published at lease one review	4.4	10.1

In-depth interview respondents were selected purposively to obtain a range of high, medium, and low-level participants. We were not able to recruit substantial numbers of interviews among lower level users. Of those interviewed, 2 were in the *Low* category, 4 in the *Medium* category, and 7 in the *High* category. Respondents with higher levels of participation appeared to be more willing to be interviewed. Others we spoke with said that they did not believe they had perspectives to contribute. Overall, interview data reflects perspectives of those with higher levels of participation.

DISCUSSION OF FINDINGS

Surveys and interviews with respondents showed ExhibitFiles as a dynamic professional development and community-building resource that was finding its niche in a rapidly changing digital environment. Respondents' ideas about what they want and how they use the site are highly shaped by their other professional development and web-based experiences. The site has room for growth, both in the numbers of members and the overall levels of participation. Respondents' ideas about what they want and how they use the site are shaped by their other professional development and web-based experiences. The opportunities for developing and sharing knowledge are more sophisticated and extensive than those envisioned when the project was funded in 2005.

We present our discussion of findings around a program theory for the site. In this discussion, we focus on findings about the extent to which the target audience was attracted to the site and used the capacities it provided. Findings about impacts are used to assess the levels of use and participation.

In general we found that ExhibitFiles had attracted its target audience but there is room for growth. The percentage of site members contributing case studies and reviews, at this point in the site's development, appears to be on par with specialized participatory sites on the web and far above initial estimates of the project. However, the level may be below what some users would like and what it may be possible to accomplish.

The site also offers members the capacity to mark case studies and reviews as favorites and to comment on these two types of items. These types of participation appear to be lower than intended and lower than one would expect from comparison with other sites. Respondent perspectives shed light on how they use and understand these functions. We also discuss the overall types and levels of impact with an eye to how impact could be increased with revisions in the site features and site management.

Program Theory

Figure 1 diagrams the high- level program theory of ExhibitFiles. Underlying this high-level theory are assumptions about processes related to each of these higher-level elements. This diagram portrays how the site designers believed the site would work. The program theory was based on interviews with the project team and analysis of the functions of the website itself. In this section we use these high-level elements to organize our presentation and discussion of findings.

Basically, the designers intended for individuals who work in exhibit/exhibition development to visit the site and then register as members. As part of registration, the users create a profile, allowing others using on the site to find out about their work and to contact them. Registration also allowed members to use a greater range of site capacities. The project team also intended

that users would navigate the site with ease and return to use it frequently – reading information, favoriting items, commenting, and contributing case studies and reviews. Through this use, the short and long-term impacts would be accomplished. Short-term impacts included expanding their social (professional) connections, developing knowledge, sharing knowledge, and using these connections and knowledge to inform their work. The intended long-term impact was to build a community of practice where exhibits and exhibitions were developed and based on a continually evolving body of knowledge about best-practices.
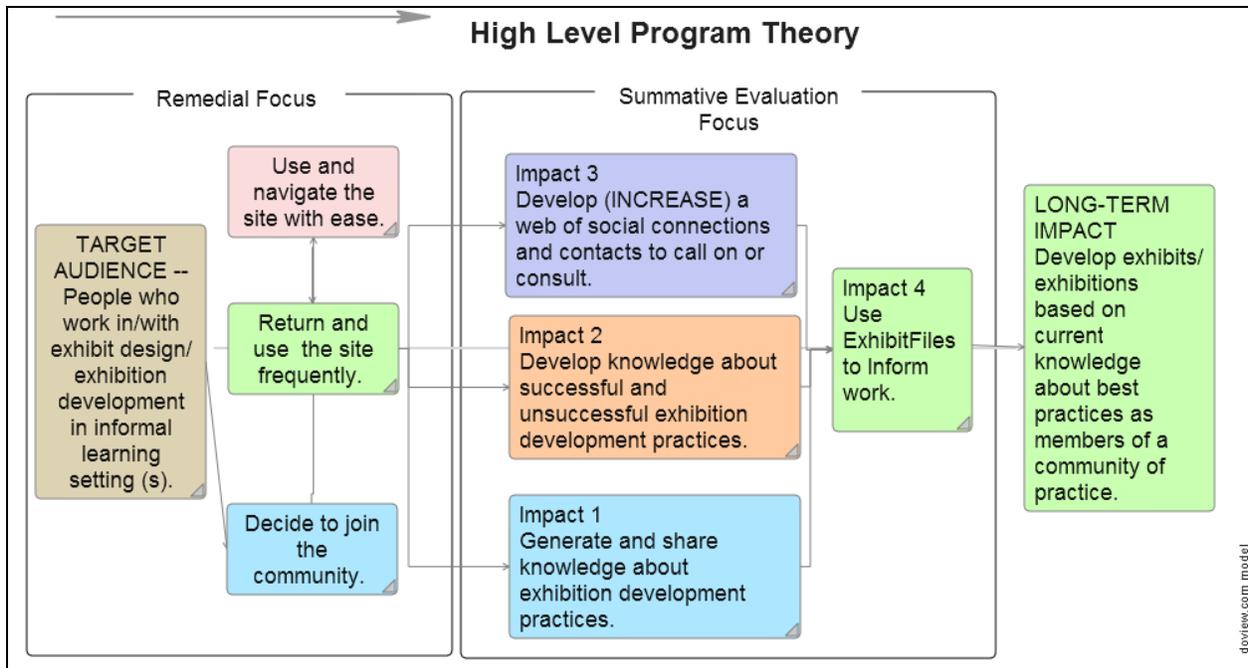
Figure 1. ExhibitFiles high level program theory

Underlying this theory were assumptions about (1) the value of the expertise developed by practice and (2) the value of relationships. The project team designed the site to serve as a development tool for new exhibits/exhibitions and a "place to report lessons learned." This means that the expertise of exhibit/exhibition developers, based on their own experiences, was identified an important source of knowledge and a basis for the ongoing improvement of the field as a whole. The site was intended as a place that where these developers could "feel in touch" with others and provide a "reference point for their own work" (EXF1_TDI_PT_Cases 1-2_072398). Users were required to register and develop a profile on the site as part a strategy to build community. During this registration process, members must check off a box that says other members can contact them through the site. As one member of the project team explained,

> *I think when you couple ExhibitFiles with other professional development activities in the field, whether it is NAME or the ASTC conference . . . this is something that*

strengthens those relationships, this is something that deepens those relationships in the same way Facebook tends to let people who know each other already stay in touch, and occasionally you meet new people. But a lot of it is . . . strengthening those existing social ties (EXF1_DI_PT_Cases 3-1_051509).

In addition, the project team assumed that there would need to be a critical mass of case studies and reviews for users to return and use the site frequently.

Reaching the Target Audience

As part of the remedial evaluation, it was important for us to find out to what extent and in what ways ExhibitFiles had attracted its target audience. Figure 2 shows a detailed description of the Target Audience characteristics from the Program Theory. One way to answer this question was to look at characteristics of registered members and to compare these to expectations and assumptions about who would and would not join the site. The percentages in the discussion that follow are of those responding to specific items in the online survey. In general, this group appears fairly representative of the population of members as a whole. The survey was too long causing a group of respondents to drop out toward the end. We compared this group to those who completed the survey on level of participation (number of case studies, reviews, favorites and comments). Surveys respondents who dropped out were not different from those who completed the survey on these variables.
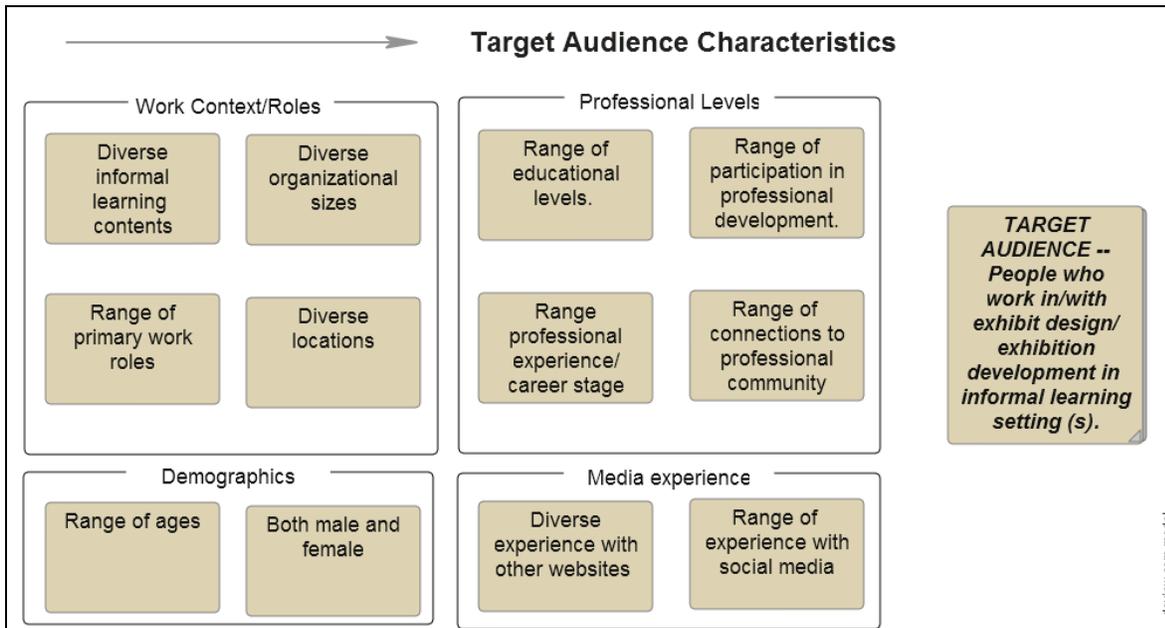
Figure 2. Target audience characteristics (program theory)

Demographics

Among the 234 respondents who provided information about their gender, 44.0% were male and 56.0% were female. As shown in figure 3, the most frequent age range was 35 to 44 with 33.2% of the total sample followed by the 45 to 54 with 23.8%.
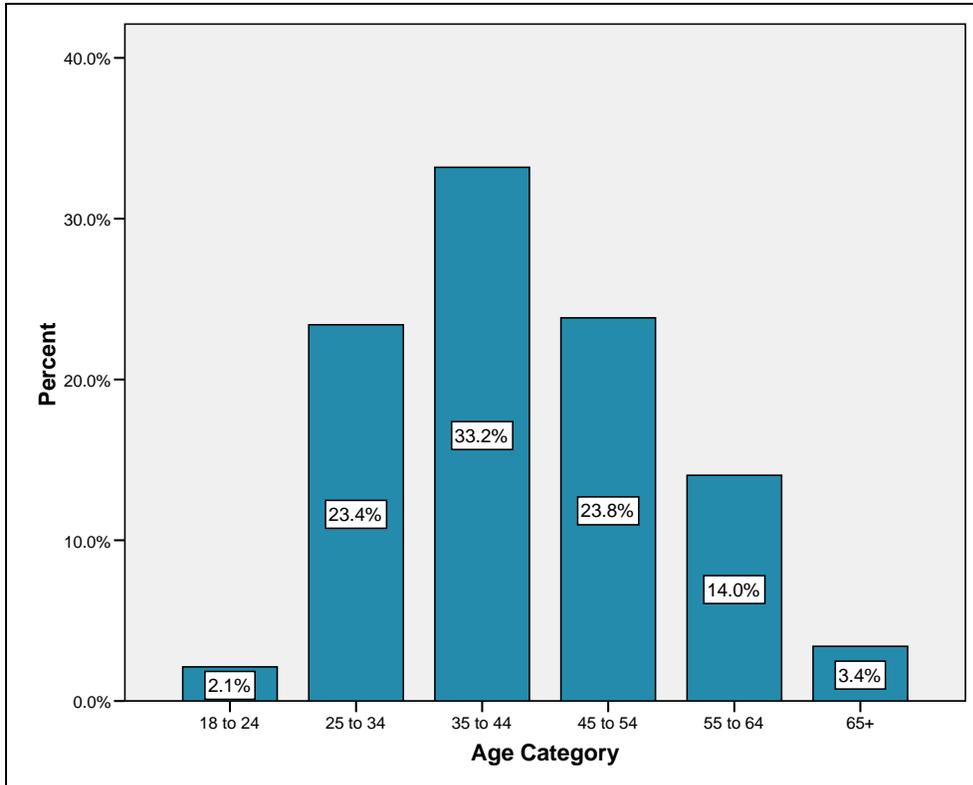
Figure 3. Age range of online survey respondents (N = 235)

Education and Experience

We also asked survey respondents about their level of education, number of years of professional experience, and career stage. Of the 233 respondents, the most frequently reported level was *master's degree* at 48.5%, followed by an *undergraduate degree* at 35.6%, doctorate at 12.4%, *associate degree* at 2.6%, and *high school* at .09%. Figure 4 shows this information.
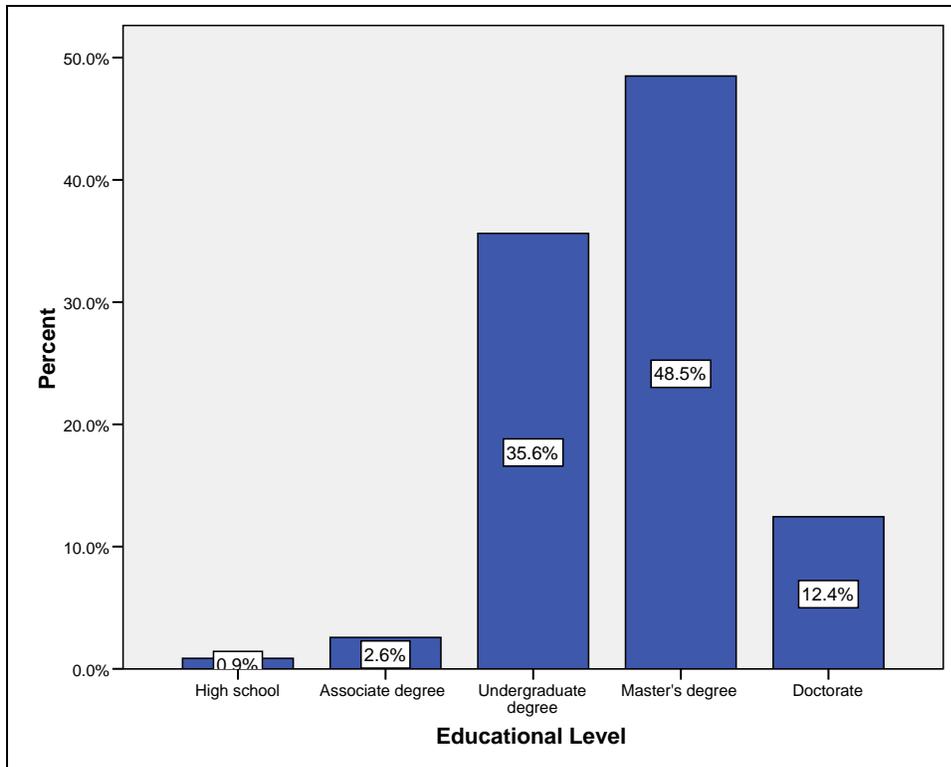
Figure 4. Educational level of survey respondents (N = 233)

Among 232 respondents, years of experience ranged to from 0 to 45 with a mean as 14.5 years and a median of 12.0 years. This is a fairly normal distribution. The most frequent career stage reported was *experienced professional* at 15.7%, followed by *senior professional* at 25.0%, *entry-level professional* at 14.7%, *student* at 4.7%, and *retired* at 0.9%. Figure 5 shows the distribution of career stage categories.
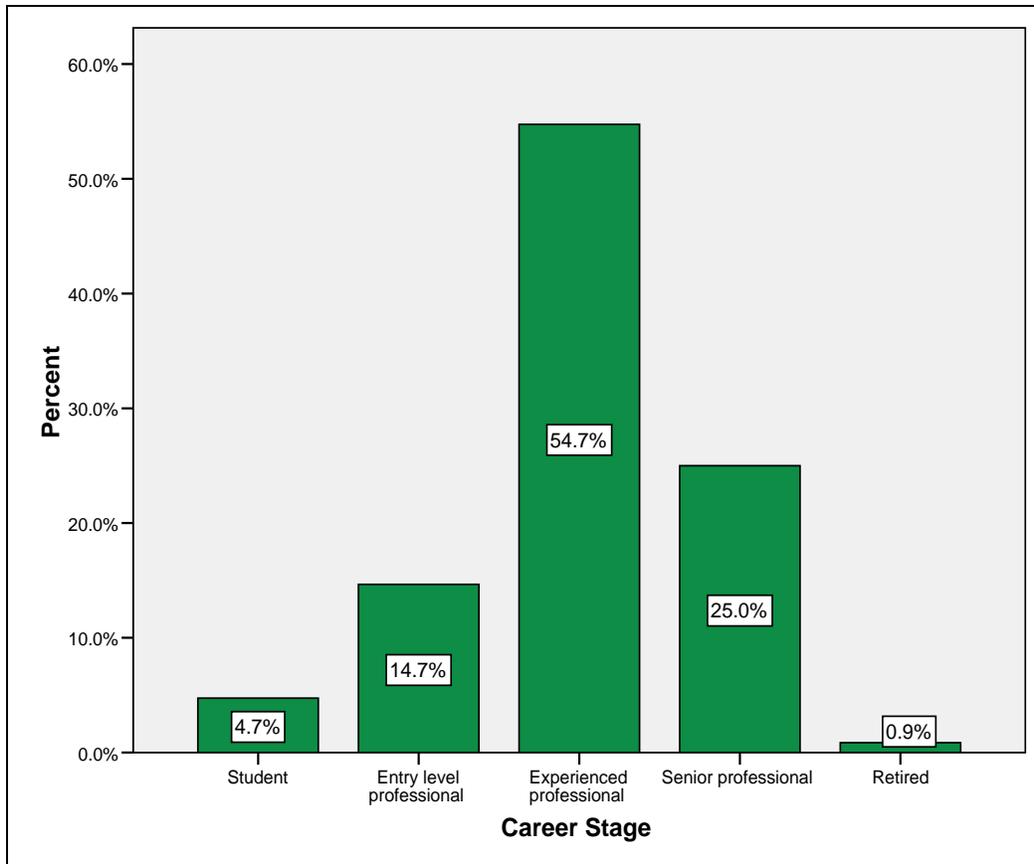
Figure 5. Career stage of survey respondents (N = 232)

Primary Work and Organizational Context

We also asked respondents to select from among categories describing their primary work. We developed these categories from the *Current Position* entries in ExhibitFiles member profiles. Figure 6 shows the categories selected in order of frequency. Among the 230 respondents, the most frequent descriptions were exhibit/exhibition development (33.5%) followed by managing exhibit/exhibition development projects (13%).

Several of these categories can be reasonably assumed to include of those directly involved in informal learning exhibits and exhibitions. These include e*xhibit/exhibition development, managing exhibit/exhibition development projects, exhibit maintenance, exhibit fabrication/construction, graphic designer, new media or technology development, manage traveling exhibitions*, and *exhibit sales*. These positions describe the primary target audience of ExhibitFiles. Respondents in these positions were 59.1% of the respondents.

Other positions describe work connected to informal learning exhibition development. These include *institutional administration leadership, teacher/professor, student, grant developer/writer, evaluator/researcher, marketing, developing/producing film/television*, and *journalism (science or culture)*. Individuals in these related positions made up 40.9% of the 230 respondents to this item.
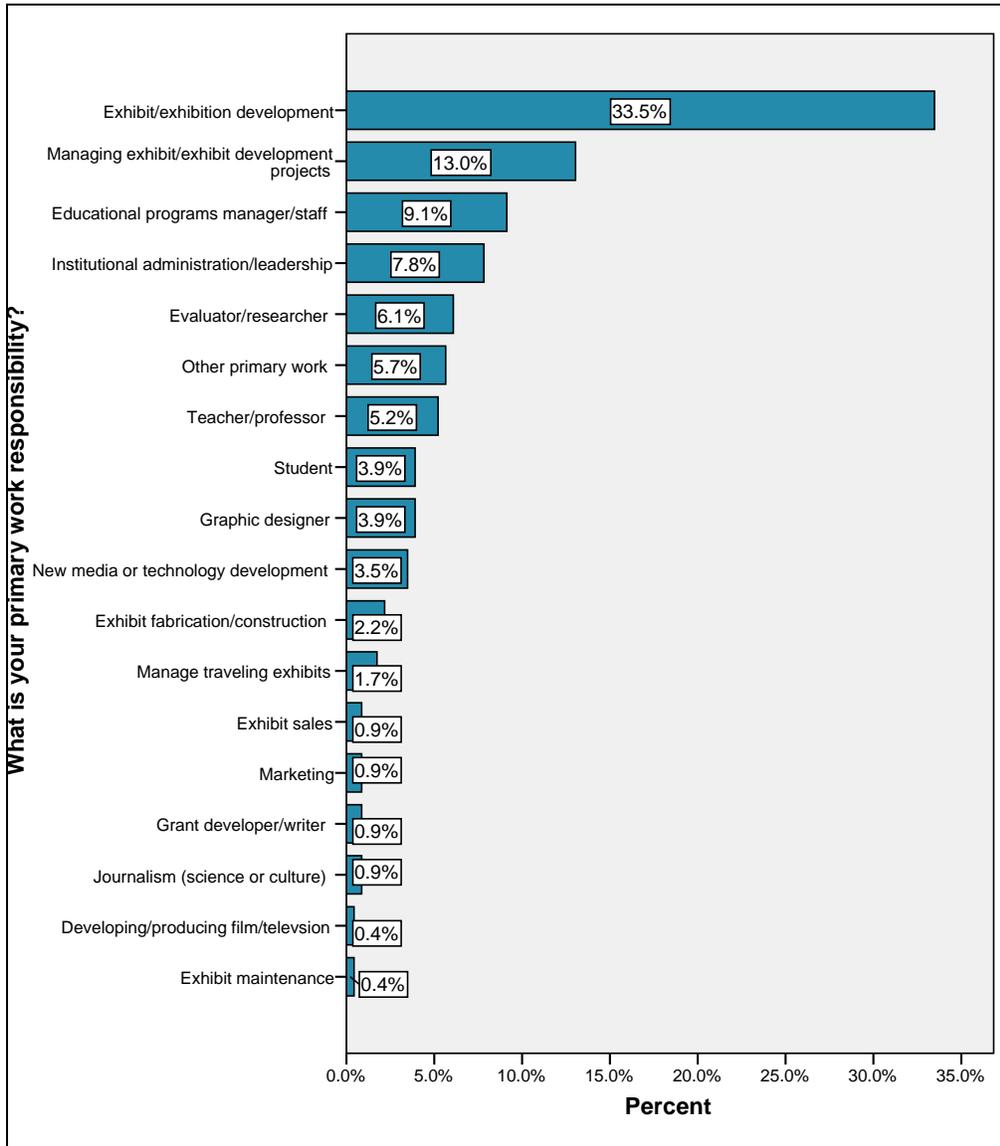
Figure 6. Primary work responsibility (N = 232)

We asked respondents "In what type of organizational context do you work?" We used categories develop by the NSF Division of Research on Formal and Informal Education for project PI categorization. Figure 7 shows the responses to this item. Some respondents commented that these categories did not allow them to clearly describe the context of their work.

