



Design principles for crowdsourcing cultural heritage

Donelle McKinley

donelle.mckinley@gmail.com

@nonprofitcrowd / nonprofitcrowd.org

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Table of Contents

Introduction	3
Design Principles for Crowdsourcing Cultural Heritage	4
1. Provide clear, concise and sufficient task instruction	5
2. Show how project output is freely accessible to the public	6
3. Keep content current	7
4. Minimize the effort to contribute	8
5. Prioritize key information	9
6. Minimize user error	10
7. Enable users to review contributions	11
8. Clearly identify tasks	12
9. Present reasons to contribute	13
10. Provide task options	14
11. Simplify the task	15
12. Design is attractive to users	16
13. Acknowledge participation	17
14. Encourage users to engage with the collection	18
15. Display project progress	19
16. Convey a sense of community	20
17. Convey the credibility of the project	21
18. Support community interaction	22
19. Publicly recognize contributions	23
20. Support content sharing	24
21. Convey a sense of fun	25

Introduction

As part of my doctoral research (2013-2016) I developed a set of 21 principles to guide the design and evaluation of websites for crowdsourcing cultural heritage (CCH). The principles focus on supporting volunteer participation and quality contribution, and supplement generic principles for website usability.

The design principles are ranked from the most to least influential on participation and/or contribution quality. Rankings are based on the results of a questionnaire completed by 251 prospective, former and current CCH volunteers.

Research methods used to develop the design principles include literature review, inspections of a purposive sample of twenty websites for CCH, the online questionnaire, and review by seven CCH practitioners.

These principles draw and build on studies on highly interactive websites (Petrie & Power, 2012), online community design (Kraut & Resnick, 2012; Preece & Shneiderman, 2009), crowdsourcing (Howe, 2009), citizen science (Jennett & Cox, 2014), and crowdsourcing cultural heritage (Hansen et al., 2013; Holley, 2009, 2010; Lascarides, 2012; Liew, 2015; McKinley, 2012, 2013; Romeo & Blaser, 2011).

For more information about the study please see:

<http://nonprofitcrowd.org/crowdsourcing-design-theory/>

Design Principles for Crowdsourcing Cultural Heritage

1. Provide clear, concise, and sufficient task instruction
2. Show how project output is freely accessible to the public
3. Keep content current
4. Minimize the effort to contribute
5. Prioritize key information
6. Minimize user error
7. Enable users to review contributions
8. Clearly identify tasks
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20. Support content sharing
21. Convey a sense of fun

1. Provide clear, concise and sufficient task instruction

Websites for crowdsourcing cultural heritage support participation and contribution quality by providing clear, concise and sufficient task instruction.

Explanation: Task instruction should be concise and easy to follow so as to not overwhelm the user, but sufficiently detailed to enable users to complete the task efficiently and effectively. Terms, abbreviations and interactive elements should be clearly explained, and jargon should be avoided.

Benefits: New visitors should be able to start contributing within a short space of time, and contributors should be able to work independently and with confidence. A diverse group of users with varying levels of skill, knowledge, and available time should be supported by instruction delivered in various formats.

Examples of compliance with this principle:

- Task instruction may begin with an overview of task workflow, using video tours of the task interface, instructive graphics, step-by-step tutorials or demonstrations.
- Incorporating step-by-step instructions or hover/pop-up instructive text into the task interface can support new contributors.
- More detailed instruction in the form of written guidelines and help documentation, FAQs, screenshots and examples, knowledge bases, or forums can support contributors requiring additional guidance.

2. Show how project output is freely accessible to the public

Websites for crowdsourcing cultural heritage support participation by showing how project output is (or will be) freely accessible to the public.

Explanation: Types of project output include original, transcribed, corrected and enhanced content; metadata; structured or synthesized data; digital collections; and curated content. Project output should be made accessible as soon as possible; if project output is not immediately accessible, the website should explain when it will be accessible.

Benefits: Proof of free public access to project output encourages new website visitors to contribute, although this may be more influential on the decisions of users who have previously contributed to websites for CCH than for users who have not. Seeing the result of their contribution in the public domain gives contributors a sense of satisfaction, and may encourage them to contribute more.

