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# 10 Most Wanted

Complex game-based crowdsourcing to enhance collections [metadata](#)

Research Report

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# Executive Summary

## Background

The idea for the project came from the Technology Partner, Adaptive Technologies Ltd. who, two years earlier, had made the website for the Museum of Design in Plastics. Phil Blume, the project leader, was surprised that many artefacts in the collection were missing important information because the designer or manufacturer was unknown. Since much of the collection is 20th century and these artefacts would have been commonplace around the home or office, he felt this made them good candidates for crowdsourcing this missing information. For a suitable crowdsourcing framework he recalled the FBI's *Ten Most Wanted Fugitives* initiative, which focuses the search on a selected group and encourages the public to send information in return for a reward.

The Museum of Design in Plastics welcomed the idea as it combined the opportunity to reach new audiences, enhance public engagement with the collections and provide useful outcomes.

In order to link the idea up with current research into crowdsourcing, Adaptive approached the Interactive Technologies Research Group at the University of Brighton. The group recognised that the 10 Most Wanted concept posed a number of interesting research questions and welcomed the opportunity to get involved in the project.

## The project

10 Most Wanted provides a game-based approach to crowdsourcing curatorial research concerning the discovery and verification of previously undocumented facts about collection items. Rather than presenting artefacts as removed from people's lives and explained only by experts, it encourages players of the game to find out and tell the experts what they know about the artefacts and what they mean to them.

The project addressed shared challenges across the arts sector such as developing and sustaining audience engagement, verifying and integrating user contributions with professionally curated content and acknowledging the copyright of contributors without blocking future re-use.

The presentation of the 10 artefacts, the game instructions, the player rankings, the collation of information and the storing of solved cases all takes place on the project website: [www.10most.org.uk](http://www.10most.org.uk).

Public discussion takes place on the Facebook group: 10mostinvolved. Comments and discussion also take place on Twitter: 10 Most Wanted. The comments from Facebook and Twitter are pulled into the 10 Most Wanted website homepage and filtered on to the individual artefact pages where Case Notes, written by the curators, summarize the salient points in the social media, and integrate them into an evidence trail under the museum's control.

Players are rewarded for the efforts gaining titles, stars and certificates and ultimately entering the Hall of Fame and becoming part of the 10 Most Wanted HQ staff.

While focusing in a first stage on plastic artefacts in the MoDiP collection, the approach and methodology are equally applicable to other contexts like identifying people and places in painted and photographic images or recording public narratives around historic buildings and monuments.

Guidelines, data and templates based on the project's experiences are being disseminated broadly for use by other arts organisations.

## Website & social media

Rather than make a sub-site of the MoDiP website, it was decided to make a separate website with its own URL and identity in order to avoid a conflict of brands between the two. A stand-alone site would also be easier to re-purpose for use by other museums and it contributes to the sense of 10 Most Wanted as being a resource open to all. Additionally It gives the developers freedom to make it in any way that works best without being concerned about breaking the main museum site.

It was decided to divide the functions into two:

1. The website would be a place for curators to manage the museum artefacts and store information discovered about them.
2. Existing social media channels would be used to host the conversations between curators and users.

It was felt sufficient challenge in making a website that would explain to users the rather unusual proposition without needing to re-invent social media as well, so it was decided to use existing social media tools and concentrate on making the connecting space that holds them together and defines the process and provides the branding.

Using the Facebook group as the discussion forum and the website as a repository works well because so much of the infrastructure is already in place and the potential social network is vast. It provides a system where users can simply turn up and make a contribution without being side-tracked by the need to join yet another members' space. It is also an economical solution that lessens the technical and financial requirements for other institutions wanting to use this methodology. It also provides a more flexible model for other museums to adopt, they could use the whole thing or just parts of it: the terms and conditions, or the methodology, or the lessons learned, or some combination of all three. Nonetheless it imposed a conceptual burden. It enabled contributors to the project to bypass the 10 Most Wanted website and therefore not fully comprehend its purpose.

## Results

Over 300 people registered with the 10 Most Wanted website, 43 people joined the Facebook group and 27 people contributed posts. In a period of 9 months, there were a total of 548 interactions including 76 'wanted' facts found and 76 images contributed. Those who provided them had an enriched involvement with the collection. Thus a new model for public engagement with collections is now available.

A formative evaluation found that the site's perceived user experience was slightly below its perceived usability. Both show room for improvement. Feedback from museum professionals was mixed: 50% of respondents were not entirely comfortable about crowdsourcing the documentation of collection artefacts and only 57% were comfortable with how 10 Most Wanted converts user-generated information into formal documentation. However, 75% thought the 10 Most Wanted approach useful for engaging people and were fulsome about the range of facts it

could be used to find out. Feedback also shows that while 60% of respondents have IPR policies in place, only 20% have a budget to deal with IPR issues, indicating that the creation of a re-usable IP model and template is a useful project outcome especially for smaller organisations.

## Lessons learned

The most important lesson this project has given rise to is awareness of the need for simple forums of this type that pose questions about modern cultural heritage and encourage those with unique knowledge to share it while they are still able to do so.

More specific lessons are:

- Separate website works well as it enables developer greater freedom, develops a brand for the approach, and makes reuse easier.
- Asking volunteers for a non-exclusive license to use submitted content respects their copyright without restricting future uses or interfering with other licensing models in use by the organisation
- A short form of the T&Cs as part of the sign-up procedure provides a well-defined checkpoint ensuring that all participants have read at least the short form and understood the basic principles before contributing content.
- If separate social media channels are used for posting public contributions make it clear how it will be used on another site.
- Curators have mixed feelings about the use of volunteer contributions and the method adopted for integrating them with collection metadata.
- Anecdotal evidence suggests the game aspects have been ineffective as a means to stimulate and sustain motivation.
- Intrinsically interesting objects generate deeper and more sustained engagement than topical objects relating to current trends or events.
- Facilitation by the museum is critical for nurturing the volunteer community, sustaining participation and turning contributions into evidence trails for collection metadata.

## Conclusion

The partners have nothing but praise for NESTA in bringing together arts, science and research partners in an eclectic mix that, at times, produced quite different views of the same situation. The project has given each of them broader horizons and better understanding of the cultural, technical and academic landscapes in which they operate.

There are no quick paths to discovery in this kind of project and it can take some time before those who hold the answer to a question are aware that it has been asked. With this in mind, the partners thank AUB for having the vision to continue to support the 10 Most Wanted initiative for another year.

Projects of this type are needed in many other areas of modern culture and heritage if the unique knowledge and insight that is available only from those who were there is not to be lost.

# 1. Background

## 1.1 Project partners



The Arts partner in the project is the Museum of Design in Plastics (MoDiP), a research resource at the Arts University Bournemouth and a fully accredited museum open to the public. The project was led overall by Professor Susan Lambert, Museum Head.



The Technology partner in the project was Adaptive Technologies Limited, which operates out of a heritage centre on the south coast where it specializes in delivering websites and web applications for galleries, museums and archives. The technical lead was Phil Blume, Project Manager.