We found that a substantial percentage of ExhibitFiles members work in informal science education but a considerable number also bring perspectives from other contexts and settings. The most frequently selected single category was science-technology center/museum at 23.3%. This was followed by 17.6% of respondents reporting they worked as exhibit designers/fabricators. Figure 7 shows responses to these work context options.
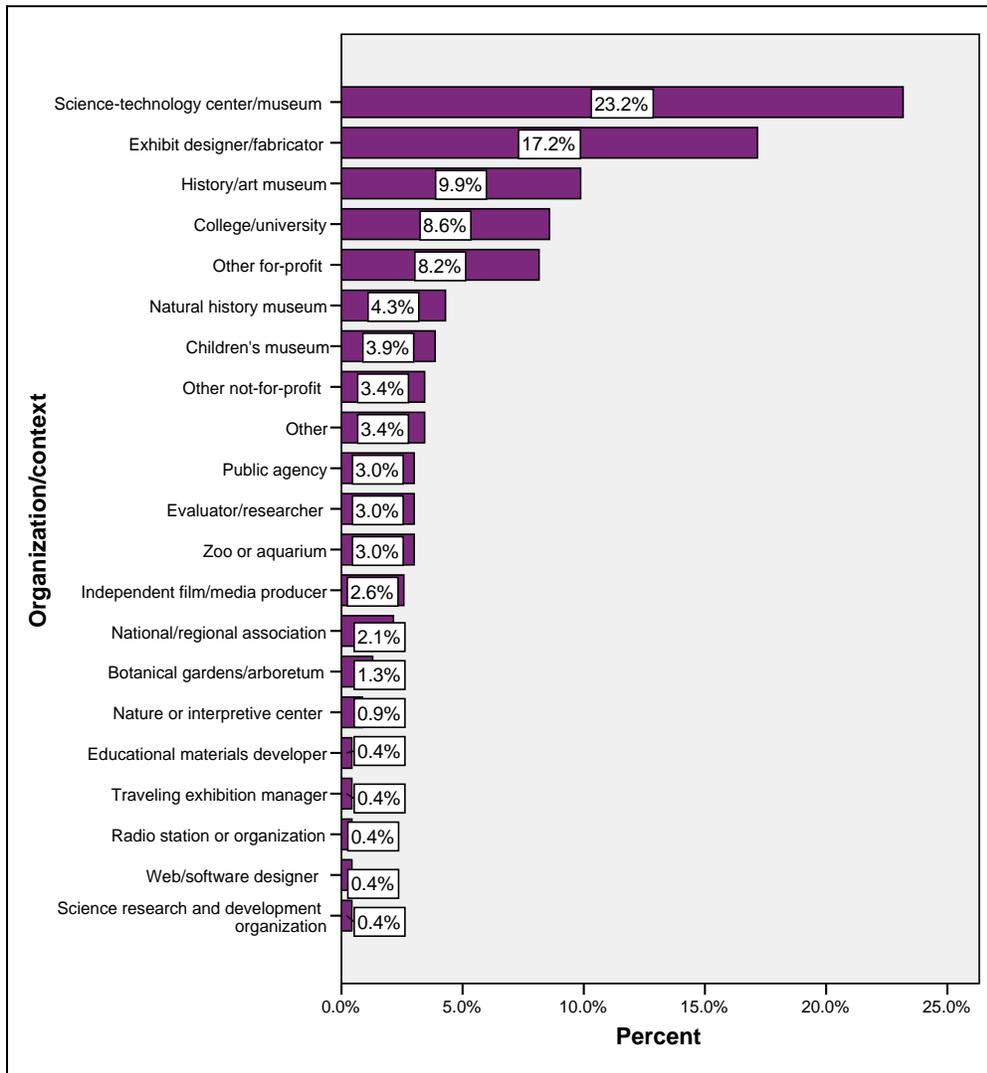
Figure 7. Organization/context (N = 223)

Several of the organization/content categories referred to a range of informal science learning institutions. These included *science-technology center/museum, natural history museum, zoo or aquaria, botanical gardens/arboretum*, and *nature or interpretive center*. These categories total 37.7% of the 223 respondents to this item. However, 9.9% of respondents reported history/art museums as their work content, 8.6% reported working in colleges and universities, and 3.9% reported working in children's museums.

Only 172 of the total 286 respondents in the sample provided information about the size of their organization. We created categories from their responses. These are shown in Figure 8. The organization size was somewhat smaller than the evaluator anticipated. This is probably due to the number of respondents who work as independent exhibit/exhibition developers, in design firms, and in consulting firms with relatively few employees. It may also reflect the trend to outsource work and downsize numbers of employees in informal learning institutions since the 1990's.
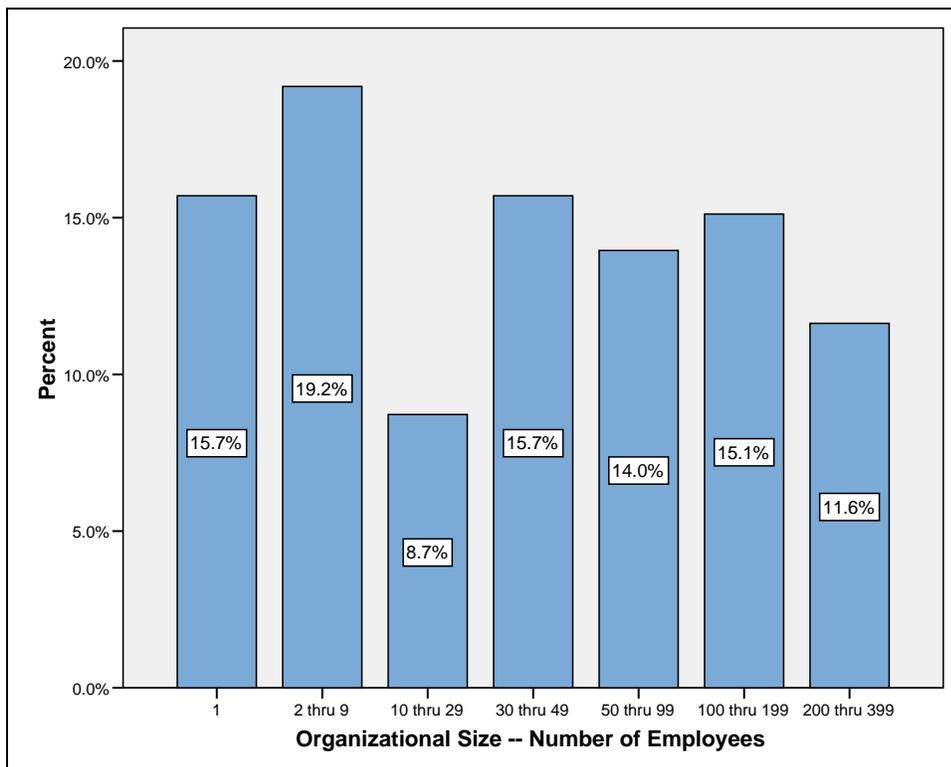
Figure 8. Organizational size – number of employees (N = 172)

Social Media Use

We also wanted to see if ExhibitFiles had higher levels of appeal to professionals who were comfortable with social media. ExhibitFiles' first three years corresponded to a period of rapid group in social media use. Among respondents to the Pew Internet & American Life Project Poll data collected in April 2010, 23% of adults reported that they had used social networking site like MySpace, Facebook or LinkedIn.com. This ongoing poll also showed the most rapid growth

in social network site use among the 50 plus age group (McFadden, 2010). We asked online survey respondents which social media sites they used professionally and personally. This information is shown in Figure 9 and the base percentage used was 230 respondents.[2] The most popular site and use was Facebook for personal use (80.3%) followed by LinkedIn for professional use (59.6%), YouTube for professional use (48.3%), Facebook for professional use (35.0%), Fickr for personal use (34.4%), Fickr for professional use (35.0%), YouTube for professional use (27.1%), and LinkedIn for personal use (17.1%). We counted across these items for the selected 230 individuals to calculate the number of social media sites individuals used. Counts ranged from 0 to 8 with a mean of 3.1 *(SD = 1.8)* and a median of 3.0 This means that about 50.0% of the sample uses three social media websites, about 12.6% use only one, and about 4.0 % use 7 or more. It appears that that ExhibitFiles attracted registered members from among a population of higher than average social networking use than the general population.
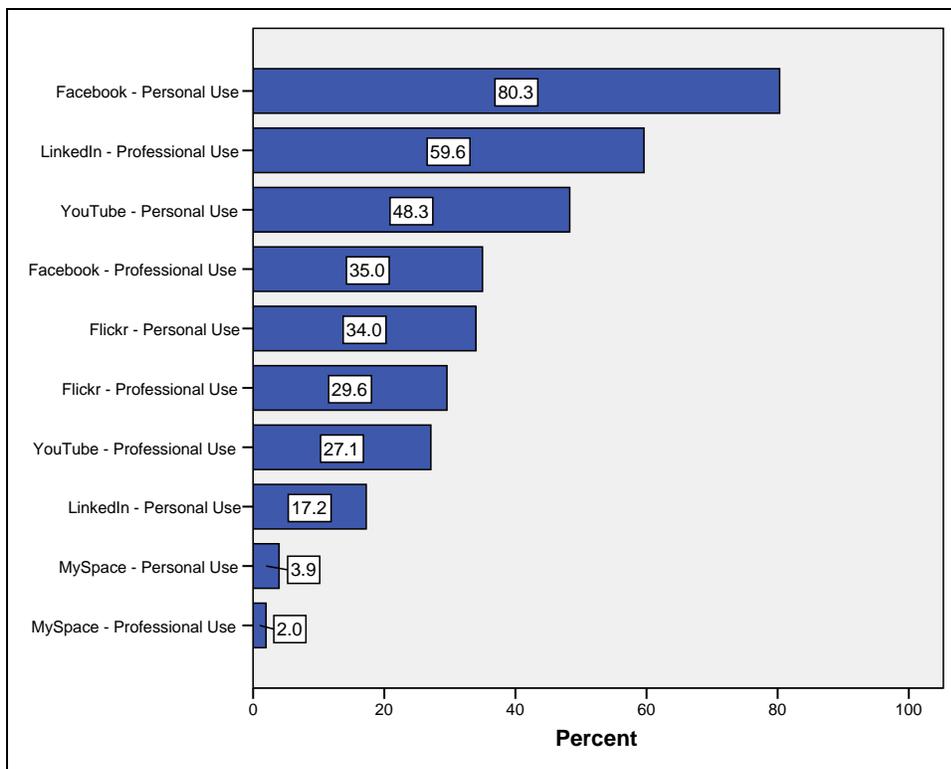
Figure 9. Social media use of survey respondents (N =230)

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[2] By this point in the survey, about 50 respondents appeared to have dropped out. We checked the number of responses to the item immediately before this set of options and immediately after. Both items were answered by the same 230 respondents. It appeared reasonable to use 230 to calculate these frequencies. If the entire sample of 286 were used, it would increase percentages of respondents NOT using these social media sites and probably provide a misleading view of ExhibitFiles members as a whole.

Market Penetration

We do not know the actual number of exhibition developers and exhibit designers in the U.S. or world, but one important target market for ExhibitFiles was members of was NAME. Using the February, 2009 NAME membership list *(N = 830)*, we found that 14.7% *(n = 122)* of individuals on the NAME membership list also appeared on the ExhibitFiles database (November, 2009). Figure 10 shows this information.
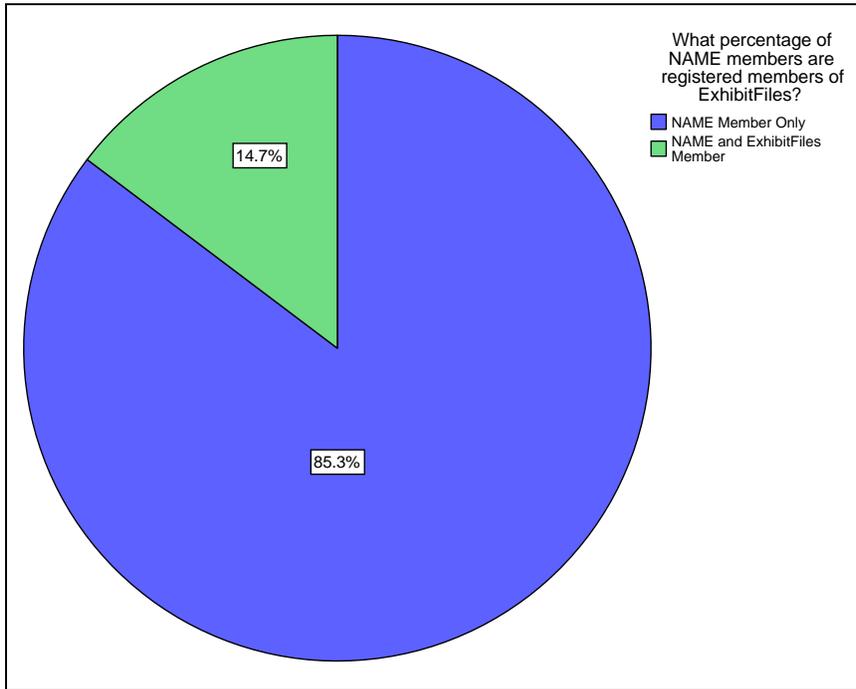
Figure 10. Percentage of NAME membership (February, 2009) registered as members of ExhibitFiles *(November, 2009) (N = 830)*

One way we know that the total population of exhibit designers and developers is much larger than the NAME membership is to look at the percentage of ExhibitFiles registered members who are and are not members of NAME. We found that 9.1% (*n* = 122) of ExhibitFiles Registered Members also appeared on the NAME membership list. This information is shown in Figure 11.
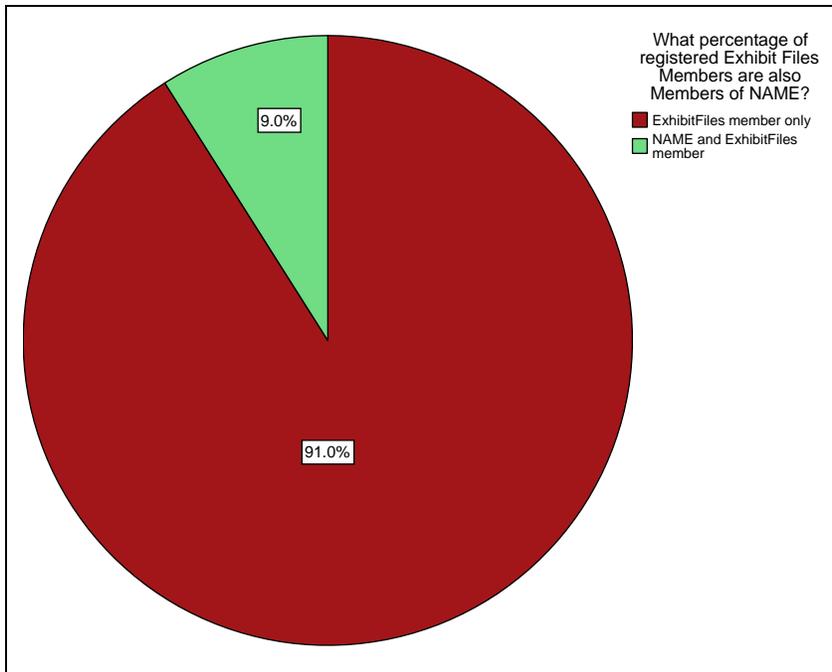
Figure 11. Percentage of ExhibitFiles *members who were members of NAME (N = 1357)*

Based on these comparisons, it appears that ExhibitFiles has room for growth among NAME members. In addition, it shows that ExhibitFiles appears to have attracted individuals who may be part of the larger field who may not have chosen to participate through this professional association. This highlights the role of the website of drawing additional members into a more connected group of professionals developing exhibits and exhibitions.

Joining the Community

It was also important to understand the effectiveness of various awareness efforts in attracting members to the site. The project team assumed that the clarity of the site's purpose would affect the decision to register. Figure 12 shows the section of the program theory with assumptions about how people would decide to register as ExhibitFiles members.
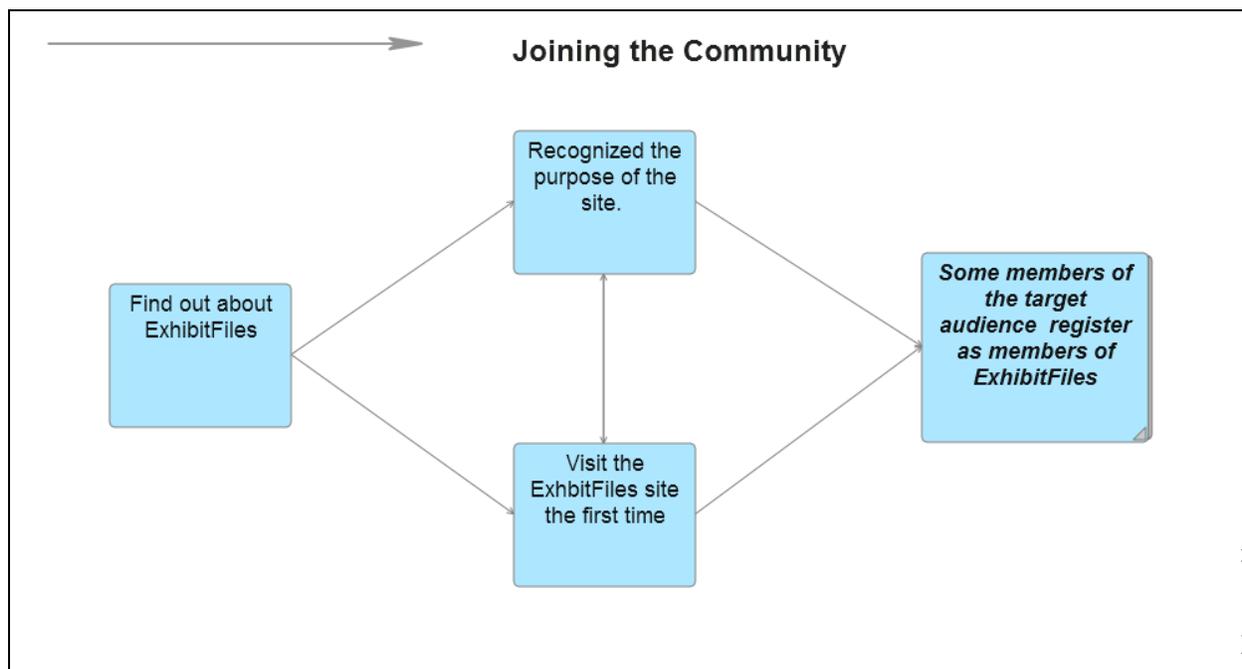
Figure 12. Joining the community (program theory)

Finding Out about ExhibitFiles
We asked online survey respondents to tell us how they first found out about ExhibitFiles. Figure 13 shows this information. Among all survey respondents (*N* = 286), the most frequently cited way was through comments or recommendations by a colleague (32.3%), followed by a search engine (12.8%), a phone call or email from site developers (8.8%), a conference session (7.6%), the ASTC website (6.4%), and the ISEN listserv (5.6%). Substantial percentages of respondents said that they did not recall (22.3.1%) or did not respond to this item (7.0%).

We compared these avenues of awareness among the three calendar years in which survey respondents registered on the site. We found there was a significant difference (correlation coefficient p < .05). Among 2007 joiners (N = 118), 9.3% learned about ExhibitFiles from the ISEN listserv compared to 0.0% among those who joined in 2009 (N = 68). In addition 13.6% of the 2007 joiners learned about the site via a phone call or email from site developers compared to 1.0% among 2009 joiners. Efforts to make ExhibitFiles easy for new users to locate via web searches are reflected in this comparison. Among 2007 registrants only 5.0% reported first learning about ExhibitFiles from a search engine compared to 20.6% among 2009 joiners.

How did you first find out about ExhibitFiles?

Category	Value
Comments or recommendations by a colleague	32.3 % (81)
Cannot remember	22.3 % (56)
Search engine	12.0 % (30)
Phone call or email from site developers…	8.8 % (22)
Conference session	7.6 % (19)
ASTC website	6.4 % (16)
ISEN listserv	5.6 % (14)
ASTC Dimensions article	2.8 % (7)
Article in The Exhibitionist	1.2 % (3)
CAISE website	1.2 % (3)
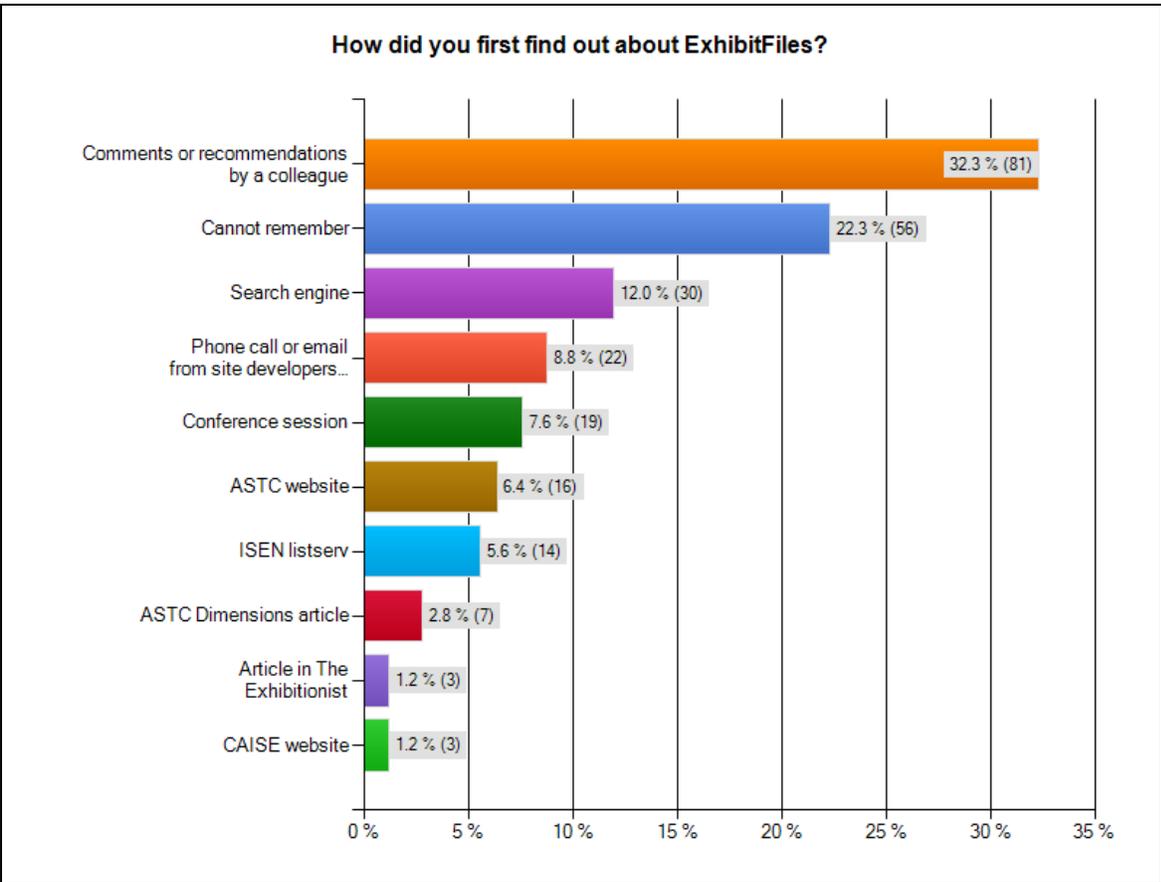
Figure 13. How did you first find out about ExhibitFiles? (Online Survey, N = 251)

Purpose of the Site

In a formative evaluation study, respondents appeared to be unclear about the purpose of the site. We are assuming that a clearly recognizable purpose is necessary for individuals to make a decision to register and join the community. In the online survey we asked respondents to explain, in their own words, the purpose of ExhibitFiles. Among the 70.6% of the total sample who responded to this item, almost all stated a purpose that reflected the intent of the design team. Purpose statements from respondents included,

> *To keep science centers aware of what is going on at other centers. To inspire new exhibits.*
>
> *To provide an interested audience for those with something to say about the medium of 'interactive' or innovative exhibition. To become over time a forum for discussion of such.*

A website where museum and exhibit professionals share case studies and reviews of exhibitions they visit or with which they shared in the development. I believe the audience is intended to be other museum professionals.

