

Sample Application

2008 National Leadership Grants for Museums

Advancing Digital Resources

New Media Centers, Inc.
Austin, TX

Steve in Action: Social Tagging
Tools and Methods Applied

Steve In Action: Social Tagging Tools and Methods Applied

Abstract

Steve, a collaboration of individuals and institutions collectively exploring the value of social tagging to improve access to cultural heritage collections and engage audiences in new ways, proposes a 3-year project to develop, demonstrate, evaluate, and document social tagging tools and methods in a range of cultural heritage settings. Building on a successful 2-year research grant funded by the Institute of Museum and Library Services in 2006, the Steve project team now hopes to shift its focus from research to practice. Early results of the research project indicate that social tagging does have the potential to significantly enhance access to online collections of art; our proposed project will support and encourage the mainstream adoption of social tagging tools and methods by cultural heritage organizations of all sizes and types.

The implementation of social tagging tools on a broad basis could have significant benefits for cultural heritage professionals and the public at large, enabling improved access to collections, new forms of engagement with visitors, and an opportunity for cultural heritage professionals to see their collections through the eyes of visitors. For this project, the Steve team will enhance the software tools originally developed for the research project; develop, implement, evaluate, and document multiple models for adopting social tagging; demonstrate integrations with major information management systems; and continue to encourage discussion within the community about the strengths and weaknesses of tagging as a method for communicating with our audiences. At the end of the three-year grant period, we expect to have implemented and evaluated a variety of tagging environments with at least thirty partners. Many of these tagging environments will run in several cycles, allowing us to compare the experiences of users from different demographics, or to judge the value of tagging for different types of collections. Our tagging implementations will test the applicability of the Steve tools to historical collections, library collections, archives, and a variety of museum collections; an application to aggregate collected tags will serve as a testbed for looking at cross-collection searching and browsing.

The proposed project seeks to answer questions of user motivation to understand how social tagging engages and rewards the visitor; to gauge the uses and benefits of social tagging for institutions and their visitors; and to measure what kinds of support and resources are required by institutions hoping to institute social tagging practices.

The New Media Consortium, an international consortium of nearly 250 learning-focused organizations dedicated to the exploration and use of new media and new technologies, will lead the project; Dr. Laurence F. Johnson, Chief Executive Officer of NMC, will serve as Project Director; Rachel Smith, NMC's Vice President, NMC Services, will be Project Manager. The NMC brings experience in the leadership of complex, multi-institution projects, including the IMLS-funded Pachyderm 2.0 Partnership, a collaboration with the San Francisco Museum of Modern Art and thirteen university and museum partners. Susan Chun, a founder of the Steve project, and Robert Stein, CIO of the Indianapolis Museum of Art, will serve as Project Lead and Technical Lead, respectively. Chun and Stein are the original and current Project Directors of Steve's IMLS-funded National Leadership Grant for Research. The project partners are the Denver Museum of Art, the Indianapolis Museum of Art, the Los Angeles County Museum of Art, the Metropolitan Museum of Art, the Minneapolis Institute of Arts, the Minnesota Digital Library, the Rubin Museum of Art, San Francisco Museum of Modern Art, the University of California at Los Angeles School of Education and Information Studies, and the Walker Art Center.

Narrative

Steve In Action: Social Tagging Tools and Methods Applied

Steve is a collaboration of individuals and institutions collectively exploring the value of social tagging to improve access to cultural heritage collections and engage audiences in new ways. In 2006, the project was awarded a two-year IMLS National Leadership Grant for Research. The final results of the research project will be published in late 2008, but early results appear to prove at least one of our hypotheses—that social tagging is an effective way to gather and apply subject descriptions *not found in existing museum documentation* to works of art. Anecdotal evidence also suggests that social tagging methods are an appealing way of engaging museum visitors, and may provide museum curators and educators with novel tools for understanding and interacting with their audiences.

1. Assessment of Need

The steve project was founded in 2005 to address concerns by art museums about access to their ever-growing online collections. As museums were welcoming increasing numbers of visitors to their online outposts, they were also discovering that these visitors struggled to navigate digital collections. The problem, in part, stemmed from a semantic gap that separated museums' formal descriptions of works—usually created by art historians or other specialists—and the vernacular language used by the general public for searching. This language, reflecting the broad range of needs and perspectives of users, simply did not exist in collection documentation. Project team members believed that by employing the then-emerging technology of social tagging and its resulting folksonomies we might bridge the semantic gap by engaging users in the time-consuming and expensive task of describing our collections; add a multi-cultural, perhaps multi-lingual perspective to our documentation; and possibly even develop strategies for engaging new types of users in looking at and thinking about art. We were also intrigued by the potential of the medium to expose our professional staff—curators, educators, and others—to direct evidence of how works of art in our collections were perceived by visitors. We formed a collaboration, open to anyone interested in thinking about social tagging and its value to museums, and began to develop a set of open source tools for collecting, managing, and analyzing user-contributed descriptions.