Examples of compliance with this principle:

- The incorporation of or links to a searchable database.
- Interactive visualizations of project output.
- Access to application programming interfaces (APIs).
- Promotion of work that uses project output.

Charging users for access to project output is an example of non-compliance.

3. Keep content current

Websites for crowdsourcing cultural heritage support participation by keeping content current.

Explanation: Time stamping should indicate that website content is up to date and that the website is active. Cultural heritage assets should be available for processing, except in the case of websites requiring contributors to record/create content, for which this may be of limited relevance.

Benefits: Evidence that the site is active encourages users to contribute, and ensuring that assets are available for processing means that users can contribute at their convenience, which encourages them to return to the site.

Examples of compliance with this principle: Websites may use text or visual elements to alert users to assets recently uploaded to the site. Examples of time stamped content include integrated social media posts, project updates, webpage footers, and discussion of upcoming events.

Time-stamped content that suggests inactivity is an example of non-compliance.

4. Minimize the effort to contribute

Websites for crowdsourcing cultural heritage support participation by minimizing the effort to contribute.

Explanation: Websites should minimize the necessity for users to provide the same information more than once, and not demand excessive effort when tasks could be achieved more efficiently by the system.

Benefits: Enabling users to perform tasks effectively and efficiently encourages new users to continue contributing, and established users to make large and/or frequent contributions.

Examples of compliance with this principle:

- Allowing users to contribute without registering, making registration optional, or simplifying registration/login by incorporating existing user accounts for web applications such as Google, Twitter or Facebook.
- Prioritizing components of the task and allowing contributions to meet minimal requirements.
- Auto-save functionality.
- Automatic completion of data fields based on previous contributions.
- Automatically directing users to the next step of the task.
- Enabling users to save and return to their work in a new session.

Examples of non-compliance:

- An unintuitive sequence of interaction, and confusing or interrupted workflows.
- Absence of the interactive functionality users need and expect, such as image magnification.
- Requiring excessive effort to successfully manipulate digitized text or images.
- Unclear or difficult input formats.

5. Prioritize key information

Websites for crowdsourcing cultural heritage support participation by prioritizing key information.

Explanation: Key information should be prominently displayed on the homepage, using a clear visual hierarchy based on the importance of information. Key information includes a specific and challenging project goal; an invitation to participate; the value proposition, which implies a mutually beneficial exchange between the project host and contributors; and a call to action.

Key information should be conveyed in simple, concise language that is crafted for the target crowd; for example, the invitation to participate is commonly framed as helping the institution, and the call to action is presented as a direct question or imperative.

Benefits: Prioritizing key information enables new visitors to quickly understand the purpose of the website, and how and why they should participate. Clearly displaying a hyperlinked call to action also speeds up the process for returning visitors, who can start contributing immediately.

Examples of compliance with this principle:

- Key information is displayed in the top left-hand corner of the homepage or above the fold.
- Project names and taglines may be used to convey the nature of user contribution.
- Information is presented using headers, centred text, bullet lists, graphics, images, video and slideshows.
- The call to action is commonly presented as a button, but can also be clearly identified using bold coloured text or navigation menu titles, and reinforced by repeating at the bottom of the homepage.

Examples of non-compliance:

- Calls to action are below the fold or obscured in body text.
- Requiring users to search for and click to display key information.
- Prioritizing explanations of how project output is being used over the need for user contribution.

6. Minimize user error

Websites for crowdsourcing cultural heritage support contribution quality by minimizing user error.

Explanation: Where feasible, the website should alert the user to actual errors, such as incorrect data formatting, required data entry fields that are incomplete, or spelling errors. Websites that assign the same task to multiple users, and rely on computational algorithms for quality control, should explain this to users to allay concerns about potential error.

Users should be able to flag potential error, which may be due to the low standard of the digitized asset being worked on, or insufficient knowledge or skill to complete the task with confidence (this may be of limited relevance when users are recording/creating content, providing contextual information, or correcting/modifying content).

Benefits: Minimizing task error reduces the necessity for editorial intervention by the project team, and contributors feel confident about the contributions they submit.