To support professional dialogue, create a sense of community and raise awareness of many different approaches to interpretation, engaging audiences and designing/developing exhibits.

Collect information about exhibits and facilitate conversations about exhibits

Connect those involved in exhibit development and informal learning; increase sharing of ideas and overall improvement in quality of exhibits/media being developed.

We do not know if the clarity of purpose actually affected the decision to join, but current members appear to be well aware of the purpose of the site. Efforts to clarify the purpose of the site after the formative evaluation also appear to have been effective.

Navigating and Using the Site

Figure 14 displays how users were intended to navigate and use the website. As we discussed previously, the use of general social networking sites were rapidly changing during the first three years of ExhibitFiles. This made it challenging to benchmark levels of usage that indicated relatively high or low use. In general, the project team expected higher percentages of members would read information on the site, search for topics or people, comment on items, and mark items as favorites. Lower percentages of members would develop and upload case studies and reviews.

These expectations are consistent with Forrester Research's Ladder of Participation (Brito, 2008) developed from their 2006 Devices & Access Online Survey of adult online consumers. Categories were created from activity frequency of at least once a month.
- Creators (13%) – publish web page, maintain a blog, and upload videos.
- Critics (19%) – Comment on blogs and post ratings and reviews.
- Collectors (15%) – Use RSS and tag web pages.
- Joiners (19%) – Use social networking sites.
- Spectators (33%) – Read blogs, watch peer—generated video, and listen to podcasts.
- Inactives (52%) – None of these activities.

The percentages in this study conducted by the Forrester Research provide an external source with which to compare participation on ExhibitFiles. Yet, it is likely that these percentages were higher in 2010 when the ExhibitFiles online survey was conducted. Madden (2010) reports growth in social media participation in all age groups with the percentage nearly doubling to 47% among adults over 50.
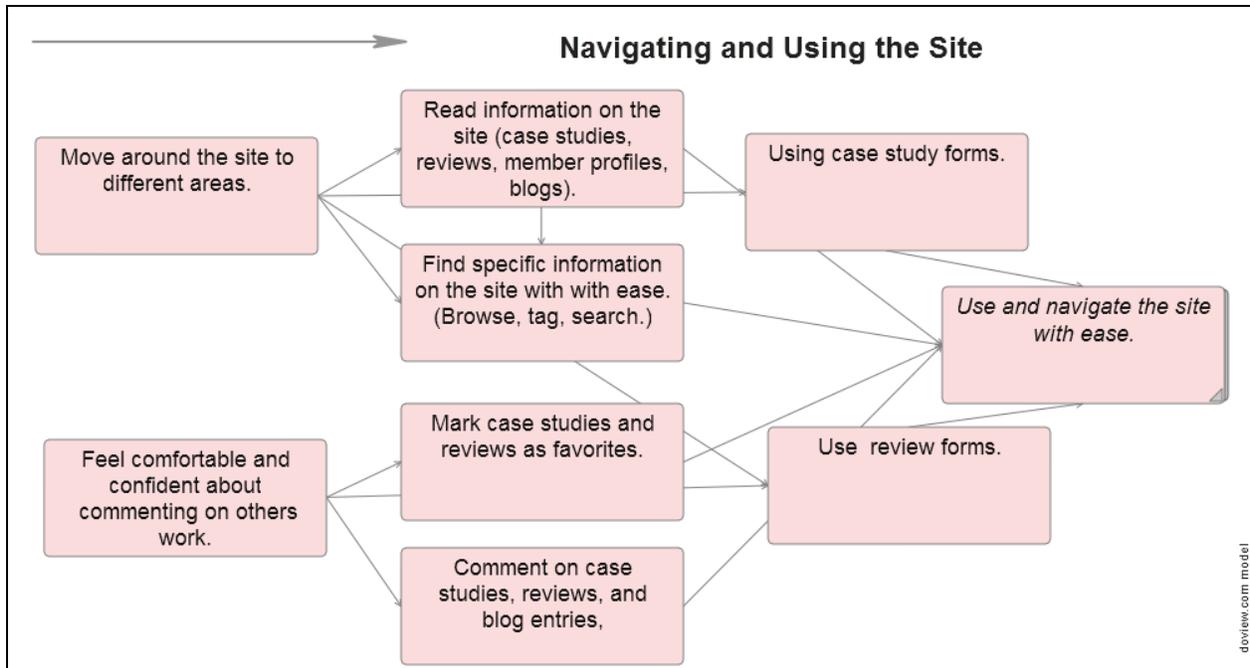
Figure 14. Navigating and using the site (program theory)

Reading Case Studies, Reviews, Member Profiles, and Blog
The most basic level of participation on the site is reading information provided by others. We asked respondents how often they read case studies, reviews, member profiles and blog items. Frequency options were never, seldom, occasionally, and often. Figure 15 shows the percent of respondents (*N = 272*) reading each of these four types of information. Case studies were the most frequently read type of information with 53.2% reporting they read these items occasionally and 19.7% reporting they often read case studies. This was followed by reviews, which 52.4% of respondents said they read frequently and 20.1% said they read often. Less frequent use was reported for member profiles with 41.2% indicating they seldom read them, followed by the blog which 44.7% report never reading this information.
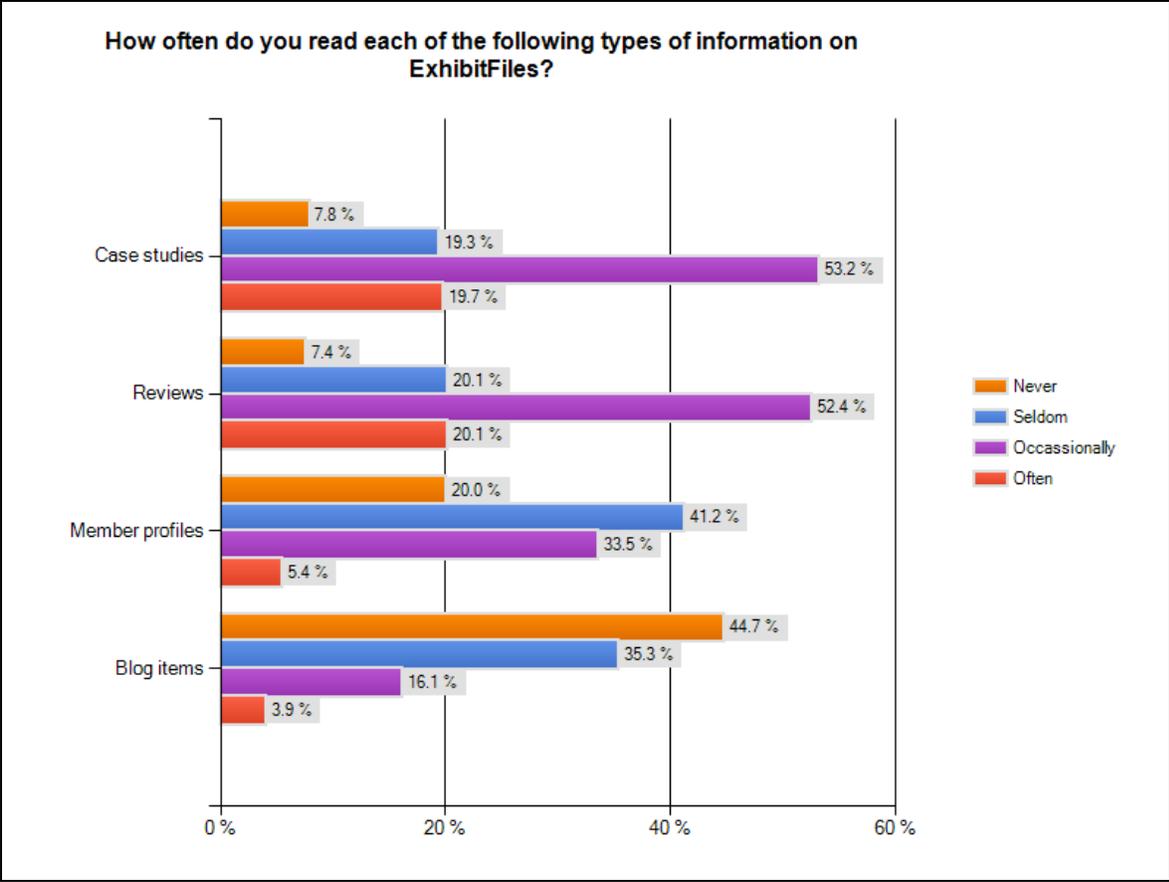
Figure 15. Frequency of reading case studies, reviews, member profiles, and blogs (N = 272)

While reading case studies and reviews appears to be at a reasonable level of use, less frequent use profiles and blog items may be of some concern. Member profiles provide a mechanism for professional connection, a major goal of the site. Blog items often have information about site changes (related to updates and improvements requested by members) and new perspectives that could provide impetus for frequent return.

Favoriting and Commenting
As we anticipated from browsing the site, we found that only a few respondents (1.1%, *N = 269*) mark items posted by others as favorites and only a few others (14.9%) occasionally use this function. A substantial percentage (19.3%) reported they were not aware that items could be marked as favorites. Figure 16 shows the frequency responses for using favorites.
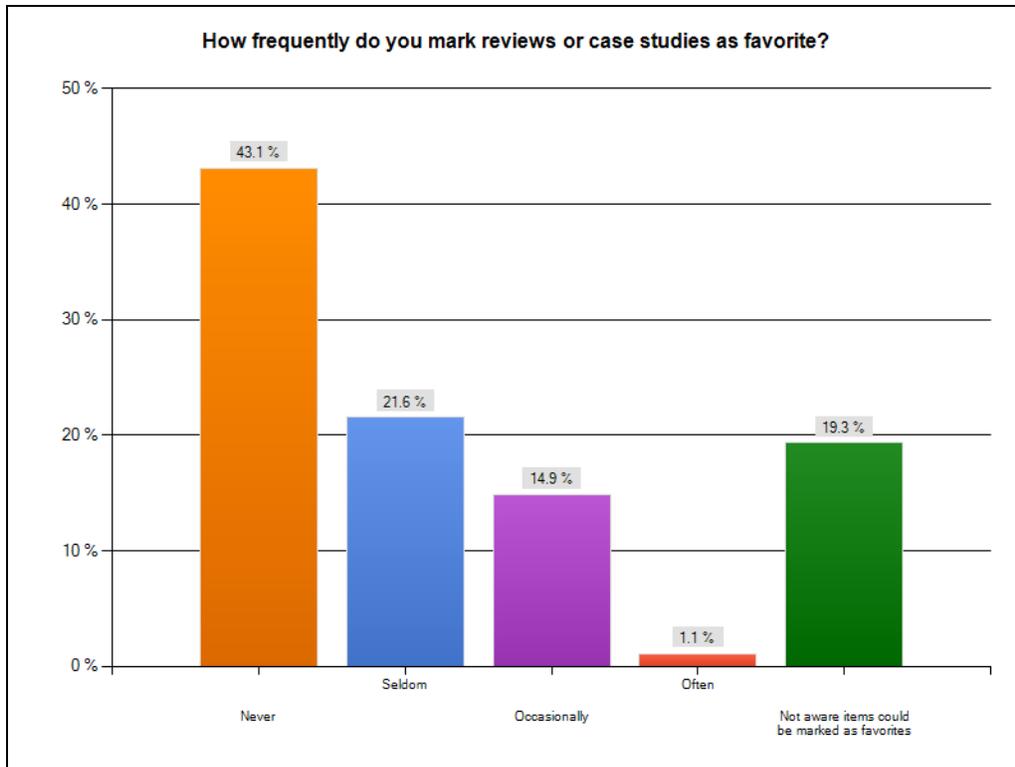
Figure 16. How often do you mark items as favorites (N = 269)

In in-depth interviews, we found a range of meanings and uses for the favoriting function in ExhibitFiles. As one respondent explained,

> ***The favoriting thing is a little -- that's a little fuzzy or unclear. I don't know if you could do something like with Amazon where you -- where you star stuff, you know, give something two stars, or three stars, or five stars, or whatever. I don't know if that's always a workable thing. You know, are you -- are you voting on the quality of the review? Or are you voting on the quality of the exhibit itself? I don't know. (EXF1_MEM_TID_934_051310_ct)***

Some respondents used favorites to point out the excellence a case study or review, that is, the written piece. Some respondents appear to use favorites both ways. Yet, others use it as a make-shift view count.

> ***I use favorite to mean that I found somebody else's item either very well done so that I -- I guess I'm not using it to save it for my future use like a bookmark. I'm using it with the theory that somebody might look at my favorites and follow them. And I don't know if that theory is true or not because I have to admit I haven't really looked at someone else's favorites and followed them. (EXF1_MEM_TID_561_051410_ct)***

Sometimes I'll favorite [an item] if I like the way the review was written. Sometimes people do a fairly good job or incisive job of reviewing.
(EXF1_MEM_TID_934_051310_ct)

I use it as a way to recommend. . . . [ExhibitFiles] doesn't keep a view count, which actually some things do. Like You-Tube does do a view count. And so you don't get much feedback about whether anybody looks at your thing. So that -- so having it be favorited is certainly a way that at least you see some particular people both looked at it and liked it. But maybe there should be a view count.
(EXF1_MEM_TID_561_051410_ct)

One respondent perceived herself as favoriting the exhibit itself, not the case study.

It means I thought the exhibit was excellent, really excellent. For me, it's just my -- it's more or less stating my taste in a way for exhibits because different people like different things. But it's -- for me, it's an example of excellence. . . . I would only do it if I had been to the exhibit or if I knew a substantial amount about the exhibit. . . . Favoriting a review would be a different issue. (EXF1_MEM_TID_289_051710_ct)

One noted that he used favorites as bookmarks.

But it's more for my -- my own reasons that I'll favorite something. And it's just like I said, like a bookmark for me so that will remind myself to go back and look at something in the future. (EXF1_MEM_TID_909_051310_ct.doc)

Another respondent wanted to be able to bookmark items without favoriting the item.

Because there might be something -- there might be one on there that I disagree with, I don't like, but I want to remember and I want to capture that and park it some place because I'm going to want to come back to it. So I don't want to favorite it, I want to bookmark it . . . . I wouldn't favorite everything just to be able to park it some place. That -- that -- that parking and doing is two different things.
(EXF1_MEM_TID_576_051310_ct)

But others used them to build connections and community – or perceived others using favorites this way.

I mean yeah, I do tend to favorite -- it's true, I do tend to favorite reviews and case studies by colleagues that I know and have a good relationship with.
(EXF1_MEM_TID_254_051710_ct)

I think the first thing is giving the writer a pat on the back. And -- and again, some of this -- some of it could be political. Some of it could just have your face out there as

somebody who looks at that review and oh they keep seeing [Name's] face, she favorites a lot and -- and -- and [Name's] face, they favorite a lot. So getting your face out there. (EXF1_MEM_TID_576_051310_ct)

Figure 17 shows the frequency of commenting on items posted by other members. Over half of the respondents (67.5%, N = 274) said they never commented on ExhibitFiles case studies and reviews. However, only a few respondents (5.5%) were unaware that they could comment.
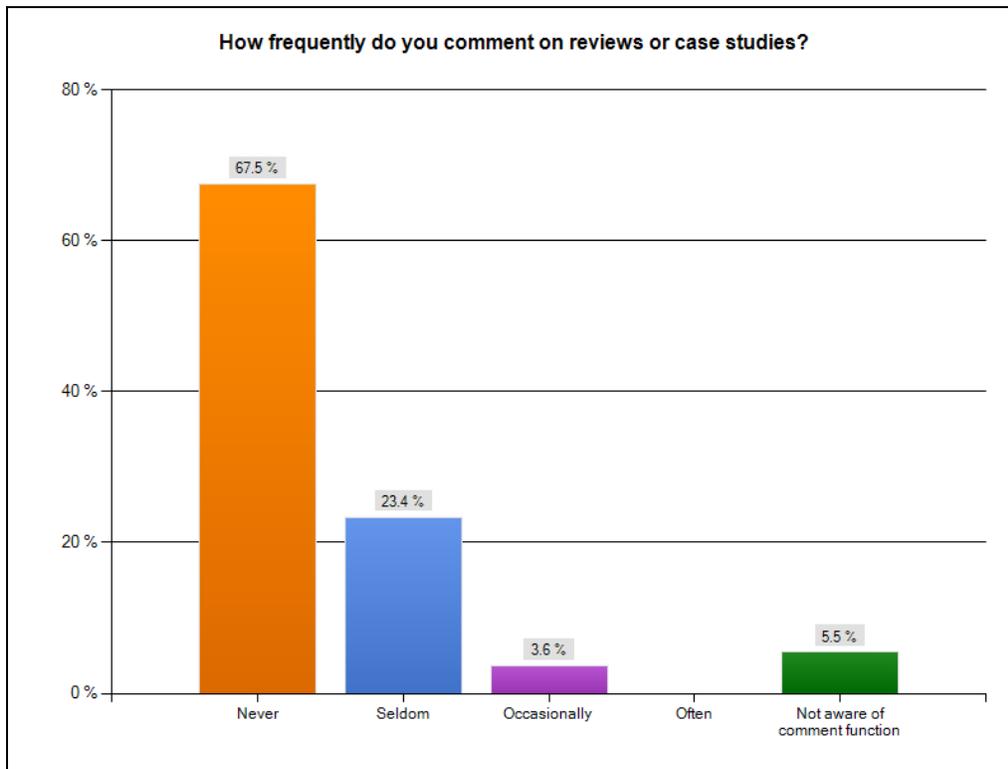
Figure 17. Frequency of commenting (N = 274)

Commenting and Discussions

In in-depth interviews, we explored why members did not comment more frequently. We found some evidence that people may not comment and engage in deeper discussions because case studies and reviews appear to be the primary unit of information.

> *Well it's interesting because I see more discussion on say LinkedIn or you know certainly the listserv type format, than I do on ExhibitFiles. I mean I -- I think I've commented a couple of times on reviews and sort of followed that strand off of a review. And often -- I think more often than not, there's not a lot of commentary coming off of -- coming off of a review. (EXF1_MEM_TID_934_051310_ct)*

One respondent explained that she rarely commented on ExhibitFiles because she had to shift

through case studies and reviews to find conversations.

> *I want to engage with ExhibitFiles in the same ways that I like looking at blogs. Where it's almost like the information is already curated for me from someone who I really am aligned with or respect in the field. . . . . I think that the interface of ExhibitFiles [makes] you really do have to dig and then maybe hope that you come up with something that . . . . I'm probably not going to dig. (EXF1_MEM_TID_1429_051710_ct)*

But other comments provided insight in to how people perceive and use social media in general.

> *I would comment if I have a direct firsthand experience that either relates or contradicts something that appeared in a case study or review. . . . So it -- it -- just like in a conversation around, you know, a table at a meal, you know, if I have something that's worthy to contribute to the conversation that I feel will help move the conversation forward, then I would make a comment. (EXF1_MEM_TID_254_051710_ct)*

Another respondent did not find this a context in which she would choose to speak up.

> *Oh, I never comment. . . . I guess for the same reasons that I don't talk to celebrities in restaurants, I don't really feel like . . . it matters what you say. You're not going to have anything that matters -- you know, that is going to provoke a response. It would be a kind of a meaningless gesture to me. And possibly annoying. (EXF1_MEM_TID_289_051710_ct)*

But several respondents expressed the desire for more discussion on ExhibitFiles. Respondents indicated they rarely visited the blog. The blog was not prominently featured on the first page of the site, and during in-depth interviews we found many respondents had never visited this section. Others saw potential for the blog in supporting more substantive discussion and participation.

> *And sometimes the unit of analysis and the unit of conversation need to be a topic of some characteristic of the exhibit or some innovation or some feature or some strategy. And that the way it's structured with the comments just by review or by case study doesn't promote that . . . . The blog may be somewhere that might happen. Or there might be some other functionality that let ongoing conversations being more coherent. (EXF1_MEM_TID_543_051210_ct)*

> *But if [the blog] could somehow be a little more prominent, and perhaps even, you know, seed the conversation . . . . Because we really haven't had any real discussions . . . . There are discussions happening they're kind of more remote from each other. You know, there -- there might be something brought up [in] a discussion over -- about a, you know, a review, but it stays over there attached to that one exhibit and doesn't*

really have a relationship to anything else that's happening on the site. (EXF1_MEM_TID_543_051210_ct)

Case Studies and Reviews Requested
The topic of additional case studies and reviews that member emerged from in-depth interviews and in discussions with the project team. The online survey asked respondents to suggest items they would like to have on the site. These suggestions were provided to the project team as part of a preliminary report (Tisdal, 2010B). In general there was much less consensus about what respondents wanted to see than we expected. However, respondents from art, history, and children's museums did want to see more contributions representing their sectors of the museum community.

We asked respondents to suggest up to three exhibits/exhibitions for which they would like to have case studies in *ExhibitFiles*. Of the total 286 respondents, 81 (28.3%) submitted 141 suggestions for case studies. Appendix B includes table of requested case studies. Only 44 of the suggestions were for specific exhibitions. Most these suggestions were made by only one respondent. However, *Race* at the Science Museum of Minnesota was requested by 4 respondents, and 2 respondents requested cased studies of *Cooking!*, *Mandalas, Real Pirates*, and *Terra Cotta Warriors*.

Other suggestions were more general requests for case studies focusing on specific topics or types of exhibitions. Frequently mention types included art exhibits/art museums, international exhibits or exhibits that work across countries, museum reviews and comparisons, exhibits at smaller museum/small spaces, exhibits for children, interaction/hands-on exhibits, mobile devices, exhibits for specific grade levels, issues-based exhibits, low budget projects/exhibits, and wildlife exhibits.

We also asked respondents to suggest up to three exhibits/exhibitions which they would like to see reviewed in *ExhibitFiles*. Of the total 286 respondents, 61 (21.3%) made a suggestion for at least one review. Only two specific exhibitions were suggested by more than one respondent: *Harry Potter* and *Identity*. Respondents were more likely to suggest reviews about types of visitor experiences including museum reviews and comparisons, art exhibits/art museums, blockbusters, international exhibits or exhibits that work across countries, children's museum exhibits, exhibits for families, museum studies related topics, temporary exhibitions, and zoo/aquarium exhibitions. Appendix A shows the number and percentages of responses and percentage of respondents for each suggestion made.