The Research partner in the project is the Interactive Technologies Research Group in the School of Computing, Engineering and Mathematics at the University of Brighton. The principal investigators were Dr Lyn Pemberton, Reader, and Marcus Winter, Senior Lecturer.

## 1.2 The idea

The idea for the project came from the Technology Partner, Adaptive Technologies Ltd as a result of building the MoDiP website. Phil Blume, the project leader, was surprised by how little was known about so many objects in the collection with the result that many fields in their documentation were left blank. He felt that the very everydayness of the objects involved made them especially good candidates for crowdsourcing the missing information and conceived the idea of an online game inspired by the FBI's fugitives' initiative to encourage the public to work together to find the 'wanted' facts.

## 1.3 Benefits to partners

MoDiP welcomed the idea. The museum in its current form as a museum focused on design in plastics only came into being in 2007 and is therefore not well known. It is also physically extremely small and hard to reach. The proposed project had the potential to reach new, larger, and far-flung audiences and involve them in the collection in a new way. It also offered a sustainable means of outsourcing documentation, a highly time-consuming backroom activity in a curator's day.

Adaptive Technologies are keen to explore an overlap between the disorganised, spontaneous content of social media and the organised, curated content of a collections website. They wanted to encourage crowd-sourced contributions to problem solving and to organise these into a stream with both direction and purpose. In doing so they hoped to find new ways to enable cultural heritage organisations to attract a wider audience and to connect with it better.

The Interactive Technologies Research Group at the University of Brighton has a long history in researching content creation platforms in various contexts including formal and informal learning, location-based games and cultural heritage. Being familiar with problems around engagement and user-generated content, the group quickly recognised that 10 Most Wanted posed a number of interesting research questions. The project provided an excellent opportunity for the group to research these questions *in the wild* and contribute to the overall design of the platform.

## 1.4 Benefits to audiences

10 Most Wanted had the potential of reaching new general and specialist audiences and also of attracting a younger age group through player activities linked to the UK school curriculum and providing an enhanced experience with museum artefacts. It offered a mechanism for people far apart geographically but with a common interest to collaborate in researching museum objects in a way that is fun but also has serious intent and would be retained for posterity.

## 1.5 Benefits to the wider arts sector

An important aspect in the project was to develop 10 Most Wanted as a template that would benefit the wider arts sector rather than as a bespoke solution for MoDiP only. While the project involves details of plastic artefacts, the approach and methodology are equally applicable to other materials and contexts such as identifying people and places in images, recording public narratives around historic buildings and monuments or gathering backstories of poster campaigns, etc. With this in mind, the partners were clear from the start that findings, data and templates based on the project's experiences should be widely disseminated for use by other arts organisations.

# 2. The project

## 2.1 Overall research proposition

The concept is borrowed from the FBI's well-known Ten Most Wanted list, which focuses the search for criminals and asks the public for help. In a similar way, 10 Most Wanted aims to involve the public in the hunt for missing information about collection items and focuses attention on ten objects at a time out of MoDiP's vast collection. Additionally it turns the search into a game.

MoDiP makes 12,700 artefacts from its collections available on its website<sup>1</sup>, where visitors can browse, search and filter their linked metadata. As is the case with many museums, much of the collection's metadata is incomplete making it less useful than it could be. Due to the sheer size of the collection it would require a vast research effort to complete the metadata for every object in the collection, which is beyond MoDiP's financial and human resources.

10 Most Wanted aimed to address this problem by using the internet (a website and social media) to outsource work to a large number of individuals, a practice commonly known as *crowdsourcing*, a term coined by Jeff Howe (2006). An additional benefit of this approach is that it can help to engage new audiences, an aspect of importance for many collections. Crowdsourcing has been successfully used to tackle problems of scale in a wide range of domains and it is becoming increasingly popular in the arts and cultural sector (Dunn and Hedges, 2012). However, such projects usually ask the public to complete simple, discrete tasks

<sup>1</sup> <http://www.modip.ac.uk>

that can be completed by individuals and do not require specialist knowledge or long-term commitment.

By contrast, 10 Most Wanted applies crowdsourcing to the discovery and verification of previously undocumented facts about collection items, which involves open-ended, complex research tasks that require collaboration and sustained engagement. The overall research proposition in the project was therefore to design and build a platform for complex, game-based crowdsourcing and evaluate it in practice.

## 2.2 Main objectives

The main objectives were:

1. Develop the crowdsourcing platform and related facilitation practices covering the project website as the central hub to advertise objects, sign up players and document progress, as well as related social media and to communicate with players.
2. Develop suitable game mechanics, including the game vocabulary, concepts and rewards, to engage new players and sustain the engagement of existing players.
3. Develop a lightweight yet valid and professionally acceptable process to verify and integrate player contributions with collection metadata in order to fulfil the key purpose of the project.
4. Develop a suitable IP model and template that respects contributors' moral and legal rights while being flexible enough not to restrict future uses by the arts organisation.
5. Devise a suitable mechanism to obtain informed consent from participants giving enough detail to understand the basic model but without overwhelming them with legal details

## 2.3 Research questions

The detailed research questions are:

- RQ1. How should the game platform, support materials and facilitation practices be designed to support complex game-based crowdsourcing?
- RQ2. What are suitable processes to verify and integrate user-generated content into collections without compromising professional standards?
- RQ3. How can IPR aspects of integrating user-generated content into collections be addressed in a way that acknowledges contributors without blocking future re-use?
- RQ4. What are suitable ways to obtain informed consent from players concerning usage of their contributions by the institution without negatively impacting on the player experience?
- RQ5. What are suitable ways to develop participation and reach new audiences for the collection?

These research questions are not unique to 10 Most Wanted but relevant to any crowdsourcing effort involving game elements as a means to sustain motivation and volunteers contributing complex information to enhance collection metadata.

## 2.4 Methodology

Reflecting the generative and change-oriented aspects of the project, an iterative and user-centred approach was employed that informed the on-going development of the platform, support materials and facilitation practices through formative evaluations with experts and users. As the

project aims to develop and introduce a specific crowdsourcing model into MoDiP's wider engagement practices, the methodology draws on the Action Research paradigm (Greenwood and Levin, 1998; Dick, 2000) which is characterised by an iterative model developing theory and practice at the same time. With regard to developing the website as the core technological platform of 10 Most Wanted, the methodology draws on Design Research (March and Smith, 1995; Edelson, 2002; Vaishnavi and Kuechler, 2009), which is characterised by the iterative development and evaluation of a design artefact (the website) together with users and experts.

Specific research methods are described in the following sections.

### 2.4.1 Literature review

Relevance: Informs all research questions. [RQ1, RQ2, RQ3, RQ4, RQ5]

Description: A comprehensive literature review at the beginning of the project aiming to ground the project in theory and inform the design of all aspects of the developed platform, engagement and facilitation practices, game mechanics, IP models and process to integrate contributions with collection metadata.