However, as recently as two years ago, museums approached the implementation of social tagging tools with trepidation. We could not then have anticipated the explosion of interest in Web 2.0 technologies that was to follow, and our research project was constituted at least partially to help museums gain some degree of confidence in the efficacy and appropriateness of social tagging as a museum practice. We asked a simple research question: “Can social tagging and folksonomy improve access to art collections online?” For the past two years, our research has explored this question using an experimental tagging interface (online at <http://tagger.steve.museum>), to collect descriptive terms contributed by the public. We are analyzing these terms in order to answer a number of queries, including: “What sorts of terms are contributed by taggers?” “How ‘accurate’ are the terms?” and “How do the terms collected relate to existing museum documentation and user search behaviors?” Our preliminary analysis demonstrates that visitors do contribute a substantial number of “new” terms (Trant, 2006a, 2006b). And because we believe that users will often describe works using the same language that they use to search for works, the potential for museums to substantially improve successful searches using user-contributed terms is significant.

Although the steve team believes that its research into the value of social tagging to enhance finding will prove a significant contribution to our community's understanding of social tagging and access to museum collections, the constraints of deploying the steve tagging tools in an artificial environment structured specifically to answer research questions have made it difficult for the steve team to develop authentic and engaging tagging activities and interfaces and thus to begin to examine another series of questions about social tagging. We are keenly interested in questions of motivation and in understanding how social tagging engages and rewards the visitor; in gauging the uses and benefits of social tagging for institutions and their visitors; and in measuring what kinds of support and resources are required by institutions hoping to institute social tagging practices.

Although the steve project team has made its tagging software freely available for download and installation to the entire museum community, there are surprisingly few “live” installations of the steve tagger software (or any other social tagging software) that model ways in which tagging might be used in cultural heritage settings. Most organizations offering tagging on their collections do so on a limited or experimental basis, with minimal integration with collections or interpretive content. Some, like the Library of Congress, in their ambitious and intriguing partnership with Flickr (announced in January, 2008), have relied on existing tagging models that do not yet seem to consider the particular needs of the visitor to cultural heritage collections.

The little information that the steve team has about the attitudes of museum staff toward social tagging comes from a small-scale study that is part of the current research project. We are charting levels of acceptance of tagging as a tool for museums from the start to the end of the two-year grant period. In doing so, we have begun to note a realignment of attitude amongst staff of steve partner museums who are directly exposed to tagging activity: Kate Johnson, Chair of the Education Division at the Minneapolis Institute of Arts (where the steve tagging tools are used in a limited capacity for internal uses), recently reported,

Just want to weigh in and say that I have never seen "star" art teachers get so excited as when we held a limited contest to see who could add the most tags to random selections of object records. Not only does this vastly improve search results long-term, but it also nourishes engagement with and commitment to the museum and its programs.

This sort of enthusiastic response has encouraged steve team members to think about how we might build on our knowledge of social tagging and our previous collaboration to support and encourage the adoption of social tagging practices in our own museums as well as in other types of cultural heritage institutions. The project team believes that by supporting “live” implementations of tagging tools, we will have an effective way to ask and answer some of our questions about the motivations of users of tagging systems and the benefit of tagging tools for museums. We have proposed a range of types of implementations in a variety of museums, historical societies, libraries, and archives. These organizations represent very different staffing and funding models, speak to diverse audiences, and may have varied missions and goals. Our interest is in measuring the acceptance and effectiveness of different tagging tools in these organizations, and in providing documented prototypes for adopting tagging tools that will serve as models for the entire cultural heritage community.

2. National Impact and Intended Results

The implementation of social tagging tools on a broad basis could have significant benefits for cultural heritage professionals and the public at large, enabling improved access to collections, new forms of engagement with visitors, and an opportunity for cultural heritage professionals to see their collections through the eyes of visitors. To support and encourage mainstream adoption of social tagging tools by cultural heritage organizations of all sizes and types, the steve team will enhance the software tools developed for the research project; develop, implement, evaluate, and document multiple models for adopting social tagging; demonstrate integrations with major information management systems; and continue to galvanize discussion within the community about the strengths and weaknesses of tagging as a method for communicating with our audiences. At the end of the three-year grant period, we expect to have implemented and evaluated a variety of tagging environments with at least thirty partners. Many of these tagging environments will run in several cycles, allowing us to compare the experiences of users from different demographics, or to judge the value of tagging for different types of collections. Our tagging implementations will test the applicability of the steve tools to historical collections, library collections, archives, and a variety of museum collections; an application to aggregate collected tags will serve as a testbed for looking at cross-collection searching and browsing.

Key Benefits for Cultural Heritage Professionals

-The implementation of “live” tagging environments in a number of museums will provide a focus for community discussions about the pros and cons of tagging and social software.

- Tools developed in the project, including improved versions of the steve tagger, but also novel interfaces, data processing models, and reporting tools, will be freely available to the community under terms of an open source license. These tools will enable the near-term implementation of tagging technology by cultural heritage organizations of all sizes and budgets.
- The steve collaboration will expand, continuing to demonstrate the fiscal and professional value of shared development and planning activities in the museum technology environment.
- Data generated by the institutional implementations will be made available to researchers in museum studies, information studies, computational linguistics, cognitive studies, and other fields of interest, so that they may study the online behaviors of museum visitors.
- Social tagging tools might serve as an effective way to search across collections or domains.

Key Benefits for General Audiences

- The widespread adoption of social tagging tools could vastly enhance the findability of museum collection objects, not only on museum Web sites but also through search engines, or in visual resources collections.
- Collections might be more easily seen through a multi-cultural, multi-lingual lens, removing cultural or geographical barriers to access for a worldwide audience.
- Social tagging may offer an engaging form of interaction with museum objects by encouraging a sense of ownership and belonging in the general public.