The most frequently made topical suggestion was for the review of specific museums or museum comparisons. Some of these suggestions included a comparison of three children's museums in Papalote, Mexico City; California Academy of Science, Nantucket Whaling Museum; ECHO Lake Aquarium and Science Center; Pittsburgh Children's Museum; and the National Museum of Australia.

Searching the Site

Another area we explored was how easy it was to find items on ExhibitFiles. The site provides a search function by user entered tags and alphabetical listings of case studies and reviews. Figure 18 shows the mean ratings of the ease by different characteristics. The rating scale ranged from *1 = VERY DIFFICULT* to *10 = VERY EASY*. These items have consistent standard deviations of ranging from 2.1 to 2.4. Mean ratings with a difference of greater than 0.4 can be considered significantly different. Respondents (*N = 239*) rated it easiest to find items by contributors with an average rating of 7.7 followed by items from particular institutions or firms with an average rating of 6.9. Finding items by technologies and design elements had lower average ratings at 5.4 and 5.2 respectively.

How easy is it to find the following items on ExhibitFiles?

Items by specific contributors	7.71
Items from specific institutions or firms	6.98
Items on particular subjects or topics	6.76
Items in specific geographic locations	5.84
Items using particular technologies	5.41
Items using particular design elements	5.2
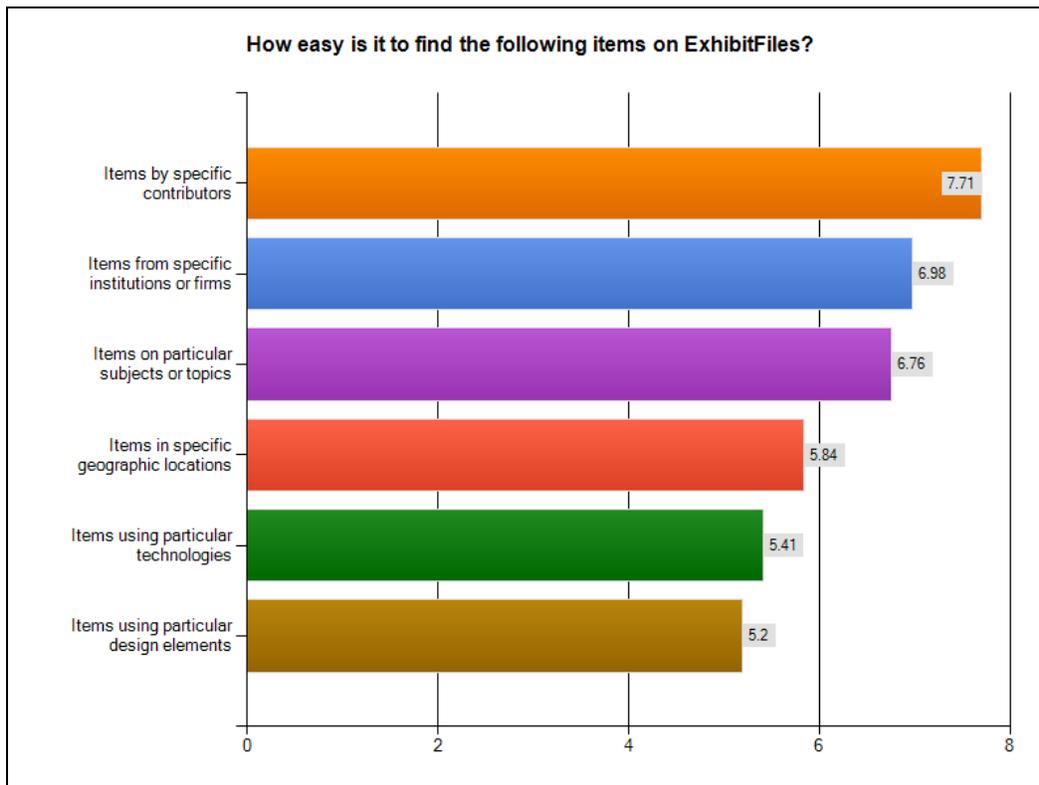
Figure 18. Mean ratings of ease of finding items by different characteristics -- Rating Scale: 1 = VERY DIFFICULT to 10 = VERY EASY (N = 239)

On both the online survey and in in-depth interviews respondents cited the search function as an area where the website needed improvement. Respondents to the online survey provided 55 comments on searching the site. Nearly half of the comments noted that they had not tried to search the site for particular items.

> ***I haven't really tried looking for particular topics. I hadn't realized how much depth there was to this site!***

I have not tried finding the above items.

Sorry, haven't tried searching on the site

Never attempted to locate a specific item.

Hard to comment because I don't conduct searches often enough

Several made the suggestion that the search engine could be better.

Your search engine isn't very good - In results I should see the section of the item that includes my search terms. As it is one simply sees the study or review within which something presumably relevant exists, but it is too burdensome to read through each one to find out which is relevant.

I know the whole issue of search engines is a tricky one...but a better search engine with more searchable terms would help and perhaps a more clear sense of how to search with slightly more comprehensive directions...

The search function is iffy in my experience.

I don't know much about search tools but I know I've seen better search tools on other sites-like newspapers. You can limit your search according to the categories that already exist -- in a newspaper you can search "sports" or "finance" rather than the whole paper. There are pre-existing categories of information on the ExhibitFiles site that could be used to limit searches.

The search engine isn't always perfect.

Other respondents to the online survey made suggestions about improving tagging and key words vocabularies for the search.

Making sure that search terms for cases are thorough so that items can be more easily found.

Advanced search capabilities, use controlled vocabularies to tag/structure case study and review inputs, filter by location, more prominent search box throughout site, find related functionality create in addition to member profiles, company profiles?

It seems like an issue of adding more tags --- some of this comes from users, but some also needs to come from within the ExhibitFiles infrastructure.
A more detailed list of popular tags

Improvements to the search functions were a high priority among in-depth interview respondents.

> *There's just a tremendous amount of stuff on there now. And -- and a lot of people as well. And I think -- I think some way of sorting by museum discipline or, you know, most recent to oldest. Or you know, sort of ways of cross referencing searches so that you can find things more quickly. . . . I don't know, about new participatory techniques, or you know, maybe there are ways of using a word cloud or something like that and tagging things that way. And then being able to click on a word in a word cloud to open up like articles in some sort of way. But I think -- I think probably a variety of -- of kind of finding aids or whatever that would help -- help people sort information would be really useful. (EXF1_MEM_TID_934_051310_ct)*

The alphabetical search appeared particularly frustrating for some respondents.

> *I think the first thing is I would want it to be easier to search. . . . I think the key thing . . . . How to I get to just exhibits that start with the letter T? You know, I mean it just -- the -- I can sort by A to Z, or I can sort by date. But okay, now they're sorted A to Z, but I got to scroll through every single page to get to the letter T. So can I just move to things and navigate through there just a little bit easier, you know, with a little bit more ease. (EXF1_MEM_TID_543_051210_ct)*

> *And then the other thing that I found hard was if I was looking to find a particular individual at a museum, it's very difficult to go through the members. I haven't found an easy way to like look -- look up or search members from say a particular institution. EXF1_MEM_TID_909_051310_ct)*

Using Member Profiles

Since making connections to other members was a primary goal of the site, we explored this area in both the online survey and in in-depth interviews. We asked online survey respondents how frequently they used member profiles. The most frequent response was seldom at 45.5% (*N = 257*). Yet only a few respondents (2.3%) were unaware of member profiles. Figure 19 shows frequency of use of member profiles.
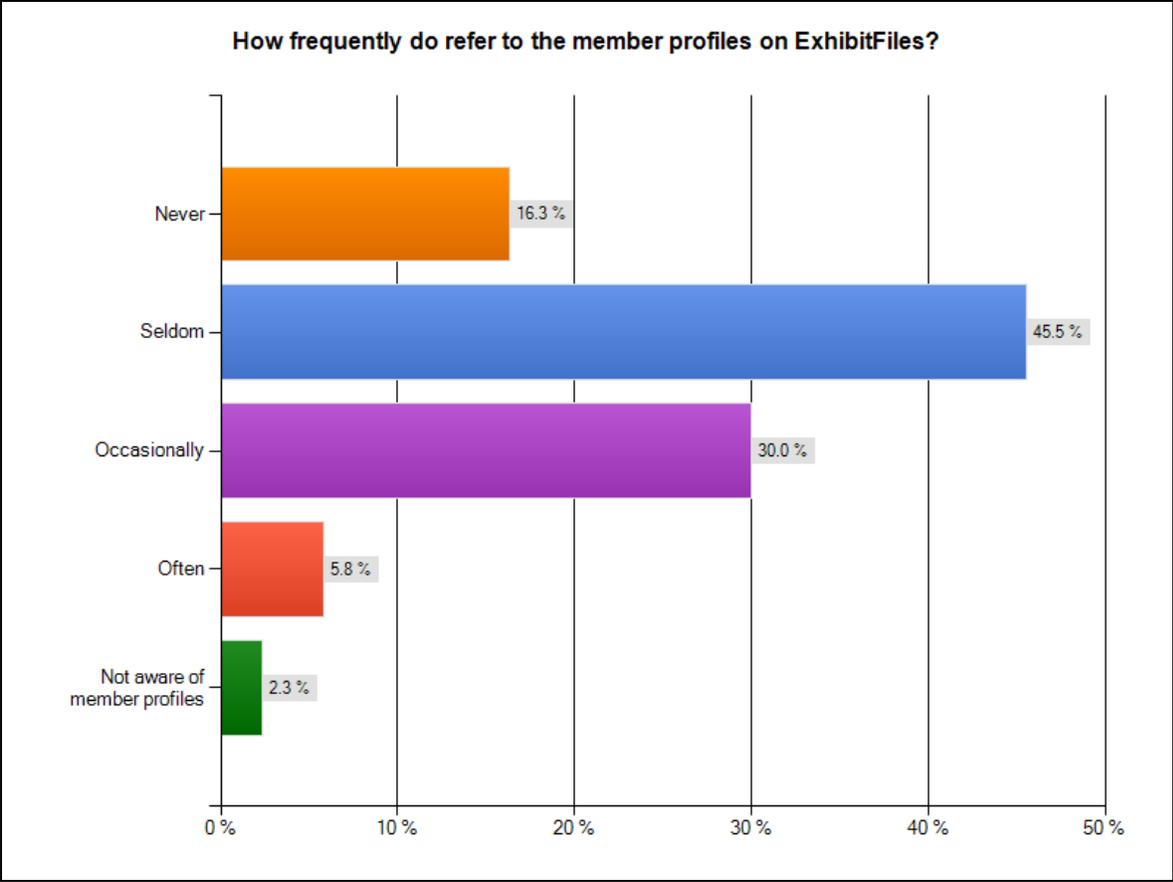
Figure 19. Frequency of using member profiles (N = 257)

We also asked online survey respondents how they had used member profiles. Figure 20 shows these responses. The most frequent use was to find out more about a case study or review with 53.6% of respondents reporting this use. The second most frequent response was that the respondent had never used member profiles at 34.2%.

How have you used the profiles of other members?

- Find out more about the writer of a case study or review: 53.6 %
- Never used: 34.2 %
- Identify a colleague to meet at a conference: 13.9 %
- Find an exhibit/exhibition designer: 12.7 %
- Email them to ask a question: 10.5 %
- Find advisory committee member: 3.0 %
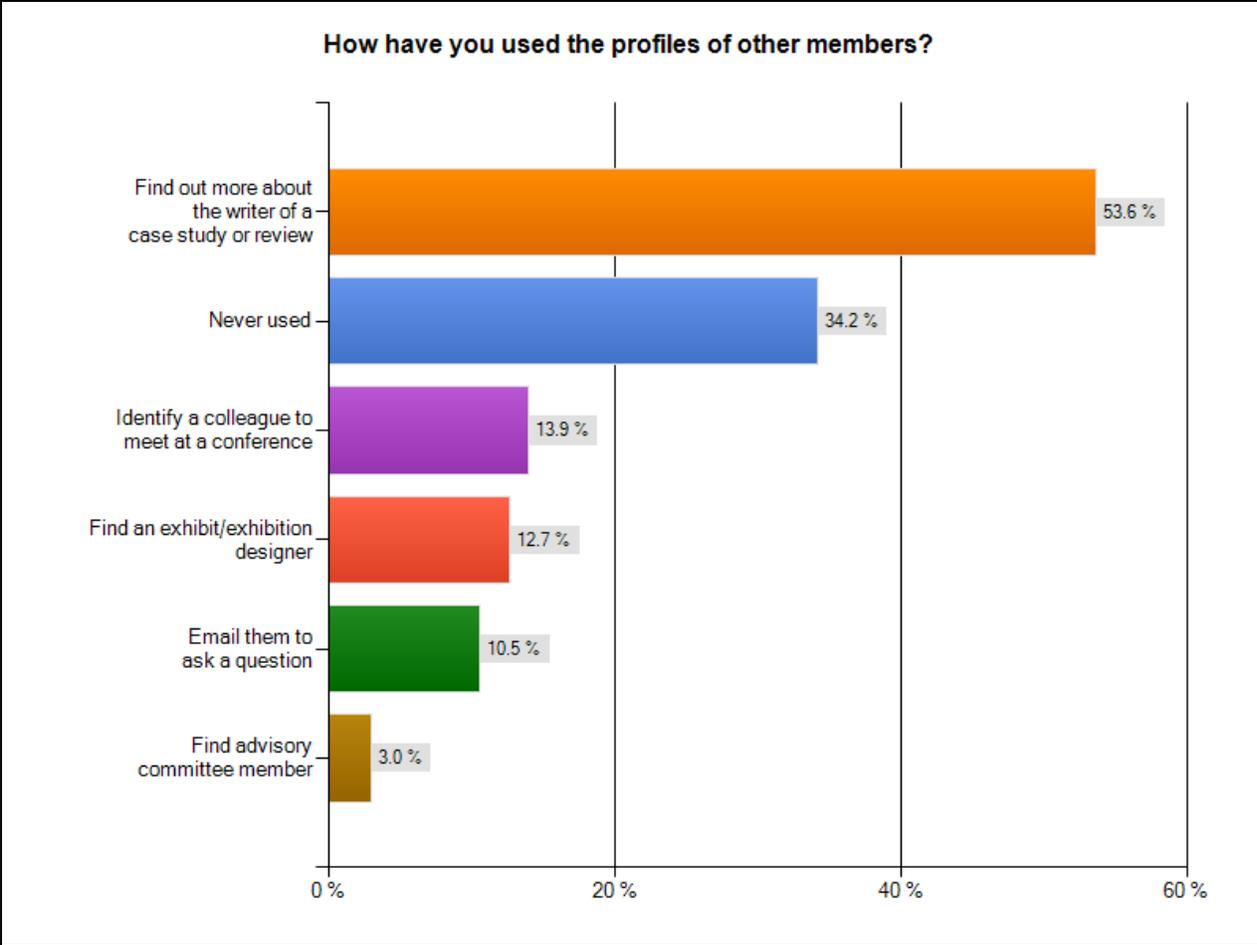
Figure 20. Uses of member profiles (257)

Using Case Study Forms

The project team did not anticipate a high percentage of members would choose to develop and upload case studies. But, they did intend for members to be aware that any registered member could publish case studies. They also intended for the process to be viewed as easy to use and accessible. We found that of those who had not published a case study (*N* = 233) only 16.1% had visited the page that had forms for uploading a case study, 56.1% had not visit the page, and 26.0% did not know such a page existed.

Only respondents who had published a case study or said that they had visited the page were asked to rate the case study forms. Substantial numbers, primarily those who had not published case studies, selected the option that said it was not appropriate for them to comment. Figure 21 shows the ratings of the ease of use of these forms. Among those who chose to rate the forms most rated the forms as good or excellent.
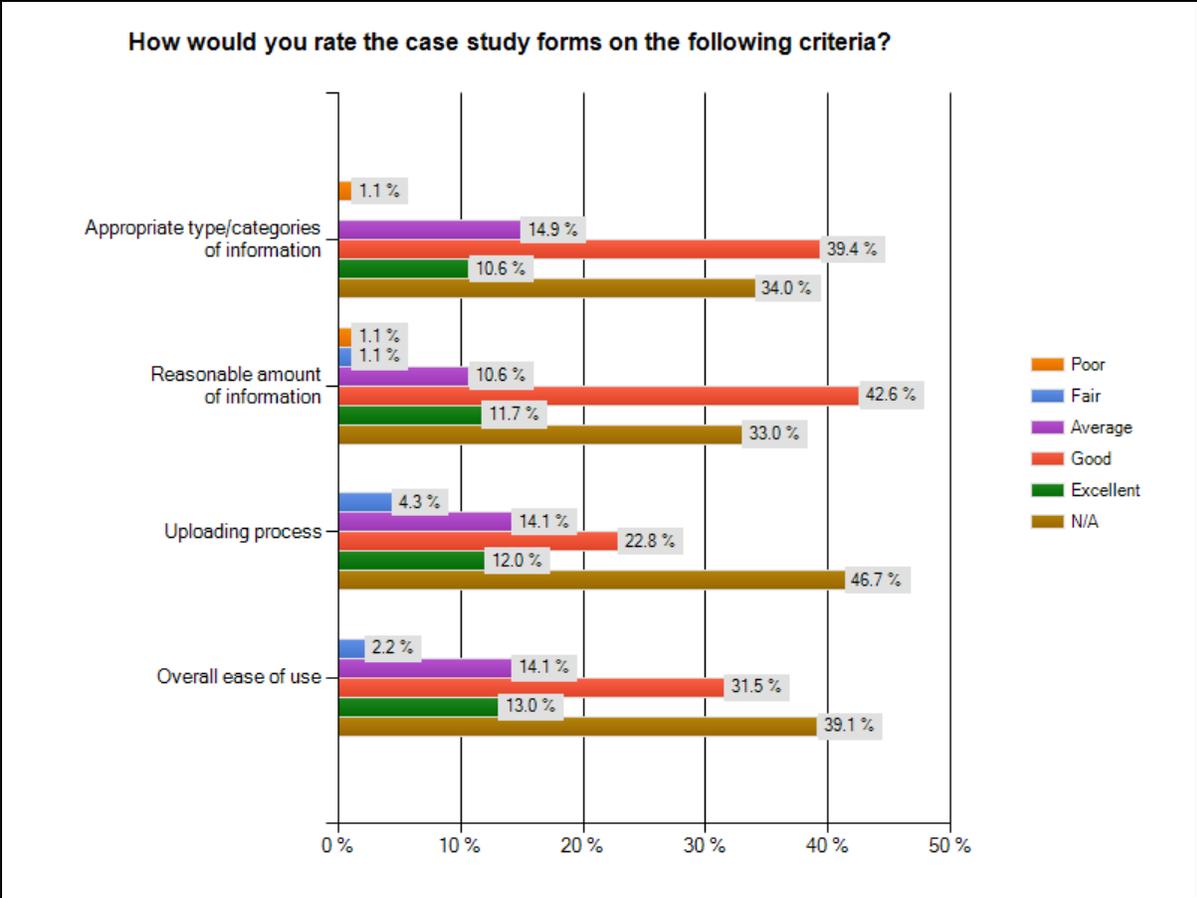
Figure 21. Ratings of case studies forms on criteria (N = 94)

Using Review Forms

Similarly, only a few members were expected to contribute reviews. As with the case study forms, considerable numbers of respondents 60.0% (*N = 230*) had not visited the page with forms to upload reviews and 26.1% were not aware that the page existed. Among those who had visited the page and rated the ease of use, most reported that the process was good or excellent. Figure 22 shows ratings of review forms.

How would rate the exhibition review forms on the following criteria?

Legend: Poor, Fair, Average, Good, Excellent, N/A

Appropriate type/categories of information:
- Average: 18.9 %
- Good: 41.5 %
- Excellent: 22.6 %
- N/A: 17.0 %

Reasonable amount of information:
- Average: 20.8 %
- Good: 37.7 %
- Excellent: 22.6 %
- N/A: 18.9 %

Uploading process:
- Fair: 3.6 %
- Good: 18.2 %
- Excellent: 21.8 %
- N/A: 29.1 %, 27.3 %

Overall ease of use:
- Average: 20.8 %
- Good: 30.2 %
- Excellent: 26.4 %
- N/A: 22.6 %

Figure 22. Review forms ratings (N = 55)

Among those respondents who had visited this page, several comment on its ease of use.

> **Not hard to do!**
>
> **This aspect of the site is easy to use and do. . .so, this I would do again more quickly than I would do a case study, which requires much more time and energy.**

Earlier in the life of the site, users noted issues uploading photos. Site designers improved this function and solved the issues. Improvements were announced on the blog. Even so, the early problems were remembered by those responding.

> **I remember having difficulty uploading the photo.**
>
> **I had a very hard time with the images. So much so, that I gave up and only loaded one or two rather than the 15 I had.**

Other users made additional recommendations about the photos for reviews such as,

I would like to control where the photos appear on the page, and the order.

Return and Use the Site Frequently

One of the most important intentions in the design was that members would return and use the site frequently. The Forrester Research group (Madden, 2010) uses a frequency of once a month to categorize user behaviors. This is at least one useful external benchmark. In the program theory, the explicit assumptions are that members remember to visit the site and that it meets their expectations. Figure 21 shows the relationship of these assumptions to frequency of use. During the period the ExhibitFiles was open, registered members sometimes received a monthly email reminding them to visit although these may have been sent less frequently in Year 3.
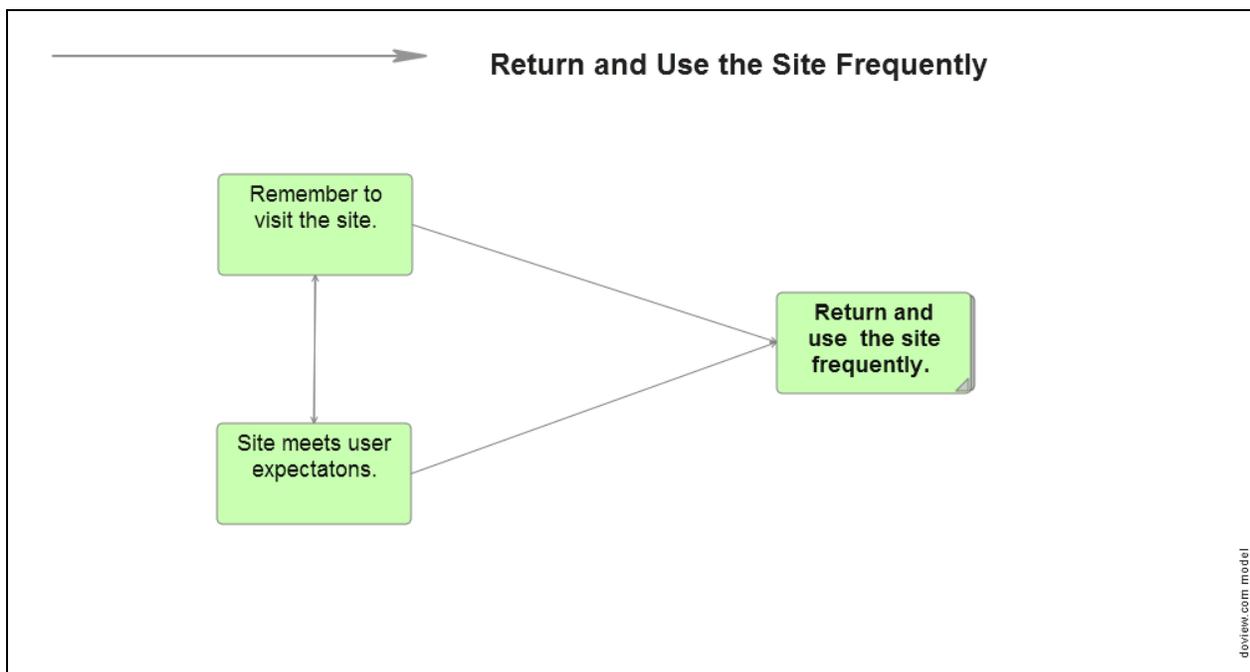
Figure 21. Return and use the site frequently (program theory)

We ask online survey respondents how often they visited ExhibitFiles. Figure 22 shows their responses (*N = 264*). The most frequent response was once a month at 37.9%. The frequency skewed toward longer time periods between visits with 36.7% reporting visiting several times a year. But, 15.9% reported visiting more than once a month.