Outcomes: The review resulted in a detailed list of design recommendations. While developed specifically for 10 Most Wanted, most of the guidelines are equally applicable to other game-based crowdsourcing efforts based on Heavy Weight Peer Production (HWPP) patterns of volunteer engagement (Haythornthwaite, 2009)

The literature review of game-based crowdsourcing is available [here](#).

### 2.4.2 IP model review

Relevance: Informs the integration of user-generated content with professionally curated collections while also covering other project outputs such as the developed software platform, templates and reports made available to other arts organisations. [RQ1, RQ2, RQ3, RQ4]

Description: A review of the literature on IP in crowdsourcing to better understand critical aspects related to user-generated content, multiple authorship and remediation of contributions. This also included a review of the Terms and Conditions of major crowdsourcing projects and social networks to get a better understanding of common practice.

Outcomes: The IP model review informed the 10 Most Wanted terms and conditions and the mechanism by which volunteers' informed consent is obtained.

The IP model review is available [here](#).

### 2.4.3 IP survey

Relevance: Informs the IP model and consent mechanism. [RQ1, RQ3, RQ4]

Description: In order to get a user-centred view on IP related aspects in the project a survey exploring potential user's mental models, expectations and preferences when submitting comments and other contributions to cultural institutions was carried out. The survey was based on 104 structured visitor interviews at Tate Modern,



Fabrica Art Gallery and Brighton and Hove Museums. Assuming a culturally interested target audience for 10 Most Wanted, museum visitors seemed an appropriate population for the survey.

**Outcomes:** The IP survey provided detailed insights on potential participants' views on content ownership, content reuse and informed consent.

The IP Survey report is available [here](#).

#### 2.4.4 Ideation and prototyping

**Relevance:** Informs the functionality and initial design of the website. [RQ1, RQ4, RQ5]

**Description:** In order to kick-start the design process, two user experience (UX) sessions were held with an experienced UX expert. The session used a wide range of standard UX methods to model users and their expectations and preferences, to analyse potential tasks they would carry out on the website and to analyse requirements for the system.

**Outcomes:** The UX sessions helped to inform the requirements analysis for 10 Most Wanted as well as the overall design and functionality of the website.

The method and outcomes are described in more detail at [here](#) and [here](#).

#### 2.4.5 Exploratory design sessions

**Relevance:** Informs the functionality and initial design of the website. [RQ1, RQ4, RQ5]

**Description:** Exploratory design sessions with potential users of the system were carried out in the early phases of the project. Participants were recruited from an existing network of volunteers working with the Technology partner. The aim of these workshops was to get an outsider's view of the project and what visitors might expect to find on the website.

**Outcomes:** The exploratory design sessions helped to inform the requirements analysis for 10 Most Wanted as well as the overall design and functionality of the website.

The method and outcomes of the exploratory design sessions are described [here](#).

#### 2.4.6 Survey group

**Relevance:** Informs the functionality and initial design of the game, website and consent mechanism. [RQ1, RQ4, RQ5]

**Description:** A survey group of 24 volunteers was used for dynamic ad-hoc consultations on specific design issues coming up during the on-going iterative development of the website. Issues raised with the survey group centred around user experience and usability, including the popularity of functions/features, problems and feature requests.

**Outcomes:** The survey group helped to help to inform the requirements analysis for 10 Most Wanted and to provide feedback on specific design decisions and alternatives on an ad-hoc and case-by-case basis.

The method and outcomes are described in more detail [here](#).

### 2.4.7 Expert evaluation

**Relevance:** Informs the design of the game, website and consent mechanism. [RQ1, RQ4]

**Description:** Once a first version of the 10 Most Wanted website was available, a heuristic evaluation with HCI experts was carried out. The aims of the evaluation were to inform the on-going iterative design and development of the website and help answer research questions relating to engagement and informed consent. In line with widely accepted recommendations on sample sizes for heuristic evaluations (Nielsen and Molich, 1990; Nielsen, 2000; Nielsen, 2012), the expert evaluation included five professionals, including three HCI experts and two web developers.

**Outcomes:** The evaluation resulted in numerical scores for the website indicating its compliance with various design heuristics covering home page usability, task orientation, navigation and information architecture, forms and data entry, trust and credibility, writing and content quality, page layout and visual design, multi-platform support and help, feedback and error tolerance. While it resulted in an acceptable overall score of 69% (i.e. the website complies with 69% of design heuristics), the evaluation clearly identified room for improvement. Some of these issues have since been addressed in subsequent iterations.

The expert review report is available [here](#).

### 2.4.8 Player survey

**Relevance:** Informs the design of the game, website and consent mechanism. [RQ1, RQ4]

**Description:** Complementing the inspection-based expert evaluation described above, an empirical evaluation was carried out involving actual and potential players of the 10 Most Wanted game. The aims of the evaluation were to inform the on-going iterative design and development of the game and website and help to answer research questions relating to engagement, IP and informed consent.

**Outcomes:** The website scored 56 on the Standard Usability Scale (Brooke 1996) and 52 on the Usability Metric for User Experience (Finstad, 2010), indicating substantial room for improvement with respect to usability and user experience. As many of the issues highlighted by the evaluation have since been addressed in subsequent iterations, the scores can now provide a baseline for repeat evaluation studies.

The player survey report is available [here](#).

### 2.4.9 Curator survey

**Relevance:** Informs the design of the game and website as well as the process of integrating contributions with collection metadata. [RQ1, RQ2, RQ3]

**Description:** In order to evaluate the developed game, website and IP model from the viewpoint of arts organisations, a survey was carried out among professionals working in museums and/or with collections. The survey involved an online questionnaire asking about the organisational setup to deal with IPR issues, the perceived threat

and potential value of using copyrighted materials and user generated content online, organisations' familiarity with Creative Commons licensing models and participants' views on the usefulness and validity of the 10 Most Wanted approach of turning user-contributed information into collection meta-data. The questionnaire was completed by 11 professionals from organisations ranging in size from 1-5 to more than 100 employees.

**Outcomes:** Results suggest limited awareness among museum professionals of IPR issues around user-generated content. With regard to 10 Most Wanted, results indicate that the aspect of generating collection metadata from user-generated content is controversial and needs further investigation.

The curator survey report is available [here](#).

#### 2.4.10 Topical objects study

**Relevance:** Informs engagement and facilitation practices. [RQ1, RQ5]

**Description:** A study was carried out to test the hypothesis that featuring objects of a topical nature rather than objects chosen for their intrinsic interest would elicit more responses. Objects were replaced on an individual basis when they did not receive any attention for three days or when the case was solved. The study collected and analysed engagement data for 15 topical objects and 13 control objects.

**Outcomes:** The results refuted the hypothesis and showed that an increase in social media reactions for topical objects does not translate to the deep, sustained volunteer engagement required in 10 Most Wanted. Web metrics clearly showed that engagement with topical object pages on the website was more shallow and short-lived than for control object pages with objects chosen by curators due to their curious design or functionality.