3. Project Design and Evaluation Plan

The project team will develop, demonstrate, evaluate, and describe multiple models for implementing social tagging tools in cultural heritage settings. The existing steve tool set, initially designed to support the project's research activities, will be evaluated, enhanced, and fully documented in the application development phase of the project, and will serve as the core software application for local, institutional implementations.

Project Structure and Planning Phase

The project structure described here reflects the more detailed tasks and activities outlined in the attached Schedule of Completion. To manage the activities associated with developing, deploying, and monitoring multiple implementations of the steve tagging tools, we have proposed an initial eight-month planning period. The first weeks of the project will be devoted to administrative tasks, implementing communications tools, updating project listservs and online collaboration tools, formalizing contracts, circulating schedules and assignments. The key work of the planning phase, however, will be working collaboratively to develop requirements for the software tools and to confirm the specification and scope for all local implementations. During this phase, the entire project team (including the Principal Investigators, Project Director, Technical Lead, Software Development Managers, partner institution representatives, and consultants) will hold a kick-off meeting, as well as subsequent online conferences, to discuss and finalize the project specification. (The complete development process, which will begin in the planning phase and continue, in iterations, throughout the project, is detailed below.) Planning in this phase will include discussion of the team's requirements for reporting and evaluation tools as well as research into requirements for integration with collections management, digital asset management, and content management systems. At the conclusion of the eight-month planning phase, the team will issue a software roadmap, outlining the development goals for the first twenty months of the project, and will produce detailed schedules and assignments for all members of the software and institutional project teams.

Application Development

The project's software development team will adhere to a structured software development lifecycle to produce high quality, fully tested software that will be released to the museum community on a periodic basis. The six-phase "agile" development process has been refined during the current collaboration of the steve development team. It begins with a phase of detailed specification of the work. This task is performed by all the team members and is a non-technical process that benefits directly from the involvement of the entire team. Software developers then use this detailed specification to build initial versions of the software. After writing the initial code, developers perform an intensive round of testing to ensure that the software behaves

as intended; this phase of testing is followed by a different testing phase, called User Acceptance Testing (UAT) in which testing scripts are developed for project team members—usually non-technical users rather than developers—to use in testing the software. The final phases of the software lifecycle include both technical and user documentation, and deployment support. Members of the software team are included in these phases, but begin the transition of the software as a finished product into the hands of other team members for deployment and use.

Institutional Implementations

Because the project team members believe that the usefulness of social tagging must be demonstrated in an authentic institutional environment, the project is organized around a series of local deployments of the tagging tools, with at least one such deployment in each of the partner institutions. These local implementations will be developed in close collaboration with educators, publications staff, curators, Web site staff, and others with an interest in the engagement of museum visitors in looking at and describing art. The partner institutions themselves will be responsible for selecting, gathering, and organizing the content to be tagged; they will work closely with the development team to design installation-specific interfaces for the tagging tool, and will be supported by developers in installing and testing the local version of the software. The implementations will each run in two 4-6 month cycles, with evaluation activities occurring at the end of each cycle. At the end of the first cycle, the project team will determine whether any revisions to the software are required, and the local team will determine whether to maintain or vary its content, interface, or pedagogical strategy.

Through our close engagement with social tagging research during the past few years, steve team members have become convinced of the exceptional flexibility of social tagging as a tool both for gathering information about artworks and for engaging in “discussion” with our users. Our research has also led us to believe that there is probably no one “ideal” environment for tagging our collections; the ways in which institutions engage their visitors to describe, or tag, their collections will vary depending on a number of factors, including the nature of the collection, the age and interests of the visitor, the point of engagement (Web? gallery? classroom?), and the goal of the tagging activity (gathering more descriptions of works? convincing the user to look closely? soliciting expert opinions or information about subject matter?). The goal in this project is to consider social tagging (and the steve software) in a number of different environments, in order to answer some basic questions about how easily social tagging tools can be incorporated into museum activities, online and onsite, in a range of different types of institutions, and about how comfortable cultural heritage professionals are with social tagging as a mainstream museum practice.

The planned local implementations of the steve software fall into three main categories: “Making Steve Easy,” “Next-Generation Tagging,” and “Designing a Tag Server”:

-Making Steve Easy

The steve project team and its developers have challenged themselves to enhance the existing software tools, developed to support the project’s 2006-08 research, by making them easy for museums of all sizes and collection types to install, run, and integrate with their existing Web sites and information management tools. To accomplish this, the current software requires improvements to its installation procedures and its ability to import and export images and metadata. We would also like to support the use of external image management and uploading, and the simplification of color and logo customizations, so that even basic installations of the steve software can be easily “branded” by an institution. The tagging tools will be generalized to enable the tagging of many different types of collection objects (the current tool is built specifically for the tagging of works of art). We plan to demonstrate integrations with standard museum systems, including a collections management system, a content management system, and (possibly) a digital asset management system. Collections Management and Collections Information staff of the Metropolitan Museum of Art and other partners will work closely with the development team on systems integration issues. Finally, the project is interested in facilitating the use of social tagging tools by the staff and public of small-

and medium-sized institutions; the ancillary question of whether tagging is “easily” integrated into existing museum practice in will be explored through both formal and informal evaluation activities.