Examples of compliance with this principle:

- Diagnostic tasks or sandboxes for new contributors.
- Tools for standardization such as calendars for date formatting, automated capitalization, and authority control/controlled vocabulary in the form of drop-down lists or predictive text.
- Automatic reminders.
- Informative error messages.
- Summaries or previews of contributions that encourage review prior to submission.
- Users can skip or flag difficult or ambiguous assets.
- Users can navigate to a previous step in the task for editing purposes.

7. Enable users to review contributions

Websites for crowdsourcing cultural heritage support contribution quality by enabling users to review contributions that have been submitted.

Explanation: Reviewers may be contributors, users of project output, or any website visitor.

Benefits: Providing users with the option of starting new tasks or reviewing submitted tasks allows them to contribute in a way that best utilises their available time, knowledge and skills. Enabling users to refer to their previous contributions encourages consistency; and editing, enhancing and correcting their own work gives contributors a more satisfying user experience. Reviewing other contributors' work promotes a sense of community, and contributors concerned about accuracy are reassured that their work will be reviewed.

Examples of compliance with this principle: The review process may involve approving, enhancing, editing, correcting, annotating or flagging contributions following initial submission. Alternatively, websites may assign the same task to multiple users and employ computational algorithms to determine the accuracy of contributions. Websites should enable users to contact the project team with information or concerns about tasks submitted.

8. Clearly identify tasks

Websites for crowdsourcing cultural heritage support participation by clearly identifying tasks.

Explanation: Websites should clearly identify the individual tasks to be started, completed and/or reviewed, by automatically displaying them to users, or providing easy to use navigation tools.

Benefits: Visitors should be able to start contributing within a short space of time, and websites should help contributors to maintain momentum and contribute more.

Examples of compliance with this principle:

- Organising tasks using lists, categories, or grid displays.
- Identifying tasks using flags, ticks, arrows, or icons.
- Displaying the level of completion against each task (e.g. percentage, progress bars)
- Incorporating a call to action in the site navigation or on individual collection item pages.

Making it difficult or time-consuming for the user to identify tasks, such as requiring the user to scroll lengthy webpages, is an example of non-compliance.

9. Present reasons to contribute

Websites for crowdsourcing cultural heritage support participation by presenting reasons for visitors to contribute.

Explanation: Reasons given should align with likely motivations to contribute, such as the significance of the project goal, the size of the challenge, the necessity for volunteer contributions, and how project output will be used. Other common motivations include interaction with interesting content, the opportunity to learn something new, joining a community, collaboration with prestigious institutions, personal recognition, forthcoming events, and the ease and enjoyment of participation.

Benefits: Presenting reasons to contribute helps visitors to quickly and easily determine whether the project entails mutual benefit, and reflects their motivations to participate.

Examples of compliance with this principle: The website may use positive and emotive terms to describe the nature of the collection, emphasize the value of project output, and describe the contributor experience.

Specific examples include:

- Using headers such as “Why this matters” and “How your contributions help”;
- Describing the type of people who will benefit from project output;
- Presenting scenarios illustrating how people will be able to use project output, or linking to evidence of how project output is being used;
- Describing a forthcoming event related to the project, such as a centenary, and specifying the number of assets to be processed before that time;
- Being explicit about connecting and collaborating with the host institution;
- Explaining the necessity for contribution;
- Inviting visitors to join the community;
- Listing the kind of research questions that contributions will help to answer, and explaining how contributors are part of the research process;
- Describing the types of people who will find it interesting to contribute;
- Promoting accessibility and enjoyment;
- Explaining how contributions will be recognised.

10. Provide task options

Websites for crowdsourcing cultural heritage support participation and contribution quality by providing task options.

Explanation/examples of compliance: Users can select tasks based on criteria such as type of asset, task or process; subject/theme; level of difficulty; collection item; collecting institution; or stage of task completion.

Websites that randomly display assets to be processed should enable users to skip to the next asset, and websites that do not provide this option should explain the rationale. The provision of task options may be less relevant for websites used to record/create content.

Benefits: Enabling new visitors to select tasks that reflect their interests, level of expertise or available time encourages them to contribute. Providing contributors with task options encourages continued participation, and supports contributions of a high standard.

11. Simplify the task

Websites for crowdsourcing cultural heritage support participation and contribution quality by simplifying the task.