The topical objects study report is available [here](#).

#### 2.4.11 Web and social metrics

**Relevance:** Informs evaluation of the game, website and engagement practices as well as overall impact and audience development for the arts partner. [RQ1, RQ4, RQ5]

**Description:** In order to get a quantitative view on player engagement, reach and overall impact of the project, various web metrics were collected for the 10 Most Wanted website, the MoDiP website and the AUB website as a baseline. In addition, metrics were collected for the 10 Most Wanted social media channels on Twitter and Facebook. The data was recorded on a monthly basis over the whole duration of the project.

**Outcomes:** The web metrics show a steady increase in registered users on the website and followers on social media over the funded project period. A close correlation between facilitation activities and social media reactions suggests that continuous involvement from the museum is necessary to sustain volunteer engagement.

### 2.4.12 Reflective journal

**Relevance:** Informs evaluation of the overall approach. [RQ1, RQ2, RQ3, RQ4, RQ5]

**Description:** In addition to the data collection discussed above, the project recorded technical and research aspects as well as major decision points in the form of project insights. Apart from providing a mechanism for structured reflection, project insights helped to disseminate the project and make the process more transparent.

**Outcomes:** Project insights were documented over the whole duration of the project. Some of the insights were published on the 10 Most Wanted project [blog](#) and the Digital R&D Fund's online magazine Native.

## 2.5 Roles and responsibilities

The Arts Partner was responsible for coordinating the project, engaging with audiences, facilitating game play and social channels, marketing the project and disseminating the research among arts organisations and sustaining the project post-funding.

The Technology Partner was responsible for technical setup, requirements analysis, UX design, game design, website and mobile app development, and technical documentation of the system.

The Research Partner was responsible for the research design, literature review, IP model review and template, formative and summative evaluations and disseminating the research.

## 2.6 Timelines and locations

The project ran from 1 May 2013 to 5 August 2014. 10 Most Wanted posted its first tweet on 25 June 2013 and set up its Facebook group on 9 July 2013. The first public contribution was made on 16 October 2013, the first 'wanted' fact was posted the same day and the first case was fully solved on 22 October 2013. The 10 Most Wanted website was formally launched at UKMW13 'Power to the people' on 15 November 2013 at Tate Modern. In mid-March 2014 a three-month extension was granted to make possible the testing of an additional engagement strategy. The three week test started on 13 April 2014.

# 3. Results

## 3.1 Crowdsourcing platform

### 3.1.1 How it works

An important overarching research question [RQ1] was how the game platform, support processes and facilitation practices should be designed to support complex game-based crowdsourcing. A key component was the website: 10.most.org.uk. It consists of a home page, a page for each artefact featured, a 'how to begin' page, a page explaining the reward system, a

page listing the players and their status, and a page providing research tips. Additionally there are pages explaining the background to the project and the terms and conditions of engagement.

Public discussion takes place on the Facebook group and comments are posted on Twitter. The latest posts from both Facebook and Twitter are pulled into the 10 Most Wanted website homepage and filtered to the individual artefact pages where case notes written by the curators summarise the salient points in the social media, and integrate them into an evidence trail under the museum's control. There is also an evidence locker to place documents that, on account of their size, would disrupt the flow of the evidence trail. There is a facility to group solved cases and those that have gone cold so that they can still be accessed but are apart from the 10 cases that are currently the subject of focus.

Vocabulary used is drawn like the project's title, from the world of criminal investigation, thus each object investigated is described as a case, its museum accession number providing its *Case number*. Museum curators are referred to as *Case Officers*, members of the public start as *Field Agents* and may be promoted to *Special Agent* and then to *Chief Agent*. Those managing the site are referred to as *HQ Staff*, which include *Case officers* (curators), *Research Officers* and *Technical Officers*. How points and prizes are allotted can be seen [here](#). A record of players' contributions is kept in the [Hall of Fame](#).

### 3.1.2 Management system

The website is based on a Drupal 7 content management system.

Drupal was the logical choice because the Technical Partner was already using it to make websites and the staff at MoDiP were used to managing their own museum website, built previously in Drupal 6.

Drupal has the benefits of being free to use and has a huge development community to ensure that it will continue to be supported. It has powerful management capabilities with publishing and workflow tools and can be configured and expanded to meet specific requirements. It is also possible, if required, to code custom modules to carry out specific functions within a Drupal website. Looking forward, using an open source framework means that users in the future will not be tied to working with just one web developer.

The reasons for choosing to build a separate website are discussed under Insights at 4.1.1.

For more information please see the Technical report available [here](#). There are also how-to-do it guidelines to help curators use the website available [here](#).

## 3.2 Integration of player contributions with collection metadata

### 3.2.1 Background

One of the more specific research questions in the project [RQ2] concerned suitable processes to verify and integrate user-generated content into collections without the risk of compromising professional standards. While the literature discusses a multitude of related problems in this context, there is no guidance available on how other projects address this problem and no model

describing the integration process in concrete terms. In order to address this problem, the project developed *Case Notes* a structured process for verifying and integrating user-generated content in crowdsourcing efforts with collection metadata. The background is given in a team paper: Winter, M., Lambert, S., Blume, P. and Pemberton, L. (2014). *Case Notes: Turning crowdsourced information into evidence trails for collection metadata*. In *Proc. Digital Research in the Humanities and Arts 2014*. [[Pre-print available here](#)].

One of the key advantages of crowdsourcing is that it combines audience engagement with the production of useful outcomes. In the context of cultural heritage this can translate into sustainable models for maintaining and extending collections by delegating some aspects of curatorial research to members of the public. A potential downside is that the public usually lacks the expert knowledge and skills of professional curators. While it has been suggested that crowdsourcing can lead to solutions superior in quality and quantity to professional efforts (Brabham, 2008), there are widespread concerns among professionals about data quality. Some of these concerns are highlighted in Alexandra Eveleigh's (2012) discussion of participatory archives:

*"User participation initiatives in archives are haunted by a fear that a contributor might be wrong, or that descriptive data might be pulled out of archival context, and that researchers using collaboratively authored resources might somehow swallow all of this without question or substantiation." (Eveleigh, 2012)*

From a curator's perspective, data quality and verification are critical to avoid compromising quality standards for the collection as a whole. Introducing invalid data would not only impact on the collection's value as a research resource but also undermine the institution's authority, which is a distinguishing aspect particularly for heritage organisations (Oomen and Arroyo, 2011). Data quality is also important from the perspective of volunteers, who want to be reassured that the outputs of their efforts are useful and academically valid (Dunn and Hedges, 2012).