To test the question of whether or not the software, once modified, is “easy” to install and the tools, if explained, are effective to use, we will run testbeds with two groups of (primarily) small organizations. The first, the Minnesota Digital Library Coalition (MDL), is a statewide coalition of more than 90 historical institutions who are cooperatively digitizing and contributing items to a central, publicly accessible, repository. The majority of MDL organizations are very small, volunteer-based organizations in rural locations; they may lack the resources to fully catalogue their holdings, but recognize the potential of social tagging to engage community members in the collective cataloguing of local heritage collections. Scott Sayre, a founder of the Minnesota Digital Library, will work with MDL coalition participants to install and manage a shared or hosted version of the steve software and to develop a series of online and onsite training and information sessions to explore the needs, issues, and opportunities associated with integrating social tagging tools and methods into these small organizations.

These activities will be mirrored in a testbed that will involve the Texas museum members of the New Media Consortium, a group of more than twenty museums ranging in size from large to very small. Larry Johnson, Rachel Smith, and Rachel Varon, of the New Media Consortium have worked closely with this group of museums in a multi-year Edward and Betty Marcus Foundation-funded digital education project designed to introduce them to new technologies via the open source Pachyderm multimedia authoring tool. These museums, with some experience of implementing future-facing technologies, will provide an effective reality check for the development team and others charged with planning a software tool that is easy to install and maintain.

-Next-Generation Tagging

Given the buzz surrounding the concept of social tagging and other Web 2.0 applications, it is somewhat surprising that relatively few museums (or other cultural institutions) have implemented tagging on their Web sites. A handful of museums have launched simple tagging interfaces to their online collections; they include the Philadelphia Museum of Art, the Smithsonian Photography Initiative, Australia’s Powerhouse Museum, and one steve partner museum, the Indianapolis Museum of Art. In general, the rather simple interfaces developed by these organizations offer a fairly straightforward tagging experience, and no real evidence yet exists that users are motivated to return regularly to these tagging environments. We believe that some additional exploration of novel and engaging ways to implement tagging online or in our galleries may help other organizations determine how best to employ social software tools to serve their institutional needs. The project team proposes to explore two classes of next-generation tagging tools: in-gallery, onsite tagging, and non-traditional, non-textual, tagging.

The Denver Art Museum, San Francisco Museum of Modern Art, and the Walker Art Center will develop gallery-based tagging applications that allow users to describe artworks that they encounter in the galleries. The teams from these three museums will design applications and interfaces for either kiosk-based tagging or tagging on mobile devices (iPods, cellphones, or personal digital assistants), and will engage in discussion about the relative merits and restrictions of the two gallery-based technologies. These institutions and others are intrigued by questions of how the “live” tagging experience varies from the online experience: they wonder whether the activity is more or less engaging; whether the tags are more or less accurate; and whether the activity itself is perceived as more or less social. They will look closely at questions about what types of works are most easily tagged using in-gallery tools, and at the relationship between tagging and in-gallery photography (now common with the advent of cell-phone photographs). Evaluation questions will consider the possible user motivations for tagging in the galleries, and look at the value of information received from mobile tagging applications for “hearing” visitor voices and reactions to art.

The Indianapolis Museum of Art proposes to investigate innovative non-textual interfaces and their ability to capture descriptive information about artworks. Most traditional interfaces gathering description of images

online have focused on text as the basis for input, a method that comes with both benefits and challenges. Infinitely flexible in the information that can be gathered, free-form textual input methods pose challenges for those who must find ways to effectively deploy myriad collected terms for end users who are searching their collections. For example, what one person may call a “horse” and another a “pony” is to a third a “trusty steed.” All three examples may be valuable, plausible descriptions, but they are difficult to work with algorithmically. A different way to solicit user feedback is to use non-textual actions to impute meaning or description to works of art by giving users some way of answering questions about the works of art without typing in answers. Similar to a multiple-choice quiz with a limited set of answers, non-textual tagging will use a different kind of user interface to enable choice. For example, users might be asked to describe the emotional character of an artwork by dragging a slider between “happy” or “sad,” “energetic” or “dreary.” In this example, the slider allows the users to dictate their answer to the question while limiting the answers to a known range of values that can be automatically recorded and processed. Capturing descriptive “terms” using this type of method makes it easy to construct a way to browse or find artworks using a similar finding interface.

-Designing a Tag Server

In addition to expanding the ways in which the public may experience *tagging* collections, the project team hopes to explore some methods for helping end users find collection items using tags. To do so, we will implement features in the steve software that will enable the aggregation of the tags and metadata from many different institutions (and different steve installations) on a “tag server.” By decoupling the steve tagger’s user interface from the data model and processing tasks required by social tagging software, the team will create the potential for populating a single back-end server database that can handle processing of tags submitted from multiple tagger installations around the country. This is a powerful idea, with many possible benefits and applications. To date, the task of integrating collection management systems for museums into a federated search platform has been a difficult one. The promise of being able to easily search across many different types of collections has been challenging and not successfully addressed by commercial software vendors. However, the steve project stands to succeed in this task where others have failed, precisely because the integration points for submitting collection objects are minimal—easily achieved by most museums—and the formal collection metadata is maintained by the museum directly. And, because steve is focused only on the collection of user tags, we can leverage the fact that tags submitted by users frequently match the ways in which users search for collection objects, thereby creating an effective search tool for users that does not require extensive documentation from museums.