How often do you visit the ExhibitFiles website?

Category	Percentage
More than once a day	
Once a day	0.4 %
Several times a week	1.9 %
Once a week	3.4 %
Several times a month	10.2 %
Once a month	37.9 %
Several times a year	36.7 %
Once a year	4.5 %
Only visited the day you registered	4.9 %
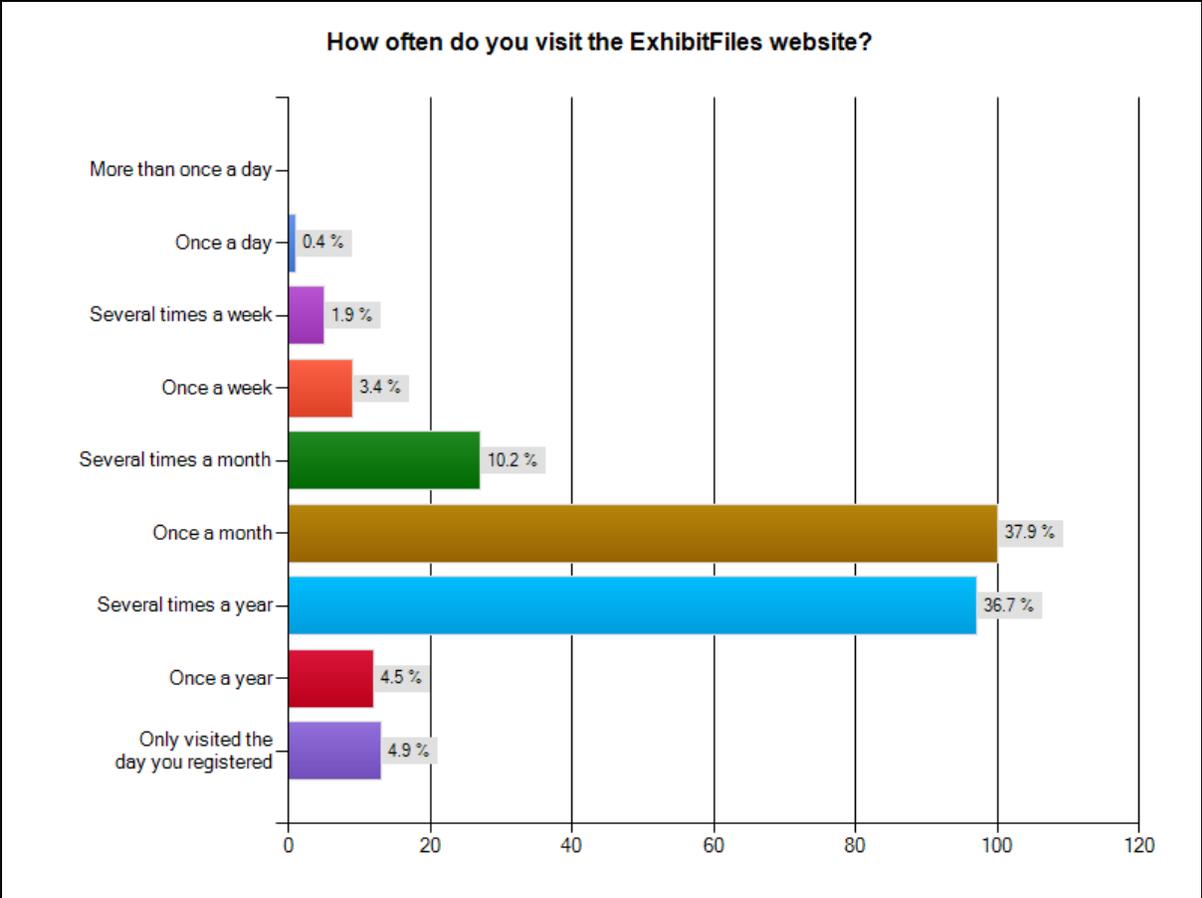
Figure 22. How often do you visit ExhibitFiles? (N = 264)

We asked online survey respondents what prompted a visit to ExhibitFiles. Respondents could select multiple reasons for visits. Of the 245 respondents to this item, 57.6% said that they visited in response to an email from the site. This response is consistent with the receipt of a monthly email from the site managers. A substantial percentage (42.4%) said they visited when they needed inspiration, when they were developing a new project (29.8%), when they were working on a solution to a specific problem (19.6%), or to find colleagues who had worked on specific types of projects (17.6%). All these were intended uses of the site.

What prompts you to visit to ExhibitFiles?

Category	Percentage
Email from ExhibitFiles about new postings	57.6 %
When I need inspiration	42.4 %
Developing a project	29.8 %
Find solutions to a specific problem	19.6 %
Find people who have worked on specific types of projects	17.6 %
Part of my regular routine	10.2 %
When I need contact information for a colleague	9.8 %
Preparing a proposal for funding	7.3 %

Figure 23. What prompts you to visit ExhibitFiles*? (N = 245)*

While in-depth interviews were with more frequent users of the site, we did ask when people visited ExhibitFiles. Several said that email reminders brought them back to the site.

> *They use to come out with like a weekly email that said, you know, two new updates and one new review. Which I think is a good idea because it's easy to forget about this kind of thing. . . .*
> *I mean obviously nobody wants too many emails. But I really think it's easy -- and very occasionally, I would say like three times a year I might actually -- it just occurs to me, like oh I should see what's up, you know, or look for something. (EXF1_MEM_TID_561_051410_ct)*
>
> *I get wrapped up in doing things day-to-day and having an email reminder sent out about hey it's been a while since you've checked the site, you know, go on it. Because I'll forget that I even have this thing bookmarked or that I haven't been on it in three months because I've been wrapped up in other things. And I think it's worth while to actually go there and take a few minutes, when I can, to browse and look at stuff and*

get ideas. Even if it's not purposefully driven, just to browse around. So something like an email reminder that was sent out would be nice. (EXF1_MEM_TID_909_051310_ct)

Some respondents also mentioned that they visited ExhibitFiles when it was mentioned on a listserv they subscribe to.

If somebody puts something out on one of those listservs that says, hey check out ExhibitFiles there's something about this that might be interesting to you. Or we've added this feature. Or come on guys, we're almost at 100 case studies, somebody put one up. That will remind me, oh yeah there's ExhibitFiles and maybe I will just take a peek and see what's on -- what comes up on that front page.
EXF1_MEM_TID_1429_051710_ct

Meeting Expectations
We asked online survey respondents to what extent the site met their expectations and 258 responded to this item. The mean of this rating was 5.8 (SD = 2.0), the median was 6.0. The median of a range of responses is the point at which 50.0% of responses fall above the rating and 50.0% fall below. Percentage of respondents rating at each level is shown in Figure 24.
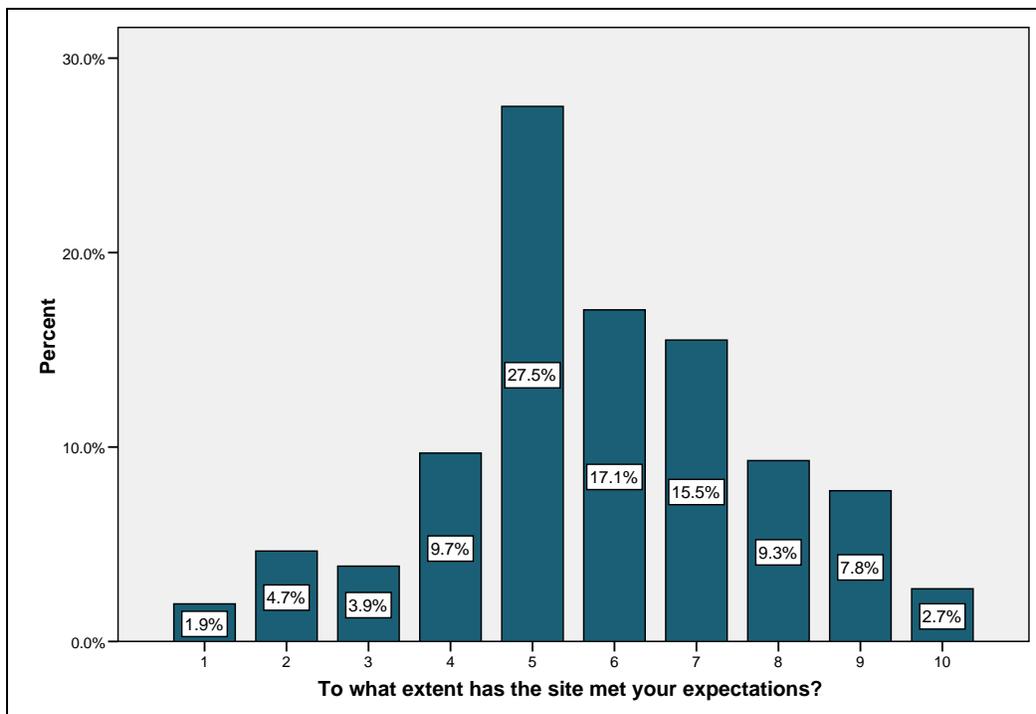
Figure 24. To what extent has using the site met your expectations? Rating scale: 1 = FAR BELOW EXPECTATIONS to 10 = FAR ABOVE EXPECTATIONS (N = 258)

Of the 258 respondents who rated the extent to which the site had met their expectations, 122 provided reasons for their ratings. We coded up to two responses for each reason statement.

There were a total of 199 responses. We also coded whether the comment provided a reason for how low the rating was, why it was neutral, or why it was high. The reasons provided by respondents provide a way of interpreting the ratings.

Of the total number of individuals providing reasons (N = 122), 63.0% gave reasons why their rating was not higher, and 41.5% gave reasons why their rating was relatively high. We interpret this to mean that the site has room for improvement to fully meet the expectations of current users.

The topic of the responses provides aspects of the site meet or exceed user expectations and those that could be improved meet user expectations. Reasons cited by respondents for not rating the site more highly included the perception of a low number of contributors and the scope and detail of the content.

> *I'd like even more people to contribute, not just join.*

> *The number of members submitting articles is far too low.*

> *I wish at least some of the reviews were longer and more detailed.*

> *Too reflective, not focused so much on current projects and work, too few contributors, feels like an insider set of active contributors.*

Several people wanted more critical discussion.

> *Very easy to use and attractive, but I wish it had more content and injected itself into my life more frequently. I also wish people were more critical (constructively) and really talked in both reviews and case studies about what DIDN'T work.*

> *Lack of critical discussion in reviews and depth of report in case studies*

> *Not enough difficulties mentioned, not enough real*

For others the site met and exceeded expectations.

> *The site has acquired so many more members, case studies, and reviews than I had expected.*

> *Love the case studies!*

> *It is a good site full of tons of useful information*

> *Helped me connect and read about others in the field.*

I personally love to see other exhibits as a way to think about the exhibits I am working on. The case studies and exhibit reviews are always very thorough and thoughtful. More photos would be ideal.

In in-depth interviews we asked respondents if the level of participation on the site met their expectations. Many said that the percentage of members contributing case studies and reviews was about what they would expect.

And that just amazed me from a study about YouTube where it was .16 of the users of You-Tube upload videos, not .16, but .16 percent. So from that point of view, you know, ExhibitFiles is obviously, you know, not doing so poorly. EXF1_MEM_TID_388_051210_ct

I think it's actually a pretty good level of participation. But what you want to look at is it the same people participating over and over again? You know, I see -- I see case studies on there from the same people, sometimes. (EXF1_MEM_TID_576_051310_ct)

Others also believed that there should be a higher level of participation.

I'm not surprised but it is low -- it is lower than I think I would expect. (EXF1_MEM_TID_1429_051710_ct)

So -- so to me, 6 percent sounds a little bit low. Especially, I mean I guess the way I would have rated it -- I'm not sure what exactly have ever contributed, I don't know if you can quantify this, but it's more like how many times a year or a month do you visit the site, and then what fraction of those do you contribute something? (EXF1_MEM_TID_561_051410_ct)

Some respondents recommended a greater range of contributions could be accomplished if core contributors and website managers would organize themes and make connections to other organizations. Two NAME board members we interviewed volunteered to help recruit members to contribute to ExhibitFiles.

I mean, you know, I'm on the NAME board and we've talked before about Exhibitionist and ExhibitFiles and is there a partnership potential there that makes a lot of sense? And you know, as we're talking about this event or theme based thing, it's -- it's very easy to jump from there to saying well what the next theme is for an Exhibitionist? You know, when are their deadlines? Let's do this blitz on ExhibitFiles and then let's have a couple of people who wrote reviews put together an article about, you know, I mean there's a really nice potential connect there. (EXF1_MEM_TID_161_051310_ct)

I could contribute to stirring the pot in some, you know, systematic ways at ExhibitFiles. And so that, you know, maybe -- yeah, I think if you could -- and -- and one of the things that I'm reason -- you know, that I -- that I have been pretty successful NAME is recruiting other people who are sort of interested in doing stuff. So maybe -- maybe somebody could help with that. (EXF1_MEM_TID_388_051210_ct)

Web of Social Connections

Figure 25 shows some of the assumptions about how members would use ExhibitFiles to contact other members and develop an increased sense of belonging to a professional community. The website allows member to share information about themselves and their work as part of member profiles. Members can also contact each other directly through the site.
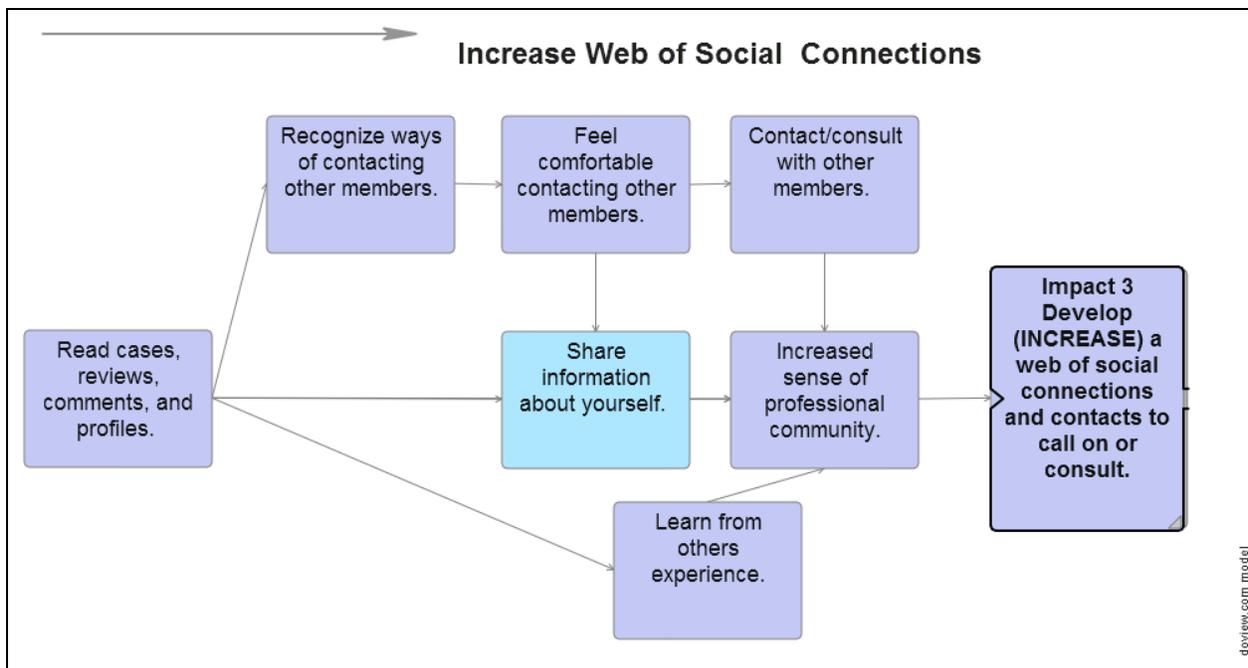
Figure 25. Increase web of social connections (program theory)

ExhibitFiles appears to support and contribute to the development of an explicit sense of professional community. However, it appears to play a role of support rather than serving as a primary mechanism for developing this community.

Respondents to the online survey were asked to rate the degree to which each of several activities contributed to their sense of belonging to a professional community. These ratings are shown in Table 4. Mean differences greater than 0.2 can be viewed as significantly different. ExhibitFiles, with a mean rating of 5.6 (*SD = 2.5*), appears to make a contribution to a sense of belonging to a professional community. But, this contribution is less than activities such as

attending conferences, attending workshops, and reading journals. ExhibitFiles' contribution was rated more highly than Membership in NAME, participating in the ISEN listserv or ASTC Connect, or using informalscience.org or the CAISE website.

Table 4. Activities Contributing to Sense of Professional Community -- Rating Scale 1 = LITTLE CONTRIBUTION to 10 = GREAT CONTRIBUTION

Activities	N	Mean	SD
Attending conferences	270	7.6	2.5
Attending workshops	255	6.8	2.6
Reading journals	274	6.5	2.4
Participating in ExhibitFiles	276	5.6	2.5
Membership in NAME	221	4.7	3.1
Participating in ISEN listserv	178	4.4	3.3
Participating in ASTC Connect	170	4.2	3.1
Using informalscience.org	177	4.1	3.0
Using the CAISE website	172	3.6	2.7

Online survey respondents were asked to list other members of ExhibitFiles who had influenced their work. The number listed ranged from 0 to 5 individuals with 60.0% (N = 234) listing none and about 10.0% each listing from 1 to 3 influencers. Figure 26 shows the number of influencers listed.
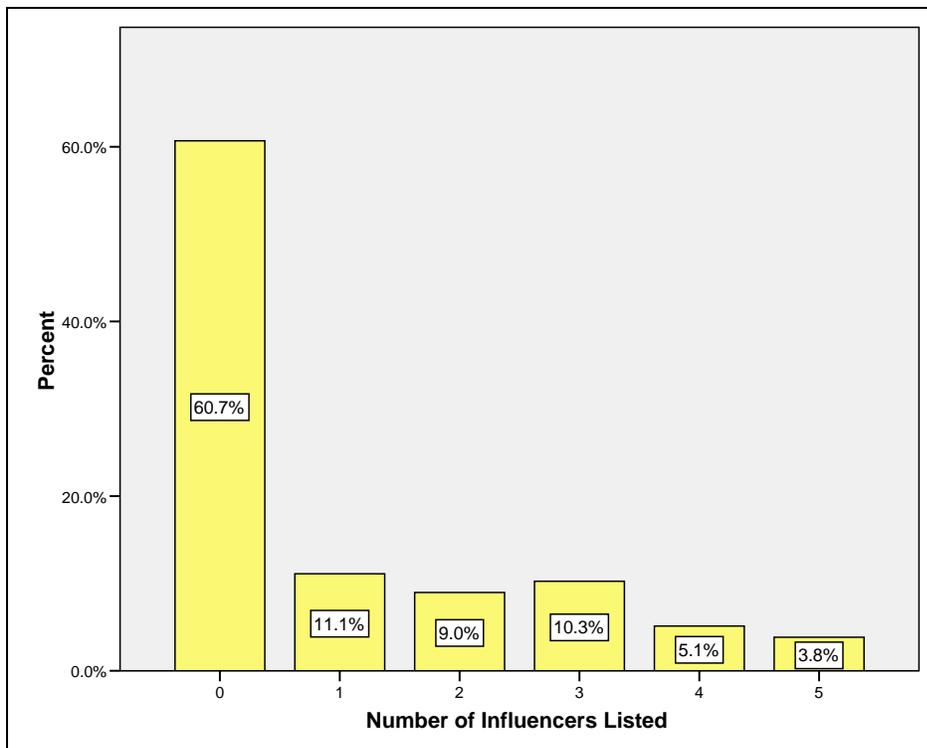
Figure 26. Number of influencers (N = 234)

Several respondents used the comments section to clarify that they knew the individuals they listed prior to and outside of ExhibitFiles.