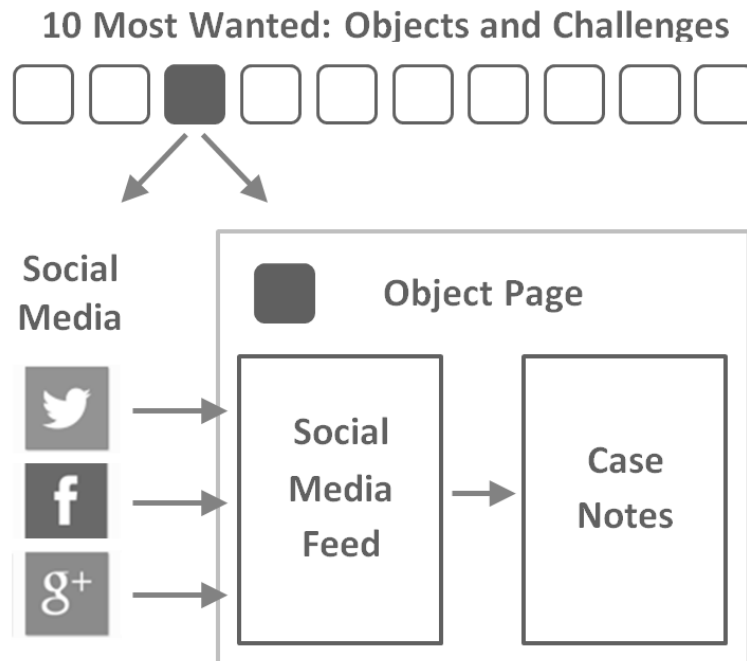
Measures suggested in the literature to improve data quality in crowdsourcing projects can be broadly grouped into four approaches:

1. Make the task easier: break down tasks into sub-tasks and provide higher quality materials (Holley, 2009);
2. Train/inform volunteers: provide learning materials (Cohn, 2008) and best practice guidelines (Kidd, 2013);
3. Crowdsourcing quality control: compare results between participants (Raddick et al. 2010) or set clean-up tasks (Bernstein, 2009);
4. Professional quality control: curators as gatekeepers when integrating content into collections (Eveleigh, 2012).

10 Most Wanted combines several of these approaches to ensure contributions meet professional standards. It trains volunteers by providing guidance and research tips and it encourages participants to critically assess each other's findings. The main responsibility of quality control rests, however, with professional curators who screen contributions and piece together key information into an investigative narrative (case notes) to evidence newly discovered facts about collection items.

### 3.2.2 Case notes

Case notes are the product of a complex process involving the advertisement of objects and related challenges (cases) on the 10 Most Wanted website, the promotion, investigation and eventual solution of cases taking part on the project's social network channels, and the aggregation and curation of contributions into archivable and publicly accessible evidence trails for discovered facts (Figure 1).



*Figure 1: Information flow from social media channels to curated case notes evidencing facts about collection items*

Besides their overarching purpose to turn crowdsourced information into valid collection metadata, case notes address several other crowdsourcing related aspects in the project:

- They provide an up-to-date summary of the on-going investigation so that participants and visitors can see progress without the need to search and connect individual social media posts.
- They record key discoveries in the museum's own domain reducing dependency on social networks' unpredictable data storage and access practices.
- They summarise evidence in a museum context by relating information to specific questions about collection items.
- They provide a platform to credit contributors for their work and thereby help to sustain motivation.

They also act as a well-defined checkpoint for curators to assess the quality of contributions and construct an evidence trail that meets professional standards. They have been used in 10 Most Wanted for over eight months to date, evidencing a wide range of newly discovered facts about collection items in a total of 15 solved cases so far and 76 verified facts. The process of maintaining case notes is well integrated into the workflow of facilitating on-going investigations on social networks and meets the requirements of curators involved in the project.

## 3.3 IP issues

### 3.3.1 The problem

Two closely related research questions in the project were how IP aspects of user-generated content can be addressed in a way that acknowledges contributors without blocking future re-use [RQ3] and how informed consent can be obtained from participants without negatively impacting on the player experience [RQ4].

Reports of crowdsourcing projects rarely discuss copyright and licensing issues. The few that do (e.g. Haklay and Weber, 2008) provide neither a high-level overview to structure the problem space nor much detail on actual IP arrangements such as the specific licenses used for various outputs, or procedures to obtain consent from participants. This lack of information obscures the fact that IP issues are an important aspect in projects that create, enrich or utilise digital collections:

*"It is a consistent finding in the evaluations of JISC development programmes that projects underestimate the time and resources required for the negotiation and clarification of intellectual property rights." (JISC, 2009)*

### 3.3.2 A solution

In order to address this problem 10 Most Wanted developed an IP model and template that can be reused in similar crowdsourcing projects in the Arts sector. While there are many secondary IP aspects in the project related to project outputs, such as software or project reports, the primary aspect of the IP model and template relate to the integration of player contributions with collection metadata. The reasons underpinning its design are explored under Insights at 4.2 below. The template can be seen [here](#).

## 3.4 Audience engagement

### 3.4.1 The actuality

Once the 10 Most Wanted platform was operational and the focus shifted to attracting players, it became obvious that the project team had unrealistic expectations with regard to the size of the community it would be able to attract. In keeping with the agile spirit of the project, it was therefore decided to add an additional research question [RQ5] concerning ways to develop participation and reach new audiences. The question was addressed by developing engagement related recommendations from the literature review discussed under Insights at 4.4 below.

While the engagement metrics (Figure 2) show that the level of participation in 10 Most Wanted is not overwhelming, they indicate stable growth, suggesting that a broad dissemination strategy involving a range of channels, activities and materials can lead to sustainable engagement levels.



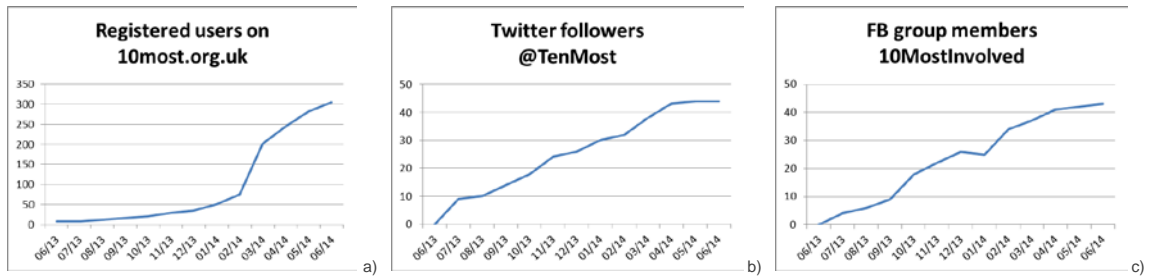


Figure 2: Engagement metrics for 10 Most Wanted from June 2013 to June 2014  
 a) registered users on the 10 Most Wanted website, b) followers on Twitter and  
 c) number of members in the 10MostInvolved Facebook group

As with most projects involving public participation, the ratio of passive to active members in the 10 Most Wanted volunteer community is heavily skewed towards passive participation, with only a small number of core participants contributing the bulk of information. Nielsen (2006) points out that in most online communities 90% of users only read content, 9% contribute intermittently and just 1% of users account for the bulk of contributions. This is in line with the experience of 10 Most Wanted to date.