The steve team proposes a practical demonstration of the tag server, which will aggregate tags collected in all of the local installations of steve during the three-year project. We will develop a cross-collection tag browsing application specifically designed to support the interrelation of objects across museums, disciplines, and collection types. Use cases developed by the project partners will be tested against tags collected during the project to determine whether tags themselves (or tags, in combination with other object metadata) are an effective tool for searching across disparate institution or object types: for example, the Los Angeles County Museum of Art, the Rubin Museum of Art, and the Metropolitan Museum of Art will study the value of inter-institutional browsing of their collections of Himalayan art, while the Walker Art Center, the Minnesota Digital Library, and the Minneapolis Institute of Arts will consider the relationship of historical documents, photographs, and artworks created in the region.

Evaluation

The Institute for Learning Innovation (ILI) will provide formative and summative evaluation design, strategy, and consultation services for this project. Kate Haley Goldman, Senior Research Associate at ILI, will oversee the overall project evaluation, working with the New Media Consortium and UCLA’s School of Education and Information Science for the data collection and analysis. As this project involves development, dissemination, and application of innovative models of social tagging in a wide variety of cultural heritage institutions, ILI will create a layered set of evaluation designs to examine the functionality and usability of the different social tagging models, the efficacy of the scaffolding for participating museums, and the

implementation of cross-institutional tagging tools. Both process and implementation evaluation will be conducted, with special attention to the institutional users' patterns, reactions and needs at the NMC's Texas museums and at the Minnesota Digital Library Coalition. As the project moves into the second cycle, the evaluation will investigate the key summative questions: 1) How does social tagging engage and reward the visitor? 2) What are the uses and benefits of social tagging, if any, from both institutional and the public viewpoints? and 3) What sort of support do institutions need to implement social tagging?

Haley Goldman will create the evaluation design and methodologies; work with the project team to identify appropriate outcomes; prepare the evaluation instruments and protocols for data collection; and in some cases, templates for data analysis. She will advise members of the NMC and/or UCLA graduate students during data collection as necessary. After collection, entry, and initial analysis of the data, she will provide consultation on the analysis and report drafts.

4. Project Resources: Budget, Personnel, and Management Plan

The project draws its participants from the Steve collaboration, a consortium of museum professionals and others with an interest in exploring the usefulness of social tagging as a tool for improving access to museum collections and engaging visitors. Those who have chosen to formally partner in the current project are committed to broadening the community's understanding of the potential of social tagging, and have agreed to manage local implementations of the project's tagging tools in order to demonstrate the practical value of our work. The team members and consultants have a demonstrated record of working successfully together on the Steve project and on other multi-museum collaborations conducted at a distance. To ensure that all members of the project team are up-to-date on project activities, the group will continue its successful pattern of annual onsite meetings, monthly project team briefings, weekly lead team meetings, and weekly development team meetings. Free and open source teleconferencing and online collaboration tools allow the team to meet regularly at minimal cost, and project listservs enable discussion of specialized topics, such as development, evaluation, and communications.

Management Plan

The New Media Consortium (NMC) will provide overall project management for the project and will serve as fiscal agent. The NMC is an international consortium of more than 250 learning-focused organizations dedicated to the exploration and use of new media and new technologies. Key staff of the NMC, including Larry Johnson, CEO and Rachel Smith, Vice President, NMC Services, will provide overall project guidance, technical assistance, and administrative management; Johnson will serve as Project Director and co-Principal Investigator, and Smith as Project Manager. They bring to the project a record of managing successful engagement in complex, multi-institution collaborations, including an IMLS-funded grant to develop and implement the Pachyderm 2.0 multimedia authoring tools.

Susan Chun, a Steve project co-founder and Steering Committee member, will serve as co-Principal Investigator and Lead, devoting three days per week to the project, working in close collaboration with the staff of the New Media Consortium. Chun has served as a project lead for the Steve collaboration since its inception, and, from the Metropolitan Museum of Art, directed the project's IMLS National Leadership Grant through planning and the project's first half-year. She is an experienced museum consultant and project manager, and speaks and publishes frequently on open content initiatives and on social tagging.

Robert Stein, the current project director for Steve's IMLS National Leadership Grant, will continue in his role as the Steve project's Technical Lead. Stein will collaborate with developers at the Indianapolis Museum of Art (Charles Moad, Ed Bacht) to manage the software development component of the project. Stein, Moad, and Bacht will hire and supervise a full-time developer, on contract to the Steve project for 30 months. In addition, the Indianapolis Museum of Art team will—along with the other museum partners—develop and document at least one local instance of the tagging tools.

Other Project Partners

Ten formal project partners will join in the work. The eight museum partners represent a range of institution sizes and collection types. The participation of the Minnesota Digital Library Coalition, a consortium of historical societies, public libraries, special archives, universities, and colleges, adds an opportunity to evaluate the functionality of the steve tool set for a diverse group of collections, including library, historical, and science collections. The University of California, Los Angeles, will provide research and analysis support for the project's evaluation consultants.