> ***Already know these, however I did connect with [name] due to fascinating case history in ExhibitFiles***
>
> ***I have not contacted them via ExhibitFiles - I knew them before.***
> ***Knew them before***
>
> ***I knew all of these individuals before the creation of ExhibitFiles.***
>
> ***[Name] is my manager and mentor***
>
> ***Worked together***

Respondents who listed influencers (*n* = 101) were ask if they had used any of several means to communicate with these individuals. The most frequently cited means was contacting influencers by email at 78.2%. However, 20.8% reported that they had used ExhibitFiles to contact someone who had influenced their work. Figure 27 shows the frequency in percent of method of contacting influencers.
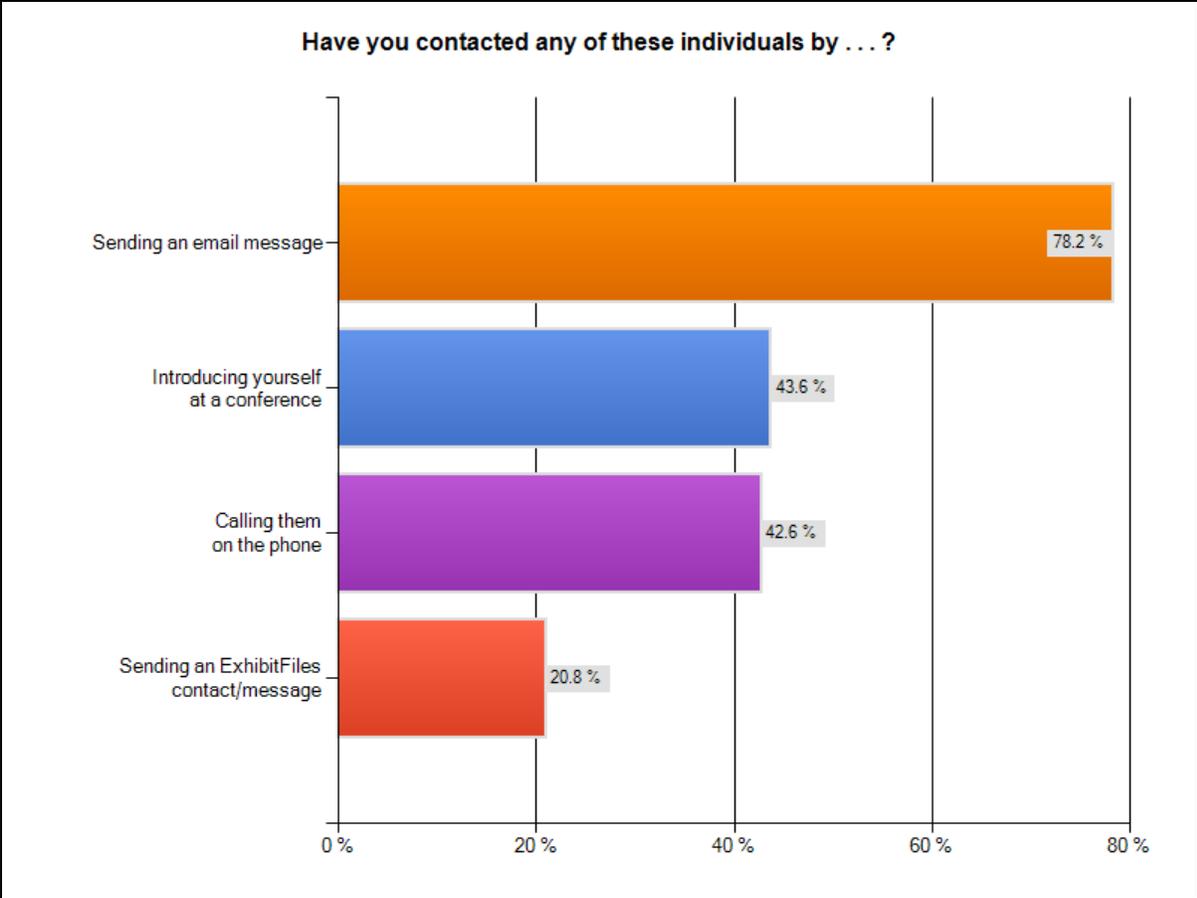
Figure 27. Contacting influencers (N = 101)

Developing Knowledge about Successful and Unsuccessful Exhibition Development Practices

One of the primary intended impacts for ExhibitFiles was for members to develop knowledge about exhibition development practices. We explored the extent of this impact in both the online survey and in-depth interviews. The overall level of impact may be somewhat lower than may be desired. We found that the level of knowledge development appeared to be closely connected to frequency of visiting the site and reading reviews. This means that one promising avenue to increasing knowledge of practices from the website use would be to increase the frequency of use. Respondents noted that ExhibitFiles provided a good way to keep up-to-date with what was going on in the field. In addition, ExhibitFiles seemed to contribute to levels of knowledge along with several other methods of learning about current practices.
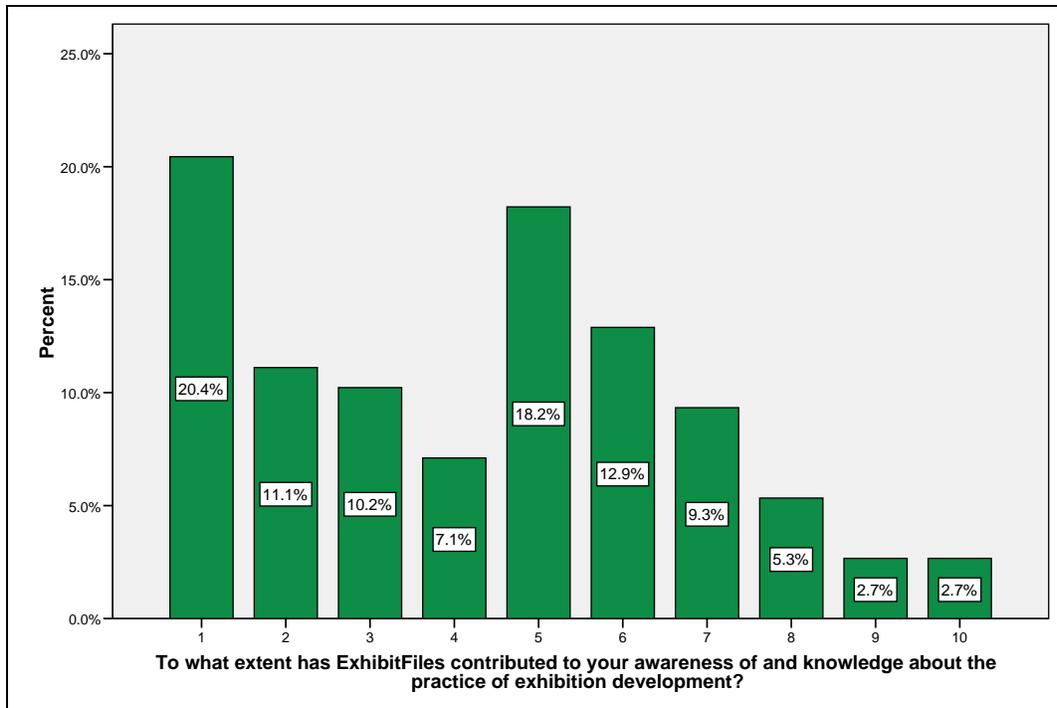
Figure 27. ExhibitFiles contribution to awareness and knowledge about the practice of exhibition development (Scale: 1 = low level of contribution to 10 = high level of contribution) (N = 225)

On the online survey, we asked respondents to rate the contribution of ExhibitFiles to their knowledge and awareness of exhibition development practices. The average rating was 4.3 (SD = 2.5). A distribution of these ratings is shown in Figure 27. Several respondents (*n = 40*) provided a reason for their rating. The most frequent reason provided included explanations that the respondent did not use ExhibitFiles enough for it to have contributed to their knowledge.

> *I find the site interesting but don't feel that I have used it enough to really gain any useful information from it*
>
> *I think there is good info and perspective there, but I don't get over there often enough*
>
> *I just have not used this website very much except as a tool to find exhibits with similar content to ones I am working on.*
> *As with nearly everything in life, you get back what you put into things. I think I need to put more effort into using ExhibitFiles, and I will get more out of it.*
>
> *I think it is a great resource but sorry to say that it is not on my radar very often...*

I'm not involved or check the site enough for a comprehensive impact - but don't get me wrong - I'm happy that it is a resource.

A few respondents explained they did not find the case study or review format useful for this purpose.

It's so wordy and dense and I have to spend so much time reading and then separately clicking through the images sans text . . . .

Rather discursive and not so problem-based or descriptive of the actual exhibit development -- how choices were made and why and to what effect.

I don't see the content as "teaching" as much as showcasing, for good or ill.

I don't generally refer to case studies. Often the solutions are too specific and don't seem applicable to my particular projects.

Others wanted case studies on different topics or saw the information as geographically limited.

Do more case studies on Natural history

It is useful but does feel very US-centric. As an Australian I feel a bit of an outsider.

But many respondent provided reasons for their ratings focusing on how the site had expanded their knowledge and how they used it. Several explained that ExhibitFiles helped them keep up-to-date with what was going on in the field of exhibition development.

Good to see what others are up to.

I can't put my finger on it, but I enjoy reading the studies and reviews and always gain something.

Reading the developers case studies is extremely interesting. It's a window into a museum profession I know little about.

Excellence continues to be recognized

Useful window into the broader practice of exhibition development from many perspectives.

It has often confirmed the practice we utilize (or gaps we have in it!)

> *Reading others' case studies, or the reviews, is invaluable. This huge body of knowledge, available to all, is really a great service. I especially appreciate the "lessons learned" section of the case study outline.*

Others explained how ExhibitFiles complemented knowledge developed among multiple sources.

> *Only one of many resources I use, the most valuable being visiting other museum and science centres.*

> *I have used many sites for research and development of exhibits. This being one of them, the reviews and contacts have been of good use.*

> *Being new to the field, I am learning from my own work and my school program. I haven't used ExhibitFiles as a tool in designing exhibitions.*

> *I hear about things elsewhere and look for more examples on ExhibitFiles.*

We found relationships between ratings on this item and ratings on other items in the survey. There were significant correlations between the ExhibitFiles' contribution to knowledge rating (p < 0.001) with the extent to which ExhibitFiles met a respondent's expectations, the frequency of visits, the extent to which the site informed a respondent's work, the frequency of readying reviews, member profiles, and reading blog items. Table 5 shows the correlations matrix of these items. Not surprising the higher correlations are between this item and the expectations rating (.47**), frequency of visits (.44**), the rating of the extent to which the using the site informed a respondent's work (.65**), and the frequency of reading reviews (.40*).

Table 5. Pearson Correlation Matrix among ExhibitFiles Contribution to Knowledge and Informed Work Rating, Frequency of Reading Reviews Rating, Frequency of Reading Member Profiles, Frequency of Reading Blog Items and Frequency of Marking Favorites

	Expectations Rating	Frequency of visits	Informed work rating	Frequency of reading reviews	Frequency of reading member profiles	Frequency of reading blog items	Frequency of marking favorites
ExhibitFiles' contribution to knowledge rating	0.47**	0.44**	0.65**	0.40**	0.21**	0.32**	0.18**
Expectations Rating		0.30**	0.60**	0.26**	0.13*	0.16*	0.07
Frequency of visits			0.55**	0.46**	0.23**	0.40**	0.03
Informed work rating				0.46**	0.10	0.27**	0.16*
Frequency of reading reviews					0.22	0.32	0.07
Frequency of reading member profiles						0.31*	0.03
Frequency of reading blog items							0.12
*p < .05, **p < .001							

Generating and Sharing Knowledge about Exhibition Development Practices

At the time the online survey data was being collected, publishing case studies and reviews were the two primary ways of generating and sharing knowledge on ExhibitFiles. Another feature, Bits, which allowed sharing smaller pieces of information, was added after the online survey data was collected but before the most of the in-depth interviews were conducted. Among online survey respondents, we found that about 10.0% of respondents had contributed at least one case study, about 10.0% had contributed at least one review, and about 90.0% had done neither. It is somewhat challenging to benchmark this level of participation to other sites. As Nielson (2006) points out for only .16% of visitors to YouTube upload videos and only 0.2% those going to the photo website Flickr upload content. Yet, these mass market sites may not be an entirely appropriate benchmark for ExhibitFiles. ExhibitFiles participation levels are closer

to Neilson's 90-9-1 rule (2006). Nielson developed this principle to describe online user participation for social media sites.

> ***User participation often more or less follows a 90-9-1 rule:***
> - ***90% of users are lurkers (i.e., read or observe, but don't contribute).***
> - ***9% of users contribute from time to time, but other priorities dominate their time.***
> - ***1% of users participate a lot and account for most contributions: it can seem as if they don't have lives because they often post just minutes after whatever event they're commenting on occurs.***

In general, we found that many of the respondents for in-depth interviews wanted greater levels of contribution to the site so that a wider range of perspectives and experience was being share and a greater collection of resources was available. But, many also believed that the level of contribution and participation was about what they would expect or higher.

Case Studies

As we noted previously, among the database of all registered member (N = 1347), 6.7% had published at least one case study. Among online survey respondents (N = 249) 10.4% reported that they had published at least one case study. This means that the feedback about the reasons for publishing case studies from the online survey is from a fairly small number of respondents (n = 26).

On the online survey, respondents were asked to provide reasons for developing and publishing a case study. Respondents could select more than one reason. Overall the most frequently selected reason was contributing to the professional community at 80.8% followed by the opportunity to reflect, increasing the individual's professional visibility, and increasing the institution/firm's visibility at 65.4%, 57.7%, and 50.0% respectively. Only a few selected reasons such as receiving useful comments/feedback (26.9%), the opportunity to reflect among team members or collaborators (11.5%). Figure 27 shows these responses.
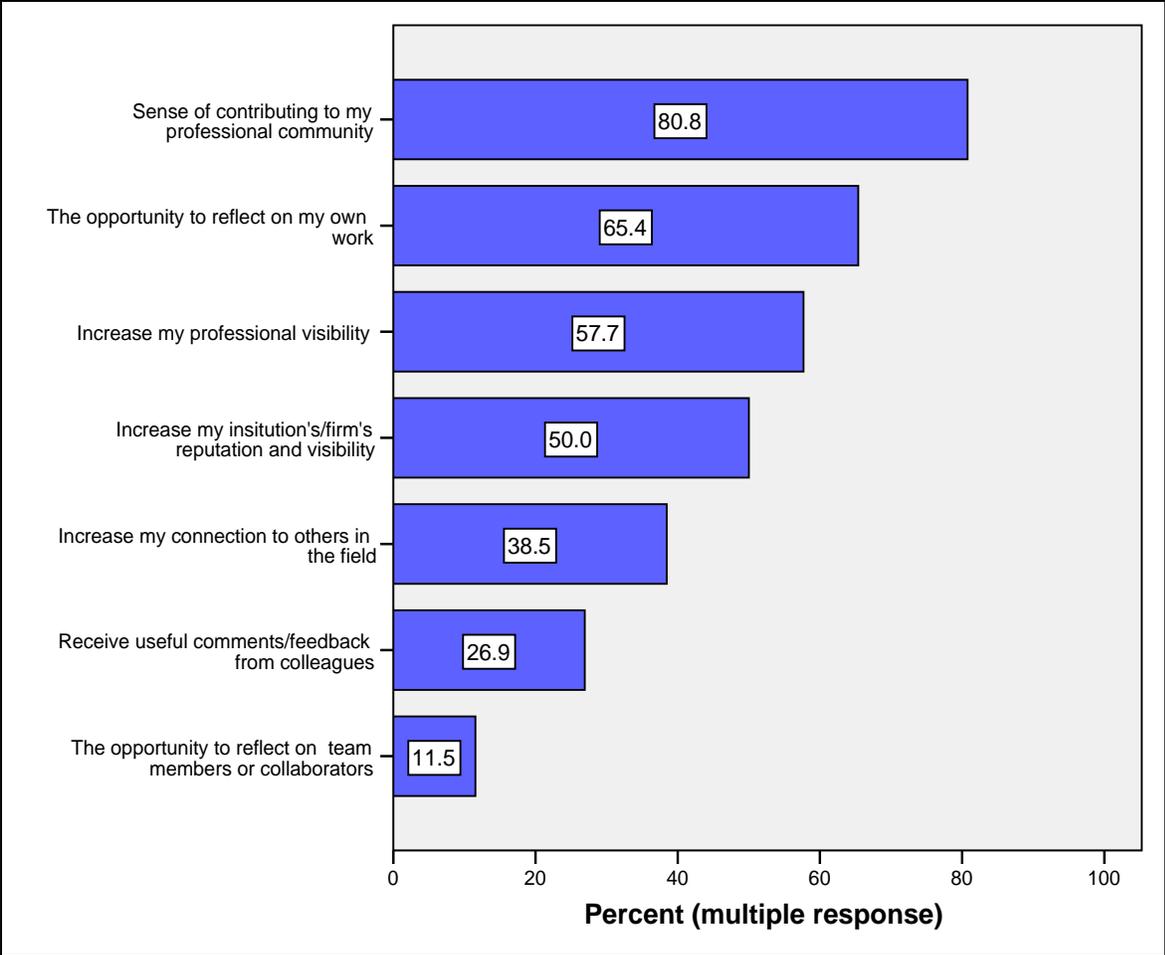
Figure 27. Reasons for publishing a case study (N = 26)

Only a few respondents provided additional reasons for publishing a case study.

Helped to build the site originally

My manager asked me to do so.

Share a problem solving experience with others

On the online survey we also asked this small group of respondents to identify challenges in publishing case studies. Respondents could choose multiple challenges. The most frequently selected challenges were composing and writing descriptions (59.3%) and identifying lessons learned (40.7%). Figure 28 shows these responses.
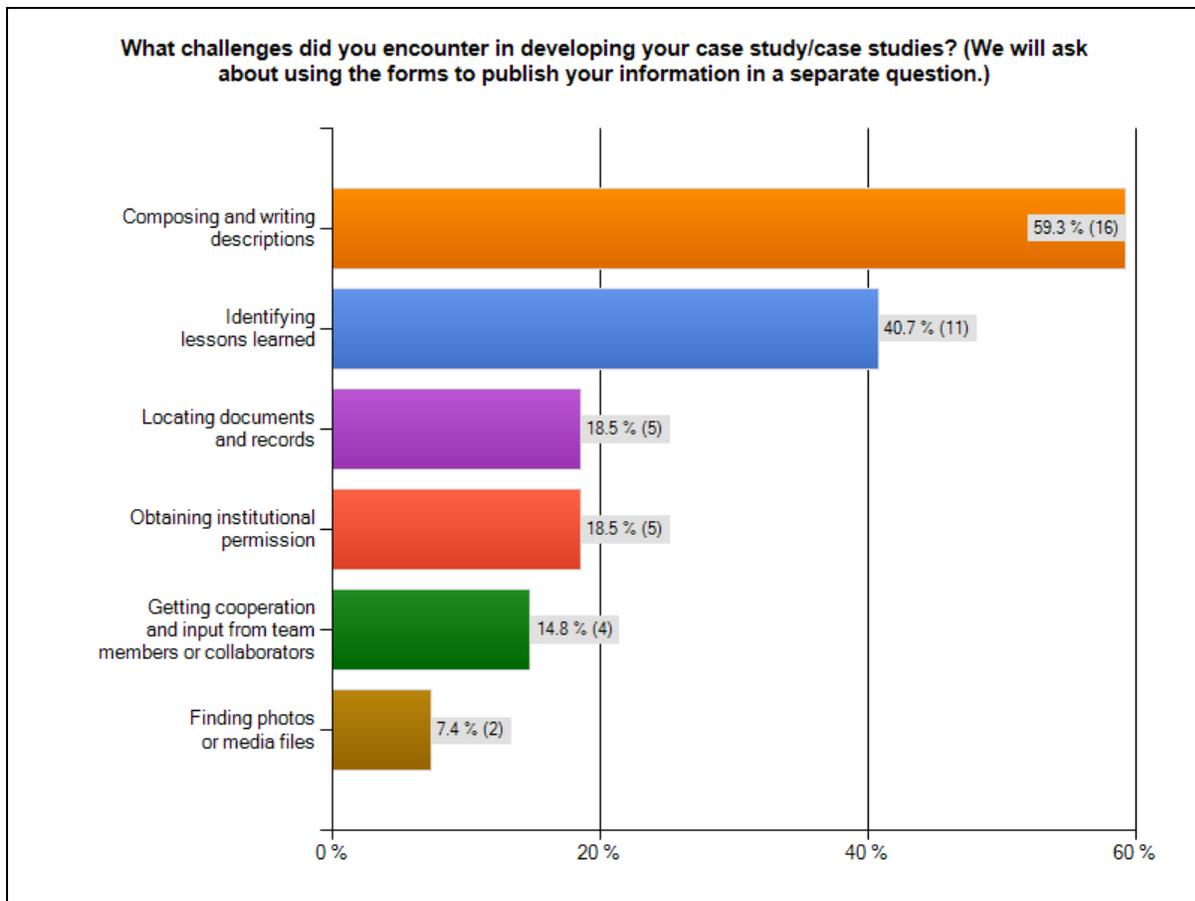
Figure 28. What challenges did you encounter in developing your case study? (N = 26)

A few respondents commented on this process – some citing earlier issues with uploading photos which had been solved by the time of the survey.

> *Would prefer a more flexible format; my comments often don't fit the mold.*

> *Is it possible to upload film now or embedded YouTube films?*

> *Uploading pictures is NOT user friendly!*

> *Only thing is we are working with very low budget. We need some type of help for educational purpose.*

> *Not hard to do!*

One recommended a change in the standardized forms.

> *It would be helpful if the list of collaborators was not automatically reset to be in alphabetical order as this often causes problems if the main people driving the project happen to come far down in the list if it's in alphabetical order.*

We also asked other online survey respondents why they had not published a case study. Respondents could choose multiple reasons. The two most frequently cited reasons were that other work interfered (48.0%) and it required too much time (41.6%). Figure 29 summarizes reasons for not publishing a case study.

Which of the following describes reasons you haven't published a case study on ExhibitFiles?

Reason	Percentage (Count)
Other work interferes with developing...	48.0 % (97)
It required too much time	41.6 % (84)
I'm a consultant/contractor -- not an employee...	19.3 % (39)
I'm new to the field	18.3 % (37)
I'm shy about showing off my work	15.3 % (31)
It's too complicated to develop a case study among...	8.4 % (17)
I have never worked on an exhibit/exhibition...	6.9 % (14)
I had intellectual property concerns	6.9 % (14)
I'm unfamiliar with other people on the site	5.0 % (10)
I'm concerned about others commenting on my work	4.5 % (9)

Figure 29. Reasons for not publishing a case study (Multiple responses, N = 202)

A total of 63 online survey respondents gave additional reasons for not having published a case study. Several of these appeared to be comments on the reasons they selected. Several made additional comments about time.

There are so many hours in the day . . .

Lack of time!

I have started a few but never finished- workload is high

Others commented on concerns about intellectual property.

Mostly I am too busy to do so. But at my institution there would likely be some concerns related to intellectual property.

Haven't consulted the institution for permission.

I have not yet focused my time to prepare one. I suspect that I may have some concerns about the intellectual property and identifying records to include, but haven't gotten into it enough to know.

Some people said they had simply not gotten around to writing one.

I meant to, it just never made it to the top of my priority list. Now the exhibit seems like old news.

No excuse - just can't get around to it

Just never got round to doing it - poor excuse really!

I would love to. Just haven't gotten around to it.

Others said that they were in the process of developing a case study but had not finished.

Have my first one in draft form; waiting to get final input from collaborators.

I am lazy. :) I have been working on one, but have not completed it to be reviewed internally before posting.

Some comments provided additional insights into why people had not published case studies. Several respondents said that they were not the leader of the team and/or someone else was a more appropriate team member to develop a case study.

Someone else on the project had enough time to publish the case file

As a team member rather than a project manager/primary concept developer, I felt uncomfortable developing a case study

My colleague has written case studies for the relevant exhibits

Not the leading party in the development of the exhibit.

> *Usually, exhibit developers from my institution write case studies. I am an exhibit designer and have not been asked by management to write one, but if there was enough time I would start on my own.*

Other respondents explained that they did not directly do exhibit/exhibition development.

> *I am a media producer, not a designer.*

> *I am an evaluator and view entering a case study as more of a job for exhibit developers. I would add evaluation reports to informalscience.org.*

> *I write reports for most of my studies and they are available on the internet. If I have time and inclination, I'd rather write for a journal with peer-review where I'm more likely to have serious readers.*

> *Does not sync well with my current focus on 'culture and sustainability'*

Others explained they preferred to read others' work.

> *I use the site to read about what is going on in the field*

> *I have been satisfied with what I've seen and haven't felt inclined to contribute yet, but I plan to.*

Some comments focused on English fluency.

> *Language. I write mainly in Spanish, and translation is time and money consuming*

> *To publish case studies means that I have to translate my articles and studies from Spanish to English, and that means a lot of additional work.*

Some respondents did not think others would benefit from hearing about their work.