Those that participated produced good results. Of the 66 cases that were posted to the site, 15 were solved, the 41 that were moved to Cold Cases included 35 facts found and 10 are still on the home page. What became apparent quite quickly is that 10 Most Wanted attracts people who have either a knowledge of the plastics industry in general or of the featured artefacts in particular. There was not much research carried out other than that which could be enabled through a keyboard.

### 3.4.2 Player experience

Player response was mixed, in some instances, agreeing and disagreeing equally with given statements. Using the Standard Usability Scale (Brooke, 1996) and the Usability Metric for User Experience (Finstad, 2010), the scores for the website were 56 and 52 respectively, indicating that the site's perceived user experience was slightly below its perceived usability. Both suggest room for improvement. For more information please see the [Player survey](#).

## 3.5 Impact

### 3.5.1 Project metrics

By the end of the test period the 10 Most Wanted website had over 300 registered users. It was attracting between 1,500 and 2,500 visits each month, these visitors would stay for 2-3 minutes, in which time they would each look at 3-4 pages. In a period of 9 months, there were a total of 548 interactions by the public including 76 facts found and 76 images contributed. Although most players were based in the UK there were participants also from Canada, Australia and Africa. Those who engaged with 10 Most Wanted had an enriched involvement with the collection. Thus a new model for public engagement with collections is now available.

### 3.5.2 Publications and presentations

The following presentations were made:

Winter, M., Lambert, S. and Blume, P. (2014). 10 Most Wanted: Hunting down missing information about cultural artefacts. Presentation at UKMW13 'Power to the people', Tate Modern, London, 15 November 2013. [Slides available here].

Winter, M., Lambert, S. and Blume, P. (2014). Collaborative mystery solving in museum collections. Poster, presentation and podium discussion at the AHRC Creative Economy Showcase 2014, London, 12 March 2014. [Poster available here]

The following presentations are scheduled for the future:

Winter, M., Lambert, S., Blume, P. and Pemberton, L. (2014). Case Notes: Turning crowdsourced information into evidence trails for collection metadata. In Proc. Digital Research in the Humanities and Arts 2014. [Pre-print available here].

Lambert, S., 'Plastics potential: the MoDiP perspective' at the Plastics Heritage Conference, Hochschule für Technik und Wirtschaft, Berlin, 22 - 24 October 2014. 50% of the paper will explain the impact of 10 Most Wanted from the MoDiP perspective.

Lambert, S., 'From analogue collection to participatory digital archive' at the Archives 2.0: saving the past, anticipating the future, National Media Museum, Bradford, 25-26 November 2014.

10 Most Wanted is also to be showcased at Interplas 2014, Birmingham, 30 September – 2 October 2014, the UK's largest plastics industry fair, by Rapid Plastics Media Ltd, the organisers of the fair.

### 3.5.3 Media

The project received the following press mentions, excluding articles on Native and the 10 Most Wanted blog:

- *Museums Journal*, 9, March 2013, p.9.
- AUB announcement of award: <http://aub.ac.uk/news/award/10-wanted-museum-design-plastics/>, 4.03.2013
- *British Plastics and Rubber*, September 2013, p.8 & <http://www.britishplastics.co.uk/News/can-you-turn-detective-in-the-name-of-plastics/#artsdigital>, 5.09. 2013, also printed.
- *Museum Practice*: <http://www.museumsassociation.org/museum-practice/new-approaches-to-volunteers/16092013-museum-of-design-in-plastics>, 16.09.2013
- AHRC website: <http://www.ahrc.ac.uk/News-and-Events/Features/Pages/Ten-Most-Wanted.aspx>, 22. 10.2014.
- *British Plastics and Rubber* article, October/ November 2013, p.10 & <http://www.britishplastics.co.uk/News/plastics-puzzle-helps-put-piece-of-history-in-place/>, 29.10. 2013.
- UKMW14 conference programme: <http://museumscomputergroup.org.uk/2013/10/24/uk-museums-on-the-web-2013-about-the-papers/>, 15. 11. 2013.
- UKMW14 conference slideshare: <http://www.slideshare.net/museumscomputergroup/03-ukmw13-10most>, 16 11.2014.
- Blog post on UKMW14: <http://cultureandcrafts.wordpress.com/2013/11/24/museums-on-the-web-mcg-conference-2013-part-1/>, 24.11. 2013.
- Blog post on UKMW14: <http://pointatthemoon.co.uk/2013/11/uk-museums-web-2013/> 24.11.2013

- Blog post on UKMW14: <http://moerg.wordpress.com/2013/11/25/uk-museums-on-the-web-2013/>, 25.11.2014
- Blog post on UKMW14: <http://blog.historisches-museum-frankfurt.de/?p=8139>, 28.11.2014.
- U3A flyer: <http://www.ivybridge-u3a.org.uk/U3A%20Trust%20updates%20Feb%202014.pdf>, February 2014.
- *Current Archaeology* 289, pp.47, 21.03. 2014.
- 10 Most Wanted exhibition at MoDiP: <http://www.modip.ac.uk/exhibitions/10most>, 28.02.2014.
- *Dorset Museums Association Newsletter*: [http://www.dorsetmuseums.co.uk/domains/dorsetmuseums.co.uk/local/media/images/me dium/March\\_2014\\_Newsletter.pdf](http://www.dorsetmuseums.co.uk/domains/dorsetmuseums.co.uk/local/media/images/me dium/March_2014_Newsletter.pdf), March 2014.
- AHRC Creative Economy Showcase 2014, pp.21-25, March 2014.
- log: <http://www.londonmuseumsgroup.org/2014/03/21/10-most-wanted-online-detective-game/>, 21.03/2014
- PRW article: <http://www.prw.com/subscriber/headlines2.html?cat=30&id=4682>, 8 April 2014.
- Featured on create hub: <http://www.create-hub.com/interview/susanlambert.html>.

### 3.5.4 Impact on partners

The partners have nothing but praise for NESTA in bringing together arts, science and research partners in an eclectic mix that, at times, produced quite different views of the same situation and quite different suggestions as to how to react to them. Each partner comes away from the project with horizons broadened and an understanding of the cultural, technical and academic landscapes in which they each operate brought more tightly into focus.

10 Most Wanted has enabled MoDiP to interact with people who have never and probably never will visit the museum and has given them a deeper engagement with both the collections and the curatorial staff than normally arises from an in person visit. It has also provided a potentially sustainable way of documenting the collections including the finding of facts known only by specific people involved in the creation of the product. The project has also impacted creatively on curatorial understanding of what interests people in the collections with implications for the museum's documentation practice. More generally 10 Most Wanted has increased public awareness of MoDiP. During the course of the project web traffic to the MoDiP website has increased by 50%.

For Adaptive Technologies Ltd, this project has been of value because of the way it has enabled it to observe and to learn about the interaction between the flow of users of social media and the audience of a conventional website. Whereas before 10 Most Wanted it may have been hesitant to suggest ways that museum, gallery and archive clients could best engage with social media to support their aims, now it would be much more confident about making and justifying such suggestions.