Explanation: Cultural heritage assets may be processed as small components; for example, a digitized text document may be presented as individual pages, sections, visual elements, or lines of text. Task simplification should not undermine the user's ability to view any contextual information necessary to complete the task, such as the preceding section of text.

Benefits: New visitors are encouraged to contribute when tasks appear manageable, and simplifying tasks helps contributors to submit high quality work.

Examples of compliance with the principle:

- Expanding sections to give users an overview of the task;
- Presenting different stages of the task over several pages;
- Providing users with distinct data input fields for entering information;
- Highlighting the stage of the task being worked on using visual cues.

12. Design is attractive to users

Websites for crowdsourcing cultural heritage support participation by being attractive to users.

Explanation: Attractive websites employ clean and consistent design; include interesting content; are well-organized, highly visual and aesthetically pleasing to users.

Benefits: Clean design ensures that no superfluous elements impede visitors from receiving key information and performing the task. Consistent design and navigation minimizes friction and ensures that visitors do not become disoriented or confused. A site that appears professionally designed increases visitor expectations about the probability of project success.

Websites that are attractive encourage new visitors to spend time on the site, and positively influence the decision to contribute. An attractive website contributes to a satisfying user experience, which incentivizes users to return to the site and contribute more.

Examples of compliance with this principle:

- Generous use of space
- Keeping primary navigation options to a minimum
- Large headers and easy to read font
- Webpages that present all content above the fold
- Conveying a sense of immersion
- Up to date design elements
- Static or dynamic images, graphics, data visualizations
- Slideshows, a grid of collection images
- Themed backgrounds, videos on the homepage

Examples of non-compliance:

- Webpages that are busy, text heavy, and feel daunting to visitors.
- Inconsistent or confusing navigation, which may be the result of integrating crowdsourcing functionality into an existing website or using a multi-purpose platform.

13. Acknowledge participation

Websites for crowdsourcing cultural heritage support participation by acknowledging user participation.

Explanation: User participation may encompass registration, completion of steps in the task, task completion, task submission, and cumulative contributions. Feedback on user participation is always positive, and may take the form of text or visual indicators.

Benefits: Acknowledging participation encourages new visitors to complete a task, and users to contribute more.

Examples of compliance with this principle:

- Thanking the user for tasks completed and inviting them to contribute more
- Acknowledging the user's contribution to the goal
- Updating individual progress indicators

14. Encourage users to engage with the collection

Websites for crowdsourcing cultural heritage support participation by encouraging users to engage with the collection.

Explanation: Engagement refers to reading, browsing, searching, and returning to cultural heritage collection-related content.

Benefits: Stimulating interest in and promoting a sense of collaboration with the collecting institution encourages new visitors to contribute, and contributors to continue participating.

Examples of compliance with this principle:

- Displaying images of all collection items being processed
- Featuring collection items in a prominent place, such as the homepage
- Describing highlights of the collection
- Online exhibitions
- Displaying collection item metadata
- Linking to related content
- Displaying stories about the collection and collection items, which may be in the form of blog posts integrated with the site
- Sharing stories about collection items from contributors and output users.
- Enabling user curation, such as the selection of favourite collection items
- Enabling users to download digitized collection item files

15. Display project progress

Websites for crowdsourcing cultural heritage support participation by displaying project progress.

Explanation/examples: Statistics and progress bars are commonly used to display evidence of user contributions in relation to the project goal. When the rate of participation is low, acknowledging each new volunteer or contribution may be a more favourable signal of progress than showing the number or percentage of assets processed.

Benefits: Evidence of activity and progress contributes to an expectation of project success, which encourages new visitors to contribute. Displaying project progress also contributes to a sense of achievement, and encourages users to contribute more.

16. Convey a sense of community

Websites for crowdsourcing cultural heritage support participation and contribution quality by conveying a sense of community.

Explanation: The project community is comprised of contributors and the project team, and may include users of project output.

Benefits: A visitor's decision to contribute may be positively influenced by the prospect of belonging to a community, and by the presence of other people, which raises expectations of project success. Users who are motivated by being part of a community may submit higher quality contributions due to a sense of commitment, and return to contribute more.