> *Most of our exhibits are homemade, our budget is very limited. Did not think large organizations would be interested. Many of our exhibits are live.*

> *I'm not sure how much our experiences would be interesting or useful to others in the field.*

One respondent did not see the process as sharing as much as showcasing exhibition development work.

> *Not sure I see the value to the field for the cost of my/our time putting one together. Many submissions seem like end-of-project celebrations, maybe even a bit self-congratulatory.*

Developing and Publishing Reviews

Online survey respondents were asked if they had published a review. Among all registered members (N = 1357), only 4.4% had published a review. Of the total 248 responses 10.1% reported they had published a review.

Figure 30 summarizes the reasons selected by respondents for publishing reviews. Respondents could select multiple responses. The most frequently selected reason was a sense of contributing to their professional community (82.6%) followed by the opportunity to reflect on experiences from a visitor's perspective 69.6% and the opportunity to spotlight innovative or excellent work (60.9%). Increasing the individual's visibility in the field and the sense of belonging to a professional community were also selected by over half of the respondents.
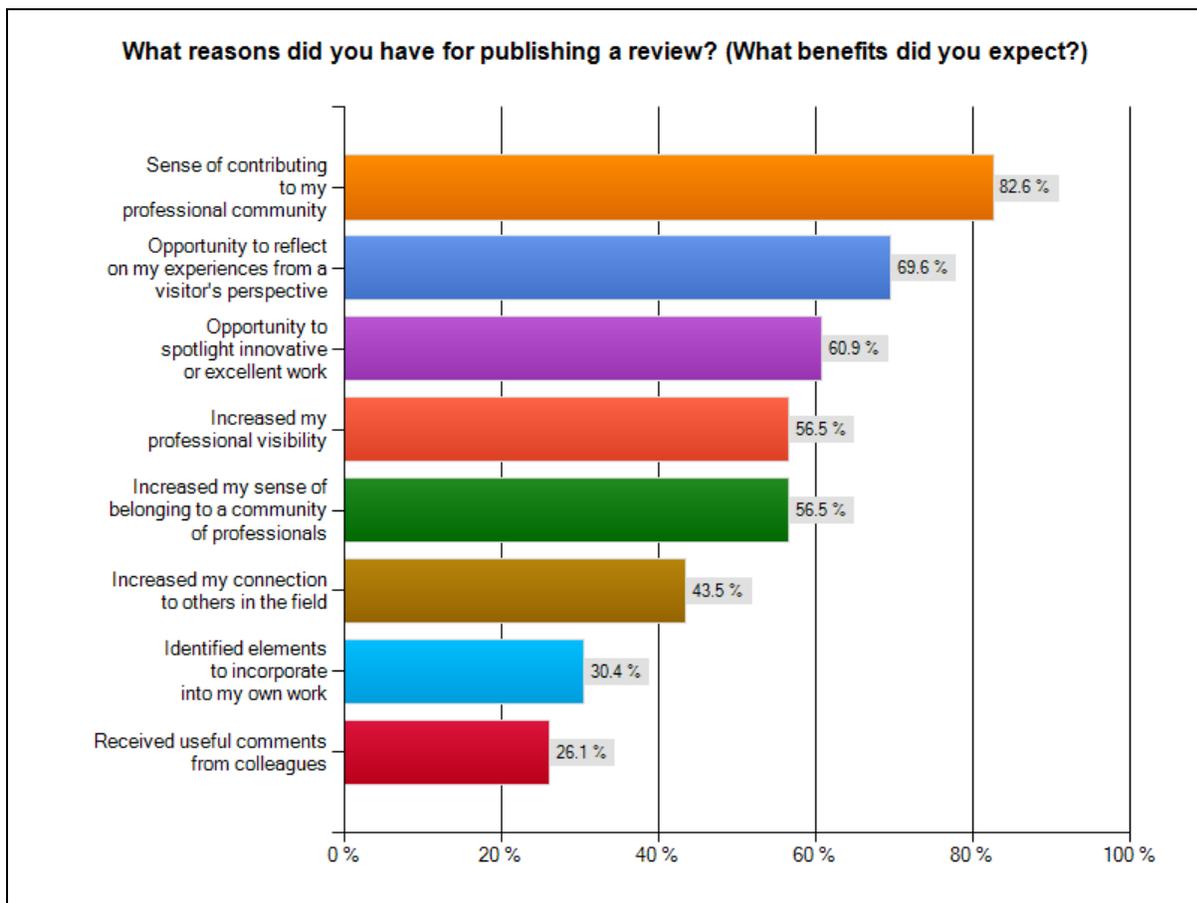
Figure 30. Reasons for publishing a review (N = 23)

Those who had published reviews were also asked about the challenges of this process. Among the 15 who responded, 68.8% reported the challenge of transcribing their experience into a form of a professional critique, 56.3% reported it challenging to present negative aspects of the experience, and 25.0% reported challenges in getting permission to use photographs or media was a challenge.

We asked online survey respondents about factors that prevented them from publishing a review. Among the 200 respondents answering this item, 35% cited the time required and 32% said they planned to develop a review, but other work interfered. Figure 31 shows factors that contributed to not having published a review.
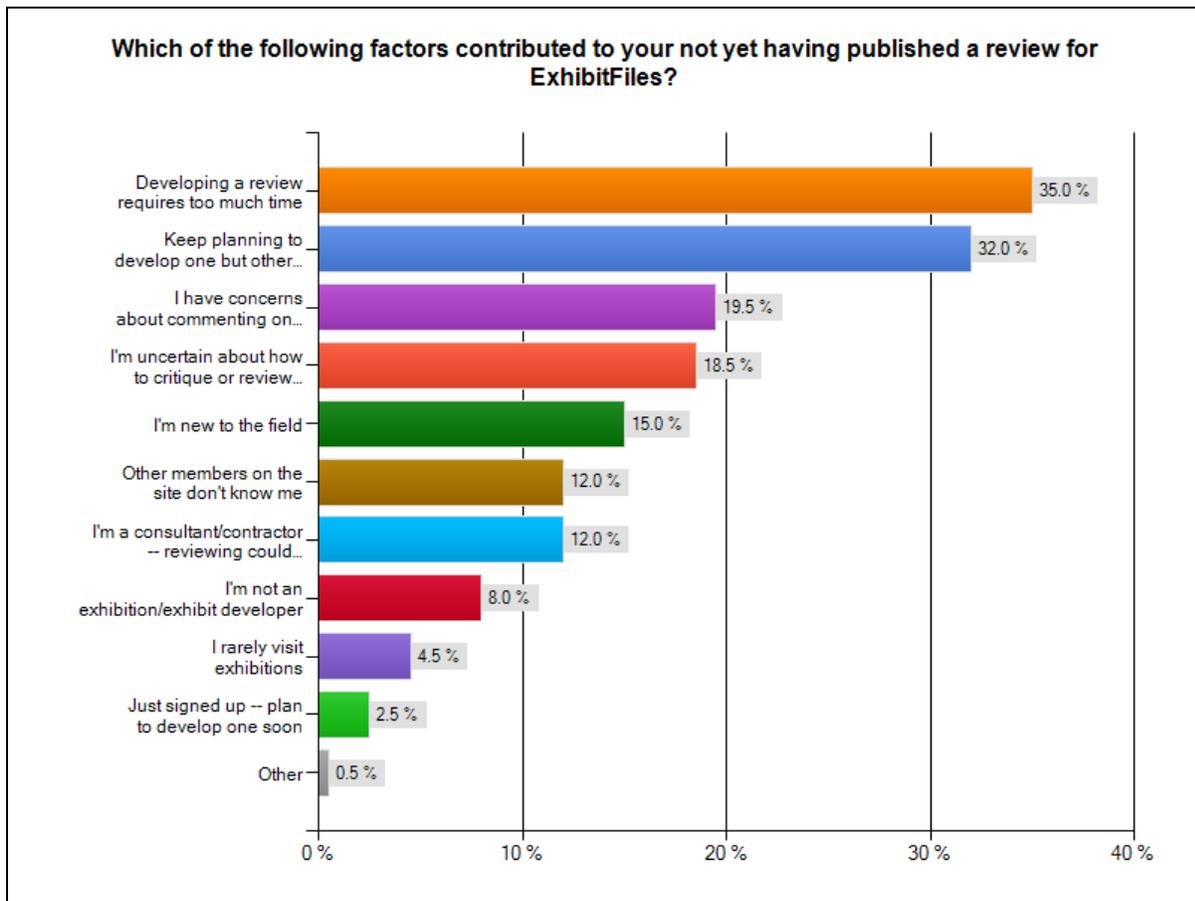
Figure 31. Which of the following factors contributed to your not having yet published a review for ExhibitFiles? (N = 200)

Several online survey respondents commented about factors which had prevented them from publishing a review. The most frequently made type of comment had to do with time and priority.

> *Available time at work is a challenge - have not participated in on line dialogues much in any forum*

> *It's only been time that holds me back. I see a lot of exhibitions and really like to talk about them with colleagues.*

> *Little time and not much motivation I suppose.*

> *No time with present job*

> *Time. its not always a priority*

> *Does not sync well enough with my current focus on 'culture and sustainability'.*

> *Never got around to it*

> *Not a priority right now for me*

A few respondents said that they did not think their perspectives would be valuable.

> *I am not convinced my review of an exhibition contributes to anything*

> *I'm not sure why people would want my review.*

Others noted that there were other venues for publication of reviews.

> *I write reviews on my personal blog. I've been considering republishing them on ExhibitFiles.*

> *If I want to write a review, I'll do it in a published journal.*

> *There are other outlets in which I publish reviews; reviews take a long time to write and cohere -- I prefer other outlets with professional editing and peer review. Online reviews are simply not a good venue for the kind of review writing that I do but I appreciate the work of those who do take the time to write these reviews.*

Some respondents noted that English was not their native language. This made publishing reviews more challenging.

English is not my native language

English language … it would take a longer time to find the words

My English is not fluent

A few respondents expressed concern about critiquing of colleagues' work in this public forum.

If I were going to review something, I would want to review it as honestly as possible. I would be afraid of offending the creators of the exhibit, or hurting them professionally if I criticized their work. If someone did that to me, I would be very angry.

If I were to provide an honest critique, because the comments are tied to my name, I might inadvertently "poison the well" and upset someone who I might otherwise collaborate with.

I'm not likely to criticize in this sort of forum and have not felt so compelled to rave about something - so I'm sure I will eventually but just haven't managed to summon up the motivation.

During the timeframe of the study, a review was published that was somewhat controversial among ExhibitFiles members. The developers of the exhibition were upset about the review and published a rebuttal. Others strongly defended the author's viewpoints and believed that critique was a major way of moving toward better exhibition practices.

In in-depth interviews, respondents gave their perspectives about the value of increasing a culture of critique in the field of exhibition development. Some strongly supported this culture. A young, free-lance exhibition developer found the process of critiquing others work very valuable.

But a critique, it needs to look for, I believe, and show things that were done well and things that were not done so well. And we need to, all of us, get over the trying to be all touchy-feely about it. I mean it's kind of like when you're -- when you're in college and you get that first essay back and it's -- there's more red than black on that thing. And it hurts, and you go home and you cry about it, but you learn from the experience, and -- and the next essay is better, and the next essay has less red. And so I -- I think it's important that as we are -- as we're viewing these -- as we are viewing these exhibits, that we -- that we be professional about it. (EXF1_MEM_TID_543_051210_ct)

But, another respondent believed that critique could be destructive.

> *I've been teaching a lot in the universities this past year, and I've spent a lot of my time, you know, working with students and trying to give, you know, useful feedback. . . . . You know, in my -- in my sort of philosophical view of the world, I'm not sure that I really think what the world is missing, nowadays, is people [being] blunt and -- and -- and, you know, potentially destructive. . . . I don't know what we're adding to the field by, you know, having this tone that's kind of -- that's harsh. (EXF1_MEM_TID_388_051210_ct)*

Another respondent cautioned that critique and relationship may have to be balanced.

> *I'm very much involved in the art world, also. And I hear that sort of thing about art critiques all the time. . . . I think that there's an art to critique and critique is very important. But I also think in terms of very real critique that gets down and dirty, I wouldn't expect more than a handful of people in the world to be able to do that. It's like, you know, New York Times reviewers are willing to risk their personal relationships to come out and say something frank and honest. And a lot of other folks, you know, we have to nurture our relationships. And like my professional responsibilities means that I -- I have to maintain certain relationships which, just like in any other place in life, you just don't go spouting off your mouth about the first thing you think of. You -- you know, you value the relationship first. And put your own feelings and critiques second. (EXF1_MEM_TID_254_051710_ct)*

One respondent pointed out that there is a difference in reflecting on your own problems and having them cited by others.

> *I feel like in ExhibitFiles it's much like many newspapers and they only review things that they like. And if it doesn't get reviewed it's because nobody has anything nice to say about it, so they're not going to say anything mean. And there's, you know, there's a certain value to that. There's a certain real value to civility that I'm not ready to dismiss. (EXF1_MEM_TID_289_051710_ct)*

Another talked about the level of skills needed to offer constructive criticism.

> *I think there should be some discourse, but it should be constructive. Just like the -- the reviews that we get back from our NSF proposals. I -- I think in the case of the [exhibition name] exhibit, I think that -- that writer, it was too personal. . . . I think that crossed the line. It wasn't constructive, you know, how -- how you would write a criticism, how you would criticize anybody is you would start out with some positive statements. Then you would lead into some questions, these are things I'm questioning. These are things I'm not seeing. This didn't work for me. I didn't get that. And -- and then -- and then maybe open it up for some response. But I think it*

was the tone of the writing that -- that belittled the process in that particular example I think crossed the line. It wasn't constructive. It wasn't -- I don't know. I had a real problem with that. (EXF1_MEM_TID_576_051310_ct)

Other respondents pointed out that an online forum may not be the best place to build the trust required to discuss problems and challenges.

Where if I were at a conference and was with a group of people in a conversation and maybe one of the designers was right there and we had a -- a level of trust with one another that we could beat around those challenges. And even beat around those challenges in a way that says well maybe you might try this. Hey I've seen this museum do this, it worked great. But it feels kind of roundabout in a way that I wouldn't feel comfortable with. Because to me it's not like reviewing a restaurant on Yelp or reviewing a product I'm using on Amazon. This is work that's so near and dear to me that it just -- it -- I wouldn't feel comfortable putting out some all out critiques on the -- a colleagues work without talking with them directly. (EXF1_MEM_TID_1429_051710_ct)

A respondent noted that one reason people read websites is because there is edgy content. But, this may be difficult on ExhibitFiles.

Well I think one thing that would make [ExhibitFiles] more sticky is more provocative content. I think that -- and that's very hard to make happen . . . . I think that the things that people pass around and love are things that are more provocative because they speak truths that we don't otherwise talk about. (EXF1_MEM_TID_161_051310_ct)

None of the respondents we talked with wanted guidelines or rules about tones of discourse. One explained.

I think let the market place set the tone. . . . If people are moved enough to speak, they have a right to say whatever they want to say. (EXF1_MEM_TID_2192_051310)

Using ExhibitFiles to Inform Work

The ultimate goal of ExhibitFiles is for members to use it to inform their own work. The project team assumed that individuals would use the site in a number of ways and for a number of purposes. At an ExhibitFiles breakfast at the ASTC conference in 2008, we asked attendees to share, on index cards, how they had used and planned to use the site (Tisdal, 2008B). These responses were coded to develop the categories shown in Figure 32.
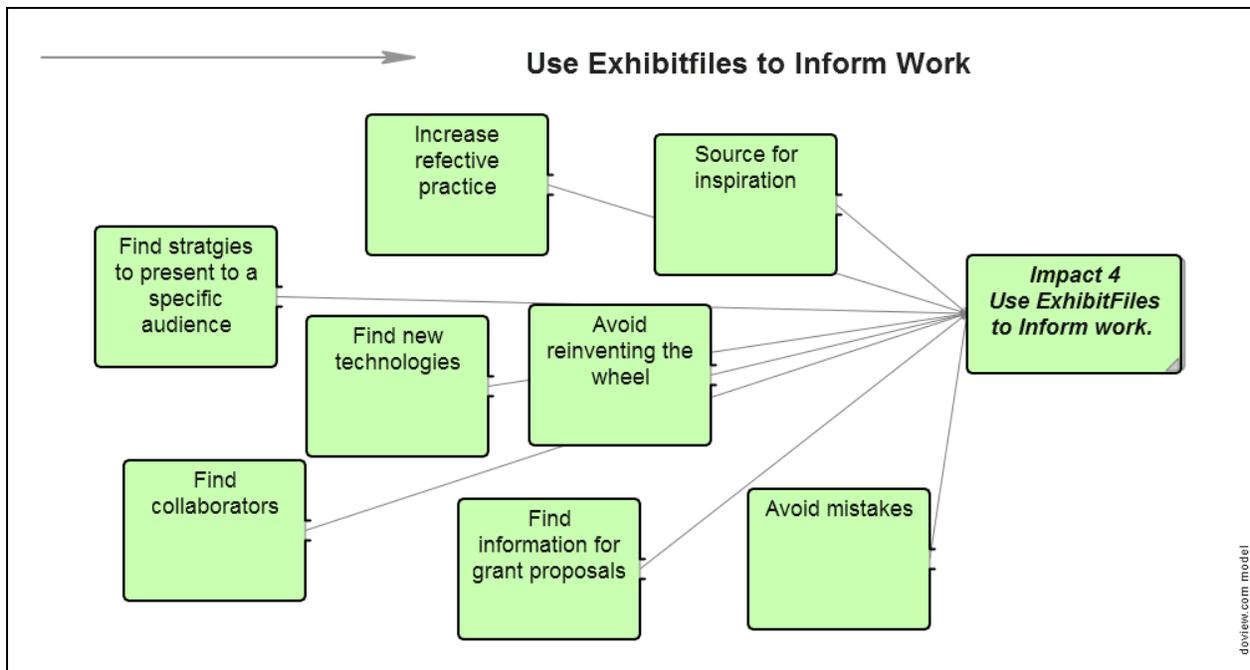
Figure 32.Use ExhibitFiles to inform work (program theory)

We asked online survey respondents about the extent to which and ways in which ExhibitFiles had informed their work. Respondents rated the extent to which ExhibitFiles had informed their work on a scale of 1 to 10 with *1 = Low and 10 = High*. The mean rating was 4.28 (*SD* = 2.3) and a median of 4.0. Using a one-way ANOVA we found no significant differences among respondent groups such as age, gender, and year joined ExhibitFiles, career stage, or educational level. The range of responses to this item is shown in Figure 33.
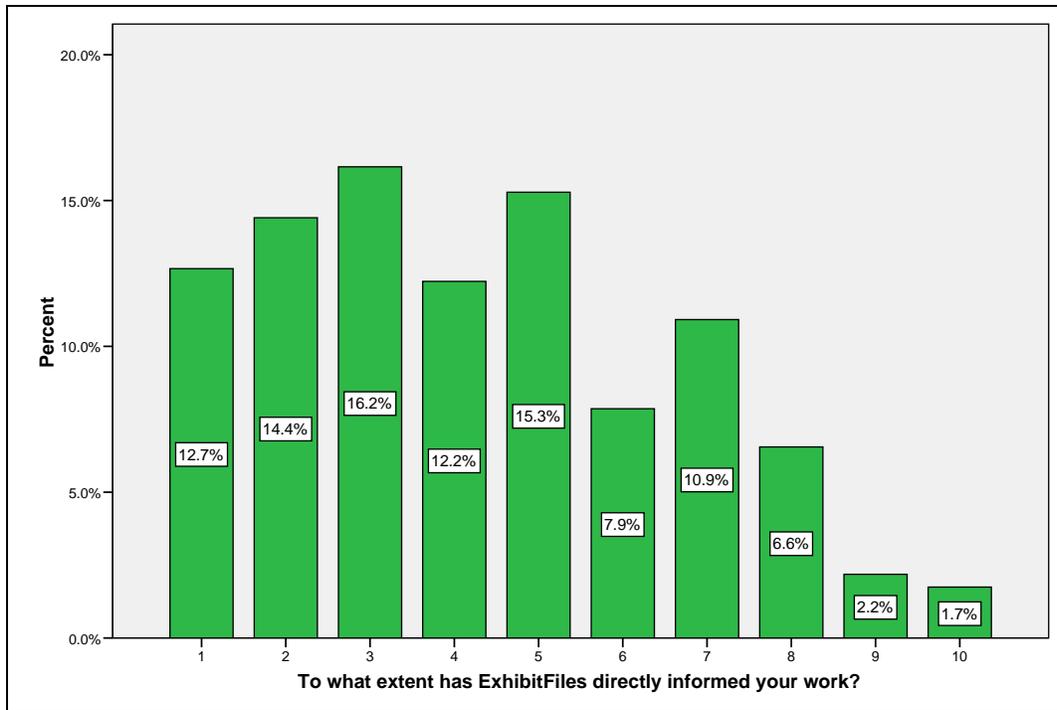
Figure 33. To what extent has ExhibitFiles directly informed your work? – Rating Scale: 1 = LITTLE IMPACT to 10 GREAT IMPACT (N = 225)

While group characteristics did not affect this rating significantly, we did find significant associations to levels of participation and expectations. Table 6 shows a correlation matrix among ratings for this item, frequency of visits, the expectation rating, and the frequency of marking favorites. This rating was positively correlated to frequency of visits at 0.56 (p < .001) with more frequent visitors rating the impact more highly. Similarly, those who said that the site met their expectations also cited greater levels of impact. This correlation was also moderately high at the 0.57 level (p < .001). These associations do not indicate cause and effect between participation and impact. They do suggest that these factors are associated.

Table 6. Pearson Correlation Matrix among Informed Work Rating, Frequency of Visits, Expectation Rating, and Frequency of Marking Favorites

	Frequency of Visits	Expectation Rating	Frequency of Marking Favorites	Number of Influencers Listed
Informed Work Rating	0.56**	0.57**	0.15*	0.23**
Frequency of Visits		0.29**	-0.07	0.23**
Expectation Rating			0.06	0.17
Frequency of Marking Favorites				0.00
*p < .05 on tailed ** p < .01 two tailed				

We asked online survey respondents to give a reason for their rating and 178 provided this explanation. Several reasons were cited for not rating the extent of impact at a higher level. The most frequent reason given for not rating the impact of the site more highly was simply not using it that often.

> *I don't use it often enough for greater impact.*

> *I'm not very active on ExhibitFiles in terms of regular reading, and submissions.*

> *I'm not sure of any direct relation in that I don't follow who is part of it and have not been a regular reader of its web pages*

> *I use it very rarely.*

> *I really haven't used it much, but glance occasionally.*

> *I rarely use it. I might log in once or twice a year.*
> *I probably don't refer to it as much as I should.*

Several suggested that they would visit more frequently if they received regular email updates about what new items had been posted.

> *The site doesn't "push" enough to remind me of what is there, to match my interests when something new comes up*

> *Stopped getting weekly email notices about new additions to site, so tend to forget it's out there.*

> *I wish it was more sticky so I would return more frequently - haven't figured out how to use the RSS to get updates*

> *I use it occasionally; would use it more if I received a weekly digest so I am more aware of recent postings.*

A number of other respondents said that they did not have time to use the site given other work responsibilities. Several also noted that the site is dense in information and were difficult for them to skim quickly.