10 Most Wanted was featured twice on the University of Brighton's homepage and its internal Channel magazine, reaching a wide internal and external audience. The project helped the Interactive Technologies Research Group (ITRG) to further raise its internal and external profile and provided an opportunity for its researchers to add to their expertise in crowdsourcing and user-generated content. Together with the project partners, the researchers from the ITRG delivered several presentations at national and international arts and humanities conferences, presenting the research and developing new contacts. Furthermore, the group published, and

continues to publish, findings from the project at academic conferences and in academic journals, helping to disseminate the Digital R&D Fund's work and contributing to the University of Brighton's efforts in the Research Excellence Framework. Last but not least, an important long-term impact of the project is the newly formed relationships between the ITRG and its project partners. As MoDiP continues running the 10 Most Wanted website beyond the funded period, there is scope for future collaborative research further exploring and improving the concept.

## 4. Insights

### 4.1 Platform choices

#### 4.1.1 An independent website

The decision was taken to create a separate website rather than make a sub-site of the MoDiP site so it could have its own URL and thus its own identity and thereby avoid a conflict of brands between the two and develop a brand for this and future uses of the 10 Most Wanted methodology. A stand-alone site is also easier to re-purpose for use by other museums and contributes to the sense of 10 Most Wanted as being a resource open to all.

Being a separate site also means that the developers had freedom to make it in any way that would work best and could crash around inside it and not be too worried about breaking the main museum site.

#### 4.1.2 Relationship between the website and social media channels

When it came to organising the interaction between the website and the social media channels, there seemed to be two options.

Route 1. Make a website where the curators can manage the museum artefacts and store information discovered about them, while relying on existing social media channels to host the conversations between curators and users.

Route 2. Make a site that, in addition to manage artefacts and storing information, also has its own in-built social media tools and hosts its own conversations.

The project took route 1. It was felt a sufficient challenge to make a website that would explain to users the rather unusual proposition without needing to re-invent social media as well. Theoretically the concept of using the Facebook group as the discussion forum and the website as a repository works well because so much of the infrastructure is already in place and the potential social network is vast. It provides a system where users can simply turn up and make a contribution without being side tracked by the need to join yet another members' space. It is also an economical solution that lessens the technical and financial requirements for other institutions wanting to use this methodology.

The downside is that the use of two platforms presents a conceptual burden: users need to understand that the product is divided between two places rather than being centred on just one. With this comes the risk that they will ignore the 10 Most Wanted website: not register with the site or sign up to the conditions of use or provide a profile, so they cannot be included in the ranking and game play aspect of the site and may remain unaware of the overall mission of the project.

It would be interesting to investigate ways of re-balancing this workload: to see if there is a benefit to using social media just to raise awareness of the project and bringing all the discussion into the 10 Most Wanted website domain.

## 4.2 IP issues

### 4.2.1 IP dependencies

Any specific licensing arrangement for user-generated content must be compatible with other licensing arrangements and original copyright applying to other parts of the collection, e.g. if participants' contributions would be covered by a Creative Commons Share-Alike (CC-SA) license, then MoDiP would be required to make any fused work incorporating that contribution available under the same terms. Figure 3 illustrates these dependencies in the context of 10 Most Wanted and the MoDiP collection.

While it is obviously possible to make different parts of the collection and different content on the organisation's website available under different licenses, this requires more effort and care from the institution in order to control the use of its own IP and avoid infringing on others' IP. Given that many smaller institutions do not have a budget or dedicated staff to deal with IP related issues (see 2.4.9 *Curator survey*), it is preferable in many cases to avoid dependencies by asking volunteers for a straightforward license to use their materials.

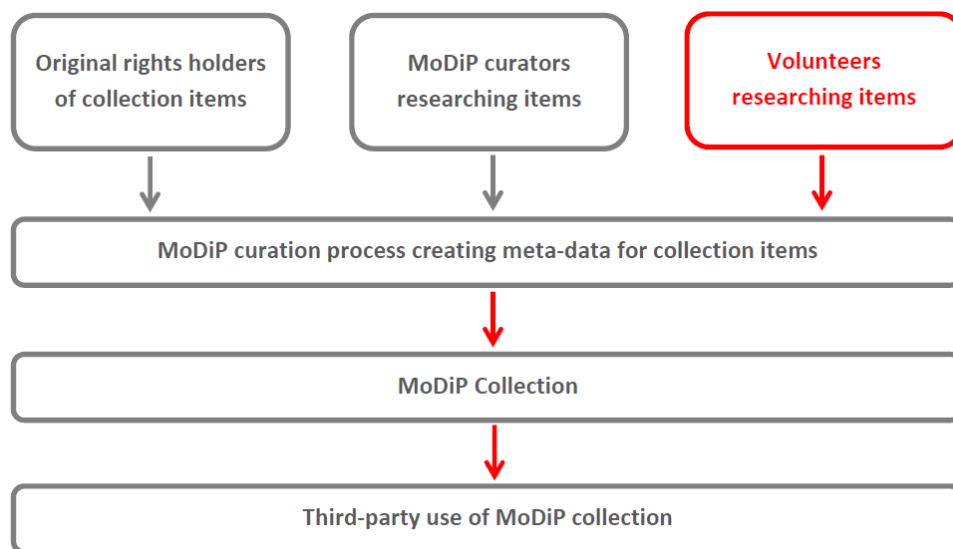


Figure 3: Red arrows indicate IP dependencies between volunteer contributions and the collection as a whole

### 4.2.2 Common practice

The Project's IP model review shows that Terms and Conditions (T&Cs) in a number of well-known crowdsourcing projects are often unclear about how volunteers' contributions will be used and who has the legal rights to them. Of the projects that do address this point, only one (Atlas of Living Australia <sup>2</sup>) gives participants the option of per-item licensing based on Creative Commons licences. Other projects simply declare that copyright resides with the organisation (Transcribe

<sup>2</sup> Atlas of Living Australia (ALA). <http://www.ala.org.au/about-the-atlas/terms-of-use/>

Bentham <sup>3</sup>), ask participants to grant permission for unlimited use (Zooniverse <sup>4</sup>) or avoid ownership questions by promising attribution and naming rights (Stardust@Home <sup>5</sup>).

### 4.2.3 Terms & Conditions template

In order to avoid messy IP dependencies and provide volunteers with a clear framework acknowledging their contributions, the 10 Most Wanted website T&Cs are underpinned by the following considerations:

- Volunteers own the original copyright in their content;
- The social media where content was contributed has a non-exclusive license to use it;
- The organisation owns the copyright in the curated evidence trail but needs volunteers' permission to use their original contributions;
- In order to avoid IP dependencies issues, the organisation prefers to have one single licensing model instead of introducing a second model for UGC;
- The organisation prefers a license that does not restrict future uses of UGC;
- Volunteers have a moral right to their contributions and should retain copyright;
- The granted license should be as far-reaching as possible to keep options open.