The formal partners, and their principal representatives, are:

- Denver Museum of Art (Bruce Wyman, Director of Technology)
- Indianapolis Museum of Art (Robert Stein, Chief Information Officer)
- Los Angeles County Museum of Art (Diana Folsom, Manager, Art and Education Systems)
- The Metropolitan Museum of Art (Matt Morgan, General Manager for the Web)
- Minneapolis Institute of Art (Willy Lee, Webmaster)
- Minnesota Digital Library (Scott Sayre, MDL Steering Committee)
- San Francisco Museum of Modern Art (Peter Samis, Associate Curator, Interpretation)
- Rubin Museum of Art (Helen Abbott, Publisher and Head of Print and Electronic Information)
- University of California, Los Angeles (Jonathan Furner, Associate Professor, Graduate School of Education and Information Studies)
- Walker Art Center (Robin Dowden, Director, New Media Initiatives)

Principal representatives will be responsible for representing their institutions in all general project discussions, including the project planning and application development phase. Each of the principal representatives will recruit appropriate staff from their institutions to participate in the activities pertaining to their local installation of the steve tools: staff will be called on to support content development, installation, testing, evaluation, and community outreach activities. All members of the project team have the full support of their museums to commit time and expertise to the collaboration. Most museum professional time required for the project is contributed as cost-sharing, with the exception of developer time. A complete list of project team members from the participating institutions is attached as an appendix.

In addition to the formal project partners, some of the New Media Consortium's museum members will implement the steve tools. A concentration of NMC museum members in Texas has been identified as a testbed for the implementation and use of the steve tool set.

Advisory Committee

The project team will consult periodically with an international Advisory Committee of experts in social software, museum and library informatics, and museum education and technology. The Committee's goal will be to ensure that tools practices developed by the project team are, to the extent practicable, broadly applicable to multiple collection types, interoperable with existing or emerging standards or other social software applications, and easy to implement. Committee members will be formally invited to join the Committee if funding is granted, but colleagues who have agreed, in principle, to participate include: Sebastian Chan (Powerhouse Museum); Ron Daniel (Taxonomy Strategies); Steve Gano (American Museum of Natural History); Matthew MacArthur (National Museum of American History, Smithsonian Institution); Judith Klavans (University of Maryland Department of Computational Linguistics); and George Oates (Flickr).

Consultants

A distinguished team of consultants will work with the Project Director and other project team members on evaluation activities and dissemination strategies.

Kate Haley Goldman (Senior Research Associate, Institute for Learning Innovation) will develop a methodology for and supervise the evaluation of the institutional implementations. Haley Goldman's work concentrates on furthering theory and practice of the use of technology for personal learning. She has worked on dozens of learning-based evaluation and research projects including museum projects involving mobile phones, Web sites, augmented and mixed reality, novel data visualization systems, and online workshops. Her current research priorities include investigation into the long-term impact of museum visits, the impact of changing technology on personal learning, and the nature and context of learning in online environments, including the uses of user-generated content and Web 2.0.

Scott Sayre (Principal, Sandbox Studios) will develop and implement a training strategy for the "Making Steve Easy" activities, working with a group of Minnesota Digital Library partners to test the installation and implementation of the steve tools in small historical society settings and with a variety of collection types. Sayre has more than fifteen years of experience in guiding museums to select, develop, and apply educational and business technologies. Prior to founding Sandbox Studios, Sayre served as the Art Museum Image Consortium's Director of Member Services and US Operations, and as Director of Media and Technology at the Minneapolis Institute of Arts, where he formed and led the museum's Interactive Media Group in the development of ArtsConnectEd.org, the Institute's Web site, and interactive multimedia programs installed in the museum's galleries.

David Bearman and Jennifer Trant (Principals, Archives and Museum Informatics) will continue their long-time association with the steve project as communications consultants. They will work closely with the Project Director to frame questions about the institutional implementations of the steve tools that will inform the development of the deployment environments; they will review results of the institutional implementations and provide feedback about how these results might be interpreted in order to be most useful to the museum and cultural heritage at large. Bearman and Trant will bring their in-depth knowledge of the 2006-08 steve research project to their consulting work in this phase of steve's work; Trant is the research project's Principal Investigator and Project Manager, and has written and spoken extensively on the steve project and social tagging.

5. Dissemination

The steve collaboration has relied on transparent and inclusive working methods; our goal since the project was formed has been to involve members of the community at large in an open, ongoing consideration of our work. This philosophy allows other organizations and individuals, who may lack the resources or institutional buy-in to partner fully with us now, to follow and even inform our progress. In the next year, we plan to continue—in fact, to expand—our role as a nexus for discussion about social tagging (and other types of social software) in the museum, library, and archive community. We also hope to continue a mutually-beneficial conversation with the researchers who have engaged with us during the course of our IMLS-funded research work; we are proud to have found a way to use this project to bridge a sometimes formidable gap between the academic community and museum practitioners.

Web Site and Mailing Lists

The project takes advantage of several electronic information streams to communicate with the diverse communities who participate in or follow our work. Our main project Web site (at www.steve.museum) is the central distribution point for project documentation, including presentations, papers, specifications, methodology reports and project plans, schedules, and the public archive of our public discussion lists. The Web site, which is collaboratively authored by members of the project team, is scheduled for a Spring 2008 relaunch (with a new look and feel, updated documentation, and new "Forums" and "News" sections). Concurrent with the site relaunch, we plan to replace the project's two public mailing lists (steve.discuss and steve.tech, with 270 and 62 members, respectively) with online Forums, some with more focused approaches to some of the topics that are of interest to our subscribers.