Examples of compliance with this principle:

- Emphasizing the collaborative nature of the project
- Inviting contributors to register, and displaying contributor names or handles
- Displaying contributor profiles
- Evidence of community interaction
- Displaying welcome messages to new contributors
- Publicly acknowledging new contributors
- Publicly displaying community announcements, such as project news, progress updates and new website features
- Linking to related crowdsourcing communities.

A website that does not convey a sense of community to users, despite techniques employed with a view to achieving this, is an example of non-compliance.

17. Convey the credibility of the project

Websites for crowdsourcing cultural heritage support participation by conveying the credibility of the project.

Explanation: Credibility refers to trust in the value of the project and its sustainability, and information security. Conveying the credibility of the project may be more influential on the participation of visitors unfamiliar with websites for CCH, than people who have visited or contributed to such websites before.

Benefits: Assuring new visitors that the time and effort required to contribute will be well spent, and that any personal information they provide will be secure, encourages them to contribute.

Examples of compliance with this principle:

- Displaying host institution logos
- Displaying a list of supporting institutions
- Evidence of financial support
- Names and photos of the project team
- Displaying the number of people who have contributed to the project
- Linking to offline project events
- Displaying project awards
- Evidence of external publicity by third parties
- Evidence of project support on social networks
- Contributor profiles
- Testimonials from project output users.

18. Support community interaction

Websites for crowdsourcing cultural heritage support participation and contribution quality by supporting community interaction.

Explanation: The project community is comprised of contributors and the project team, and may include users of project output. The primary purpose of enabling interaction is to inform, support, and gather queries and feedback from contributors. If community interaction is intentionally unsupported, the website should explain the reason for this.

Benefits: A visitor's decision to contribute may be positively influenced by the prospect of belonging to a community, and the knowledge that support will be provided. Interactions that support contributors with questions or concerns better enables them to submit quality contributions. Contributors can provide feedback to the project team, which may help to improve the user experience, and in turn incentivize them to return and contribute more.

The ability to interact with the project community may be more influential on the decision to contribute for visitors unfamiliar with websites for CCH than for people who have visited or contributed to such websites before.

Examples of compliance with this principle:

- Displaying a project email address
- Enabling users to subscribe to project newsletters
- Integrating social networks, blogs and discussion forums
- Comment functionality
- Feedback forms
- Enabling users to send private messages between them, join user groups, and add other users as friends.

19. Publicly recognize contributions

Websites for crowdsourcing cultural heritage support participation and contribution quality by publicly recognizing the contributions of individual users.

Explanation: Websites may allow users to choose whether their contributions are publicly recognized.

Benefits: Publicly recognizing completed tasks or contributions is an incentive to participate for users motivated by recognition or competition.

Examples of compliance with this principle:

- Publicly displaying the number of tasks completed by individuals
- Linking user identifiers to project output
- Displaying a list of users who have most recently completed tasks

20. Support content sharing

Websites for crowdsourcing cultural heritage support participation by enabling users to share website content.

Explanation: Incorporating sharing functionality encourages users to share their project experiences and collection items of interest with people outside the community, and invite them to participate.

Benefits: Receiving an invitation to participate from someone they know is an incentive for new visitors to contribute, and working alongside people they know outside the project community is an incentive for users to continue contributing.

Examples of compliance with this principle:

- Incorporating email and social network functionality into the task interface, blog posts, discussion forums, and the collection database. A message to users, encouraging them to invite friends to the project, may be displayed alongside sharing functionality.
- Encouraging users to share webpage URLs, links to digitized collection items, and downloadable project promotion material.
- Encouraging users to embed promotional project videos or other website content in their personal online spaces by providing them with website code.

21. Convey a sense of fun

Websites for crowdsourcing cultural heritage support participation by conveying a sense of fun.

Explanation: Websites associate performing crowdsourced tasks with having fun.

Benefits: Visitors who find the site fun to use are more likely to contribute, and users are more likely to return and contribute more. A sense of fun may be more influential on the decision to contribute for visitors unfamiliar with websites for CCH, than for people who have visited or contributed to such websites before.

Examples of compliance with this principle:

- Using a light-hearted tone for webpage copy
- Using “fun” or similar terms to describe the task
- Entertaining narrative and humour
- Games
- Light-hearted music and graphics

Gamification involving comparative performance feedback may convey a sense of fun, but may not support participation in all cases.