> *The website is dense and I often forget to invest the time to go through it*

> *Rarely have time to delve into the site*

Not enough time to use it properly until now, and it is not very user friendly (time consuming)

My impression is there is a lot there but I am too busy to access it. I just do not have time.

Just haven't used it much past browsing several times. Need to get it on my list of daily/weekly check-ins. Other sources somehow get my attention more.

I generally read the online case studies but haven't used much more than this yet

I don't have much time to check it!

Several others said that other sources had greater impact on their work.

ExhibitFiles is only one of many sources that influence and inform my work

Mostly get my ideas from other inspirational websites

I think I'm actually rating it pretty high considering it's a website, and most influence comes from actual experience.

I do not consult it regularly. I prefer to call individuals directly to learn more about their projects.

Others found that the case study and review content was not detailed or deep enough to be helpful in their work.

Most reviews seem superficial

Interesting case studies, but not enough detail to have impact

I like some of the narratives around the exhibits profiled, but am often left wondering what the real impact on individuals and communities is.

I found the post esoteric and only slightly related to our exhibits

I check the website from time to time and I just don't see useful information. I'd like to see ideas/designs for innovative exhibits, more frequent critiques of traveling exhibits, evaluation/research results, ops for grant collaborations, etc

Feels like an online "case study" session -- helpful, but mostly boring

A number of respondents explained that their primary work was not in exhibition development.

> *Since I am an evaluator I find that ExhibitFiles often does not include information that is helpful to me.*

> *Not sure how relevant it is as a venue to exchange info about work in digital / virtual domains especially considering there are other online venues for that type of work*

> *I'm senior level*

> *I'm on the fringes of the industry.*

> *I reference it but as I am primarily a programmer rather than an exhibit builder, I use more of the small interactive ideas than the larger exhibit concepts*

A few respondents found case studies and reviews too centered in U.S. institutions to be helpful.

> *Not enough French/European use cases*

> *ExhibitFiles seems to have its strengths in the U.S.*

Respondents also gave reasons for relatively high ratings. The most frequent reason for a relatively high rating was that ExhibitFiles kept the respondent informed and gave them ideas for new exhibits.

> *Keeps me in touch with trends and alternate approaches.*

> *It reminds me of possibilities, and also of my colleagues' critical eye (in a good way).*

> *It lets me know what's happening in the field.*

> *It gives a window to the current state of exhibitions*

> *Inspiration of plants are up to something resulted in an exhibit of our own*
> *Ideas for new exhibits*

> *I can't say that I've changed anything based on what I've read on ExhibitFiles, but the sense of being informed is helpful in general*

> *Good resource to see what else has been done on a given topic*

> *Exhibit reviews are helping know what is going on, and also info on potential exhibitions to bring here*

> ***A good source of inspiration and ideas!***

Several others cited that they had used the site to learn about and contact others in the field.

> ***I've learned more about the people who work in the field.***

> ***It is an easy and fast way to connect with people in the museum field.***

> ***I use it to look up exhibit information or to get bios of people.***

> ***Have used ExhibitFiles to learn of contacts that were useful in exhibit development.***

Museum studies faculty and students explained that they had incorporated ideas and examples from ExhibitFiles as part of their courses.

> ***I used ExhibitFiles examples in my thesis.***

> ***I search activity for my teaching work***

> ***I have used the site for a couple of class projects, but haven't been really invoked yet I enjoy reading the reviews . . . sometimes subsequently visiting the exhibitions . . . require my students to read too.***

A few respondents explained that they had used ExhibitFiles to plan what exhibits they wanted to travel to see in person.

> ***It has caused me to seek out and visit exhibits which have been inspirational.***

> ***Interesting to read reviews --reminds me that people in our field need to travel and see stuff.***

A few others noted that they had used ExhibitFiles in their career planning or job searches.

> ***Mostly during an extended job search.***

> ***It helps me get introduced to others at target firms that I may not know. However, most don't seem receptive to networking contact.***

> ***It has encouraged me to pursue the job I really want.***

Online survey respondents were also asked to report ways in which ExhibitFiles had influenced their work. More than one option could be selected. We developed these options from open-

ended responses from individuals attending an ExhibitFiles breakfast at the 2008 ASTC conference. Responses selected by more than a quarter of respondents (*N* = 259) included encouragement to be more reflective about work (51.2%), inspiration to try an innovative approach (32.9%), providing strategies for presenting a topic (30.2%), and kept from "reinventing the wheel" (26.4%). However, 26.7% of respondents reported that ExhibitFiles had not influenced their work. This distribution is shown in Figure 34.

In which of the following ways has ExhibitFiles influenced your work?

Category	Percent
Encouraged me to be more reflective about my work	51.2 %
Inspired me to try an innovative approach	32.9 %
Provided strategies for presenting a…	30.2 %
Has not influenced my work	26.7 %
Kept me from "reinventing a wheel"	26.4 %
Led me to a new technologies	24.0 %
Helped me avoid mistakes or problems	14.7 %
Provided methods for specific audiences	11.2 %
Led me to new collaborators	8.9 %
Provided information for a grant proposal	6.2 %
Other	4.5 %

Figure 34. Ways ExhibitFiles had influenced work (N = 259)

About 50 online survey respondents provided additional comments about how ExhibitFiles had influenced their work. Several noted that the site provided information about the people behind the exhibits and allowed them to introduce themselves and to maintain and keep connections.

> ***Provided me with biographical information about colleagues/major players in the field***

> ***Provided contact information for developers at institutions I have visited--allowed me to introduce myself and touch base before visiting.***

> *I felt more connected with collaborators that I already knew because when I visited the site I learned more about them.*

> *Helped me refer colleagues to other professionals in the field.*

> *Has allowed me to stay connected with colleagues as I/they move around*

> *Helped me realize that there are many colleagues!*

Several specifically mentioned the value of having access to images and photographs.

> *Some useful images in reviews and case studies*

> *Just seeing images -- that influenced my case designs in our art museum.*

> *It's great to see photos of other ISE exhibits. I appreciate when things are designed/developed in a different manner than we are accustomed to seeing.*

> *It's good to have a visual resource (lots of photos) of exhibits that I might not have a chance to see for myself.*

Museum studies faculty mentioned the usefulness of ExhibitFiles as a teaching resource.

> *Since I'm a faculty in Museum Studies, I've used it more as a reference to see trends and new ideas in the field that I share with students.*

> *It has been helpful in providing students with a connection to the field of exhibit design*

> *As an instructor in a Museum Studies Program, it has given me examples of works to provide discussion issues for my exhibition class.*

Finally, some respondents provided additional information about how ExhibitFiles had affected the extent to which they had become more analytical and reflective about their work and that of others.

> *The act of writing reviews and case studies has helped me be more reflective.*

> *It has also inspired me to be more reflective when reviewing various exhibitions.*

> *I love, love, love the case study forum that your site facilitates. The alone provides insight into design and exhibits that is invaluable to designers who don't have large travel budgets. It is great for inspiration as well as critical reflection.*

Because I often consider and sometimes follow through with writing reviews for ExhibitFiles, I find that I am more analytically critical during visits to museum exhibitions, as opposed to being satisfied with passing impressions. This is actually very good, because I believe critique is no more valuable than small talk or so much hot air if it is not accompanied by serious, analytical consideration.

While online survey respondents describe a wide varieties of ways that ExhibitFiles impacted their work, in in-depth interviews we found that respondents tended to describe when and how they used ExhibitFiles in two general ways: to accomplish a target task or to keep up to date with trends in the field. The former was a less frequent, but more intensive, activity than the later.

Summary

ExhibitFiles has attracted its target audience but there is ample room for growth. Word-of-mouth and search engines have been thus far the most effective means of attracting members. Additional methods of raising awareness about the site could be useful. Comparisons between registered ExhibitFiles members and NAME members show only about a 10% overlap between the two groups. NAME members are a prime area of growth. Yet, many respondents mentioned belonging to other professional associations, and attending conferences of those organizations. Members of organizations such as the Association of Children's and Museums, American Public Gardens Association, the National Association for Interpretation, Association of Zoos and Aquariums could be targeted and recruited.

In general, the site design appears effective and useful. The highest priority improvements cited by users were search functions for both content and members. These functions appeared to play an important role in targeted use of the site in developing new projects and new grants.

We found that marking an item as a favorite generally meant that the respondents found the case study or review useful and interesting. However, there was some ambiguity about this meaning. Some respondents requested counts of members reading an item (à la YouTube). Some respondents wanted to be able to bookmark items in ways that did not indicate approval or endorsement. While there was no consensus about the overall value to the field of provocative content, there was consensus that respondents wanted places for discussions of greater depth and substance. The relatively low levels of comments seem to be connected to having to search through case studies in reviews for conversations about design strategies and development techniques.

According to the 90-9-1 rule, overall percentages of members contributing case studies and reviews appear on par with other web-based social networking sites. Among some respondents we found a perception that more case studies and reviews are needed, particularly for the development of new projects and grants. Respondents recommended case studies and reviews they would find valuable. Respondents also made suggestions that professional organizations

and local groups could be use to organize the submission of content on particular themes. Some respondents noted that direct request for contributions with deadlines was a reasonable way to increase the range of user submitted content.

A key finding was that levels of participation were closely associated with the extent of impact reported by users. The nexus of this connection was on frequency of visits, frequency of reading reviews, and the extent to which the site met expectations. This means that changes to the site and its management have real potential to increase the impact among larger numbers of registered members. Respondents on both the survey and in in-depth interviews pointed out the likelihood of visiting when they received an e-mail about new items on the site. Expectations for higher numbers of members, more content, and greater levels of participation also appear to be connected to the frequency of visit.

Overall, we found respondents' expectations and perspectives closely related to their experiences on other websites. Many respondents use YouTube and Facebook, and also participate on leisure sites such as Ravelry and Good Reads. Expectations for ongoing levels of new content and staying up-to-date about things on the website appear to be strongly connected to this digital environment.

We also found that ExhibitFiles was only one part of the larger professional development picture for exhibit/exhibition professionals. Conferences and workshops were reported as higher impact experiences. Respondents saw ExhibitFiles as supporting in extending their professional community.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, it is useful to step back and take a longer-term view of the development of ExhibitFiles -- from the original idea for an archive of exhibition development case studies in 2003 to today. Since a snapshot view of the site in July of 2008, the site has continued to grow. Case Studies increased from 60 in July 2008 to 118 case studies In October 2010 and reviews from 71 to 160 in October 2010. Registered members have increased from 830 in July 2008 to 1357 in November of 2009 to 1645 as we finalize this in October of 2010. Growth in the site continues. To date, ExhibitFiles has exceeded initial expectations on almost all original indicators. But, like other professional networking websites, expectations for new contributions and strategies to increase and extend connections have grown as the capacity of these networking sites becomes better understood. Among respondents who contributed to this study we found a demand for the continuing addition of new content and room for growth in both membership and levels of participation.

Recommendations fall into two major areas: (1) revisions to the site design, and (2) human systems used to manage and build community among members.

The highest priority site revision among respondents was improvement of search options for both content and locating members by name. Search functions appeared to be used in targeted site use such as preparing grant applications, finding information for new project development, and locating colleagues with which to discuss ideas and solve problems.

Respondents also wanted places on the site for conversation and discussion of topics that relate across specific cases and reviews. The ExhibitFiles blog appears to be a promising vehicle for these discussions. The blog has also been where changes to the site and important events in the field are announced. Currently, relatively few users go to the blog on a regular basis. We concluded that this website feature needs a more prominent place on the homepage to increase its visibility. In addition, the favoriting function needs to be clarified. Adding ratings or items view counts may be needed. Internal bookmarking capacities don't appear to be practical. Users developing reviews of the field may need to use external bookmarking to synthesize materials across sites.

Findings also support updates to the human systems to increase contributions and levels of participation. Respondents reported visiting the site when they received regular e-mail prompts with information about new addition to the sites hot topics and lively discussions. Site managers may also find it useful to identify core contributors from professional associations to contact members about joining ExhibitFiles and contributing content specifically relevant to their sector the museum community. Other promising ideas from respondents were having guest bloggers and setting deadlines for the submission of case studies and reviews on specific themes. Team members could also solicit case studies and reviews requested by online survey respondents.

Ultimately, the importance of ExhibitFiles is its capacity to allow exhibition professionals to share knowledge and practices that support the development of lively, rich, and effective learning experiences for the public. Yet, key to accomplishing these impacts is level of use. Major obstacles to visiting the site and contributing content were lack of time and competition from higher priority of other work. These findings are not surprising. They may reflect trends since the early 1990s among larger organizations to outsource exhibit development. External, freelance designers contract for specific work and contributions to the professional community must be budgeted as part of overhead in a competitive environment. Internally, staffing levels may be "lean and mean" with focus and rewards on accomplishing specific work on time and on budget with other criteria for effectiveness among considered of lesser importance. We also found some obstacles to contribution and sharing of information related to the difficulty of getting institutional approval to share information and visuals. This may be particularly difficult for external exhibit professionals.

The project team may want to consider building some additional levels of awareness of the benefits of a coherent and lively professional community among senior managers in institutions and among those who contract exhibit design and development services. The coherent, open community of practice among exhibition professional which ExhibitFiles supports can only reach it's promise in a culture that supports open sharing, reflective practice, and assumes that professional time includes ongoing contributions to a professional community.

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APPENDIX A: IN-DEPTH INTERVIEW RESPONDENTS

Interview	Respondents	Data Form
EXF1_TDI_ PT_Cases 1_2_072308_ct	Project directors	notes
EXF1_DI_PT_Case4_051509_ct	Web designer	transcript
EXF1_DI_PT_Case3_1_051509	Web designer and project director	transcript
EXF1_MEM_TID_561_051410_ct	Low level participation	transcript
EXF1_MEM_TID_1429_051710_ct	Low level participation	transcript
EXF1_MEM_TID_909_051310_ct	Medium level participation	transcript
EXF1_MEM_TID_2192_051310_ct	Medium level participation	transcript
EXF1_MEM_TID_289_051710_ct	Medium level participation	transcript
EXF1_MEM_TID_1257_012910_ct	Medium level participation	notes
EXF1_MEM_TID_161_051310_ct	High level participation	transcript
EXF1_MEM_TID_254_051710_ct	High level participation	transcript
EXF1_MEM_TID_388_051210_ct	High level participation	transcript
EXF1_MEM_TID_543_051210_ct	High level participation	transcript
EXF1_MEM_TID_567_051310_ct	High level participation	transcript
EXF1_MEM_TID_934_051310_ct	High level participation	transcript
EXF1_MEM_TID_138_120310_ct	High level participation	notes

APPENDIX B: CASE STUDY AND REVIEWS REQUESTED

Table A-1. Case Studies Wanted (N = 81 Respondents)

Case Studies Wanted Exhibition/Area	Responses (N = 141)	Percent	Percent of Respondents (N = 81)
Race -- Science Museum of Minnesota	4	2.8	4.9
Cooking! -- Liberty Science Center	2	1.4	2.5
Mandalas	2	1.4	2.5
Real Pirates	2	1.4	2.4
Terra Cotta Warriors	2	1.4	2.5
Amazon Voyage	1	0.7	1.2
Bodies: The Exhibit -- Exploreums, Avigon, France	1	0.7	1.2
Charlie and Kiwi's Evolutional Adventure	1	0.7	1.2
CSI	1	0.7	1.2
Design Innovation -- Cooper Hewitt, NYC	1	0.7	1.2
Dinosaurs in Their Time -- Carnegie Museum of National History	1	0.7	1.2
Dynamic Earth Exhibit, Newark Museum	1	0.7	1.2
Energy Exhibit -- Liberty Science Center	1	0.7	1.2
Expedition Health -- Denver Museum of Nature and Science	1	0.7	1.2
Global Cites -- Tate Modern, London	1	0.7	1.2
Grossology	1	0.7	1.2
Harry Potter	1	0.7	1.2
Hidden Kingdoms, New York Hall of Science	1	0.7	1.2
Identity -- Boston Museum of Science	1	0.7	1.2
Mathematica -- New York Hall of Science	1	0.7	1.2
Mining the Museum -- Maryland Historical Society	1	0.7	1.2
Noah's Ark -- Skirball Cultural Center, Los Angeles	1	0.7	1.2
Point of View Diner -- Museum of Tolerance, Los Angeles, CA	1	0.7	1.2
RoboWorld -- Carnegie Science Center	1	0.7	1.2
Rocket Park Mini Golf -- New York Hall of Science	1	0.7	1.2
Science in Society	1	0.7	1.2
slowLife	1	0.7	1.2
Sony Wonder Technology Lab	1	0.7	1.2
Trailside Nature Center	1	0.7	1.2
Washington: Symbol and City -- National Building Museum, D.C.	1	0.7	1.2
Water: H20 = Life, American Museum of Natural History, NYC	1	0.7	1.2
What about AIDS?	1	0.7	1.2
Who Am I? -- Science Museum, London	1	0.7	1.2
Wild Music	1	0.7	1.2

Case Studies Wanted Exhibition/Area	Responses (N = 141)	Percent	Percent of Respondents (N = 81)
Wolf Quest	1	0.7	1.2
World Brooklyn	1	0.7	1.2
Zizi -- Cite des Sciences, Paris	1	0.7	1.2
Specific exhibitions	*44*	*31.2*	*54.3*
Art exhibits/Art Museums	8	5.7	9.9
Exhibitions from specific museums/other sites	8	5.7	9.9
International exhibits or exhibits that work across countries	4	2.8	4.9
Museum reviews and comparisons	4	2.8	4.9
Exhibits at smaller museum/small spaces	3	2.1	3.7
Exhibits for children	3	2.1	3.7
Interaction/hands-on exhibits: mobile, specific grade levels	3	2.1	3.7
Issues-based exhibits	3	2.1	3.7
Low budget projects/exhibits	3	2.1	3.7
Wildlife	3	2.1	3.7
Blockbusters	2	1.4	2.5
Children's museum exhibits	2	1.4	2.5
Exhibits for families	2	1.4	2.5
Museum studies related topics	2	1.4	2.5
Older "classic" exhibits	2	1.4	2.5
Science experiments	2	1.4	2.5
Zoo/aquarium exhibitions	2	1.4	2.5
Anthropology	1	0.7	1.2
Art and science	1	0.7	1.2
Discovery rooms	1	0.7	1.2
Environmental	1	0.7	1.2
Exhibit -- program connections	1	0.7	1.2
Exhibit collaborative	1	0.7	1.2
Exhibitions that use technology in new ways	1	0.7	1.2
Exhibits designed for teens	1	0.7	1.2
Exhibits using green materials	1	0.7	1.2
Facilities renovations	1	0.7	1.2
Health	1	0.7	1.2
Historical exhibitions	1	0.7	1.2
History museum exhibits	1	0.7	1.2
Human Evolution	1	0.7	1.2
IMAX Cinema	1	0.7	1.2
Immersive science exhibits	1	0.7	1.2
Natural History	1	0.7	1.2
NSF-funded exhibitions	1	0.7	1.2
Object-based learning -- object rich exhibitions	1	0.7	1.2
Outdoor displays	1	0.7	1.2
Science center exhibitions	1	0.7	1.2
Space	1	0.7	1.2

Case Studies Wanted	Responses		Percent of Respondents
Exhibition/Area	(N = 141)	Percent	(N = 81)
Traveling exhibitions	1	0.7	1.2
U.S. examples	1	0.7	1.2
Watersheds	1	0.7	1.2
Wetlands	1	0.7	1.2
Whodunit? Murder Mysteries	1	0.7	1.2
Topics/audiences	*83*	*58.9*	*102.5*
Miscellaneous	15	10.6	18.5
Total	*141*	*100.0*	*174.1*

Table A-2. Reviews Wanted *(N = 61 Respondents)*

Reviews Wanted	Responses		Percent of Respondents
Exhibition/Area	(N = 91)	Percent	(N = 61)
Harry Potter	2	2.2	3.3
Identity -- Boston Museum of Science	2	2.2	3.3
CSI Crime Scene Insects	1	1.1	1.6
bob the Builder -- Illinois children's Museum	1	1.1	1.6
Camera Obscura and World of Illusions -- Edinburgh	1	1.1	1.6
Charlie and Kiwi's Evolutional Adventure	1	1.1	1.6
Cooking! -- Liberty Science Center	1	1.1	1.6
Curious George -- Minnesota Children's Museum	1	1.1	1.6
DaVinci	1	1.1	1.6
Dinosaurs in Their Time -- Carnegie Museum of National History	1	1.1	1.6
Disposal? -- University College of London	1	1.1	1.6
Expedition Health -- Denver Museum of Nature and Science	1	1.1	1.6
Glow: Living Lights, San Diego Museum of Natural History	1	1.1	1.6
Grossology	1	1.1	1.6
Horses	1	1.1	1.6
Narnia	1	1.1	1.6
Our Space, Te Papa, Tongarewa, New Zealand	1	1.1	1.6
RoboWorld -- Carnegie Science Center	1	1.1	1.6
slowLife	1	1.1	1.6
Space Odyssey -- Denver Museum of Nature and Science	1	1.1	1.6
Star Wars: Where Science Meets Imagination	1	1.1	1.6
Terra Cotta Warriors	1	1.1	1.6
The Edge of the Wild -- Denver Museum of Nature and Science	1	1.1	1.6
Tim Burton -- MOMA	1	1.1	1.6
Trash Menagerie -- Peabody Essex Museum	1	1.1	1.6

Reviews Wanted Exhibition/Area	Responses (N = 91)	Percent	Percent of Respondents (N = 61)
Specific exhibition reviews wanted	*27*	*29.7*	*44.3*
Museum reviews and comparisons	8	8.8	13.1
Art exhibits/Art Museums	6	6.6	9.8
Exhibitions from specific museums/other sites	6	6.6	9.8
Blockbusters	3	3.3	4.9
International exhibits or exhibits that work across countries	3	3.3	4.9
Children's museum exhibits	2	2.2	3.3
Exhibits for families	2	2.2	3.3
Museum studies related topics	2	2.2	3.3
Temporary exhibitions	2	2.2	3.3
Zoo/aquarium exhibitions	2	2.2	3.3
Anthropology	1	1.1	1.6
Art and science	1	1.1	1.6
Critical evaluation of exhibitions at large Museums	1	1.1	1.6
Environmental	1	1.1	1.6
Exhibits at smaller museum/small spaces	1	1.1	1.6
Exhibits designed for teens	1	1.1	1.6
Exhibits for children	1	1.1	1.6
Exhibits using green materials	1	1.1	1.6
Health	1	1.1	1.6
Museum architecture	1	1.1	1.6
Object-based learning -- object rich exhibitions	1	1.1	1.6
Older "classic" exhibits	1	1.1	1.6
Science center exhibitions	1	1.1	1.6
Space	1	1.1	1.6
Traveling exhibitions	1	1.1	1.6
U.S. examples	1	1.1	1.6
Watersheds	1	1.1	1.6
Wetlands	1	1.1	1.6
Wildlife	1	1.1	1.6
Reviews of wanted for topics	*55*	*60.4*	*90.2*
Miscellaneous	9	9.9	14.7
Total	***91***	***100.0***	***149.2***