Conferences and Papers

Members of the steve project team have been in demand as speakers about social tagging and folksonomy at conferences in the U.S. and abroad. We have discussed the project at museum and library conferences throughout the United States as well as in the United Kingdom, Sweden, the Netherlands, Australia, New Zealand, and China. The team has presented well-attended project updates each year at Museums and the Web (MW), and Museum Computer Network (MCN), the key annual conferences for museum technology professionals. We have offered workshops on the project at the annual meetings of the American Association of Museums and CIDOC, the International Committee on Documentation. If the current proposal is funded, we will continue to provide project updates at MW and MCN (which also serve as venues for open working meetings of the project team and others who are interested in the work), and will also present at conferences of user groups, such as the Visual Resources Association (VRA), the Coalition for Networked Information (CNI), and the College Art Association (CAA), and the New Media Consortium (NMC). Team members have, and will continue to, publish papers on the results of our research; a selected bibliography accompanies this proposal; it demonstrates the significant contribution that the steve research has already made to our community's understanding of access to museum collections and to the nature of social tagging and folksonomy, as well as to collaborative working methodologies.

Distribution of Open Source Software and Raw Data

The steve tagger software is made available under terms of the GNU Lesser General Public License (LGPL). It is freely downloadable at <http://sourceforge.net/projects/steve-museum>; the steve team has committed to making updated releases of the software on the SourceForge site to reflect changes to the code. Other methods and tools developed during the project to support data collection and analysis will also be made available online under open-source licenses. Raw data, including tags and anonymized metadata, will be made available to researchers through the data repositories at the University of Michigan (ICPSR) and Princeton (CPANDA).

6. Sustainability

Our project anticipates the widespread adoption of social tagging tools and methods in the cultural heritage community, and takes steps to support this potentially significant realignment in museum practice. The models we will demonstrate during the course of the three-year project will provide meaningful, practical examples of the benefits (as well as the pitfalls) of social tagging as a means of enhancing online access and fostering visitor engagement with collections. The tools and documentation that we will produce will provide a permanent reference resource for others who may be considering the implementation of tagging on their Web sites or in their galleries. Techniques for integrating the steve tagging tools with standard museum information management systems (collections management systems, content management systems, and digital asset management systems) will enable organizations to store and manage tag data on a permanent basis. The steve Web site, hosted by the Indianapolis Museum of Art, will remain accessible as a locus for the exchange of information and experience, and as a permanent repository of project documentation.

Institutional Adoption of Tagging

Museums and other cultural heritage institutions have been slow to adopt social software tools. Occasionally, their reluctance has been based on unfamiliarity with the technologies that underlie the tools; sometimes, curators and others charged with the authoritative cataloguing of their collections express concern about misinformation that might be associated with their works through inaccurate user description. For the eight museum partners who will formally join the project, the research done by the steve team in 2006-08 has provided a level of comfort with social tagging that allows them to commit to adding the steve tools and methods to their professional practices. The implementation of tagging tools in these eight institutions (as well as in dozens of Minnesota Digital Library organizations and New Media Consortium Texas museums) will equip a cadre of young museum professionals with the knowledge and skills to help others in the community think about and deploy social software tools in the future.

7. Selected Bibliography: Publications by Project Team Members about Steve

Bearman, D., and Trant, J. (2005). Social Terminology Enhancement through Vernacular Engagement: Exploring Collaborative Annotation to Encourage Interaction with Museum Collections. *D-Lib Magazine*, 11(9).

Chun, S., Jenkins, M., & Stein, R. "Open Source, Open Philosophy: New Models for Museums" in *The Digital Museum: A Think Guide* (Herminia Din and Phyllis Hecht, editors). Washington: American Association of Museums, 2007.

Ellis, D., Jenkins, M., Lee, W., and Stein, R. (2008). Agile Methods for Museum Project Management. Paper accepted for presentation at Museum and the Web Meeting, Toronto, 2008.

The Metropolitan Museum of Art, Indianapolis Museum of Art, Chun, S., Stein, R., & Trant, J. (2006). Researching Social Tagging and Folksonomy in Art Museums: U.S. Institute of Museum and Library Services (IMLS).

Trant, J. (2006a). Exploring the potential for social tagging and folksonomy in art museums: proof of concept. *New Review of Hypermedia and Multimedia*, 12(1), 83- 105.

Trant, J. (2006b). Social Classification and Folksonomy in Art Museums: early data from the steve.museum tagger prototype. Paper presented at the Advances in Classification Research, Volume 17; Proceedings of the 17th ASIS&T Classification Research Workshop. From <http://www.archimuse.com/papers/asist-CR-steve-0611.pdf>.

Trant, J. (2006c). Understanding Searches of an On-line Contemporary Art Museum Catalogue. A Preliminary Study: Fall 2006.

Trant, J., Bearman, D., and Chun, S. (2007). The eye of the beholder: steve.museum and social tagging of museum collections. Paper presented at the International Cultural Heritage Informatics Meeting - ICHIM07: Proceedings, Toronto, Ontario, Canada.

Trant, J., & Wyman, B. (2006). Investigating social tagging and folksonomy in art museums with steve.museum. Paper presented at the World Wide Web 2006 (WWW2006): Collaborative Web Tagging Workshop. From <http://www.archimuse.com/research/www2006-tagging-steve.pdf>.

Wyman, B., Chun, S., Cherry, R., Hiwiler, D., and Trant, J. (2006). Steve.museum: An Ongoing Experiment in Social Tagging, Folksonomy, and Museums, in J. Trant and D. Bearman (eds.). *Museums and the Web 2006: Selected papers from an international conference*. Toronto: Archives & Museum Informatics, 2006.

BUDGET FORM - PAGE FOUR

Section B: Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages			
2. Fringe Benefits			
3. Consultant Fees			
4. Travel			
5. Supplies and Materials			
6. Services			
7. Student Support			
8. Other Costs			
TOTAL DIRECT COSTS (1–8)			
9. Indirect Costs			
TOTAL COSTS (Direct and Indirect)			

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS

2. Cost Sharing:

 a. Cash Contribution

 b. In-Kind Contribution

 c. Other Federal Agencies*

 d. TOTAL COST SHARING

3. TOTAL PROJECT FUNDING (1+2d)

% of Total Costs Requested from IMLS

* If funding has been requested from another federal agency, indicate the agency's name:

#	Task	Start	End	Days	Q4 - 2008			Q1 - 2009			Q2 - 2009			Q3 - 2009			Q4 - 2009			Q1 - 2010			Q2 - 2010			Q3 - 2010			Q4 - 2010			Q1 - 2011			Q2 - 2011			Q3 - 2011		
					Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep
1	Project Management	10/1/2008	9/1/2011	761	[Teal bar]																																			
1.1	Confirm Project Team Assignments	10/1/2008	11/1/2008	23	[Grey bar]																																			
1.2	Create and Distribute Schedules	10/1/2008	11/1/2008	23	[Grey bar]																																			
1.3	Complete agreements with Contractors	10/1/2008	11/1/2008	23	[Grey bar]																																			
1.4	Kick-off Meeting, Project Team (at MCN)	11/1/2008	12/1/2008	20	[Grey bar]																																			
1.5	Annual Meeting, Project Team	7/1/2009	8/1/2011	543	[Green bar]																																			
1.5.1	Annual Mtg 2009	7/1/2009	8/1/2009	23	[Grey bar]																																			
1.5.2	Annual Mtg 2010	7/1/2010	8/1/2010	22	[Grey bar]																																			
1.5.3	Annual Mtg 2011	7/1/2011	8/1/2011	21	[Grey bar]																																			
1.6	Weekly Meeting, Lead Team	10/1/2008	9/1/2011	761	[Grey bar]																																			
1.7	Weekly Meeting, Dev Team	10/1/2008	9/1/2011	761	[Grey bar]																																			
1.8	Monthly Meeting, Project Team	10/1/2008	9/1/2011	761	[Grey bar]																																			
2	Application Development	11/1/2008	4/1/2011	629	[Teal bar]																																			
2.1	Specification and Research	11/1/2008	5/1/2009	129	[Green bar]																																			
2.1.1	Draft and circulate initial requirements documents (entire project team)	1/1/2009	3/1/2009	42	[Grey bar]																																			

Task ID	Task Name	Start Date	End Date	Duration	Progress
4.1.3	Studies Updates: NMC	6/1/2009	7/1/2011	22	100%
4.1.3.1	NMC2009	6/1/2009	7/1/2009	22	100%
4.1.3.2	NMC2010	6/1/2010	7/1/2010	22	100%
4.1.3.3	NMC2011	6/1/2011	7/1/2011	22	100%
4.2	Project Web Site	10/1/2008	9/1/2011	761	100%
4.2.1	Post project description	10/1/2008	11/1/2008	23	100%
4.2.2	Update project documentation and post news	10/1/2008	9/1/2011	761	100%
4.2.3	Project Team listservs	10/1/2008	9/1/2011	761	100%
4.2.4	Public Forums	10/1/2008	9/1/2011	761	100%
4.3	Software and Data Releases	3/1/2009	9/1/2011	653	100%
4.3.1	Publish/update software roadmap	3/1/2009	10/1/2010	414	100%
4.3.1.1	Update #1	3/1/2009	4/1/2009	22	100%
4.3.1.2	Update #2	9/1/2010	10/1/2010	22	100%
4.3.2	Software release	9/1/2009	10/1/2011	544	100%
4.3.2.1	Version 1.0	9/1/2009	10/1/2009	22	100%
4.3.2.2	Version 2.0	9/1/2010	10/1/2010	22	100%
4.3.2.3	Version 3.0	8/26/2011	10/1/2011	26	100%
4.3.3	Data release	5/1/2010	9/1/2011	348	100%
4.3.3.1	Data 1.0	5/1/2010	6/1/2010	21	100%
4.3.3.2	Data 2.0	8/1/2011	9/1/2011	23	100%
4.4	IMLS Reporting	4/1/2009	9/30/2011	652	100%
4.4.1	6-month Status Reports	4/1/2009	5/1/2011	543	100%
4.4.1.1	6 month #1	4/1/2009	5/1/2009	22	100%
4.4.1.2	6 month #2	10/1/2009	11/1/2009	22	100%
4.4.1.3	6 month #3	4/1/2010	5/1/2010	22	100%