The resulting T&Cs on the 10 Most Wanted website address all of these points by asking volunteers for a "*non-exclusive, transferable, sub-licensable, royalty-free, worldwide license*" to their contributions. This arrangement is based on standard copyright law and provides a legal basis for the organisation to use content in any way it sees fit, including amalgamation with content licensed under other terms.

The image shows a screenshot of the 'Terms & Conditions of Service' page for 'Ten Most Wanted (TMW)'. The page title is 'Terms & Conditions of Service' in pink. Below it is the heading 'THE AGREEMENT' in bold. The main text describes the agreement and its scope. A white box with a grey border is overlaid on the page, containing the following text:

Ground rules:

- 1) You are nice to others and play by the **rules**
- 2) You keep ownership (copyright) of your contributions
- 3) We will use your contributions to support **MoDiP** and promote the activities of the **partners**.

I agree with these terms \*

Below the overlay, the text continues: 'If you do not agree to the Terms & Conditions of Service you should not use the Service and therefore decline this Agreement, in which case you are prohibited from accessing and/or using the Service. TMW may amend this Agreement at any time at its sole discretion, effective upon posting the amended agreement on <http://10most.org.uk/terms-conditions>. No variation or counter offer of this Agreement will be accepted by TMW.'

Figure 4: Short and long form of the 10 Most Wanted Terms & Conditions

<sup>3</sup> Transcribe Bentham. [http://www.transcribe-bentham.da.ulcc.ac.uk/td/Code\\_of\\_conduct](http://www.transcribe-bentham.da.ulcc.ac.uk/td/Code_of_conduct)

<sup>4</sup> Zooniverse. <https://www.zooniverse.org/privacy>

<sup>5</sup> Stardust@Home. <http://stardustathome.ssl.berkeley.edu/about.php>



In order to address the problem that most people do not read detailed T&Cs but would prefer a short notice explaining key points in simple terms, the T&Cs are provided in short and long versions. Participants are presented with the short version (Figure 4) during setup. A hyperlink in the short version linking through to the long version gives volunteers the option to scrutinise the T&Cs at their leisure.

Presenting the short form of the T&Cs as part of the sign-up procedure provides a well-defined checkpoint ensuring that all participants have read at least the short form and understood the basic principles before contributing content. An important caveat in this context, and arguably a reason for having one platform only is that relevant social media channels must inform volunteers that their contributions can only be used if they sign up first on the 10 Most Wanted website. At the start of the project a player who was happy to post a family photo to the Facebook group page on a social media site that attracts an audience of a quarter of a billion users each day, took great umbrage when the feed code pulled the same photograph into the 10 Most Wanted website with its two thousand or so visitors each month.

The Terms and Conditions template is available [here](#).

### 4.3 Case notes evaluation

The concept was formatively evaluated in a small-scale survey involving 11 curators and other professionals working with collections. The results suggest that while most respondents agree that overall 10 Most Wanted is a useful approach to engaging people in new ways with collections and are comfortable with the way it turns public contributions into formal documentation, some have reservations about this aspect. While not representative for the cultural heritage sector as a whole due to the small sample size, the results indicate that more research is needed on the aspect of integrating crowdsourced information with professionally curated collection metadata.

The full evaluation report is available [here](#).

## 4.4 Audience engagement

### 4.4.1 Findings from the literature review

The literature review looked in detail at engagement as a critical aspect concerning the sustainability of crowdsourcing projects, focusing in particular on volunteers' motivations and on measures to encourage initial engagement and sustain engagement over longer periods.

Table 1 summarises these findings in the form of engagement-related guidelines for crowdsourcing projects:

Tapping into volunteers' motivations:

- Appeal to intrinsic motivations, e.g. a genuine interest in design or plastic
- Appeal to altruistic motivations, e.g. support MoDiP as a small organisation
- Appeal to extrinsic motivations, e.g. supportive community, incentives, rewards
- Make participation fun for participants and communicate that fun to others

Encouraging initial engagement:

- Write press releases and get broadcast media interested in the project
- Develop a broad range of dissemination materials and activities:
  - project website

<ul style="list-style-type: none"> <li>○ presence in a various social media outlets</li> <li>○ mailing lists and online forums</li> <li>○ leaflets, posters, stickers, badges</li> <li>○ presentations at seminars, conferences and workshops</li> <li>○ educational resources of relevance to the curriculum</li> <li>○ contact individual museums, archives, and educational bodies</li> <li>○ organise and publicise site visits by actual and potential volunteers</li> </ul>
<p>Sustaining participant engagement:</p> <ul style="list-style-type: none"> <li>● Support communication between project team and volunteers, as well as between volunteers themselves as they shape their community</li> <li>● Use social media to convey activity in the project to outsiders</li> <li>● Organise face-to-face meetings where volunteers meet the project team and each other</li> <li>● Recognise participants' contributions through attribution and credits in publications</li> <li>● Establish lasting connections between participants and the data they contribute, e.g. by showing finds on a map and linking to participants' profiles</li> <li>● Respect participants' views on project governance, tools and practices and provide ways for co-determination, e.g. through meetings and co-design sessions</li> <li>● Provide training opportunities for participants to develop their skills, e.g. workshops and online training materials</li> </ul>

*Table 1: Engagement related guidelines for crowdsourcing projects*

The full Literature review is available [here](#).

#### 4.4.2 Experience in the project

10 Most Wanted followed most of these guidelines to encourage engagement. The project taps into volunteers' intrinsic, altruistic and extrinsic motivations by appealing to a genuine interest in design and plastics, and by emphasising that the project helps a small arts organisation. Gaming and 'a sense of fun' have underpinned the approach with quantitative and qualitative rewards, including mentions and credits for submitted information in the case notes for each object. However, anecdotal evidence suggests that the game elements have not been effective although one player who scoffed at the title Special Agent then demanded he receive a badge and certificate when he was promoted to Chief Agent. It would be interesting to try again with a commercial on-line game designer as part of the team.

Despite targeting some 15 TV and radio programmes, the project did not manage to get featured on broadcast media, which has been identified in other projects as the single most effective measure to promote engagement. It is hoped the opportunity to achieve this will arise in the future. In retrospect perhaps the marketing plan was not adequately robust and too much faith was put in the viral capacity of social media. Should a marketing expert from the commercial sector have been employed?

A close correlation between facilitation activities and participation on social media and the website suggests that continuous involvement from the museum is necessary to sustain volunteer engagement. With regard to the original aim of the project to find a sustainable way of engaging audiences and enhancing collection metadata, it remains to be seen if this particular model of crowdsourcing is inherently dependent on active and attentive facilitation by the museum or if sustainability is just a question of reaching a critical mass and promoting core participants to admin roles.



### 4.4.3 Topicality and engagement

The key crowdsourcing mechanism in 10 Most Wanted involves curators posting 10 objects at a time on the website together with a brief of what information about them is wanted. As key motivations for participation in crowdsourcing projects include intrinsic motivation (Grove-White et al., 2007; Raddik et al., 2010; Nov et al., 2011; Dunn and Hedges, 2012) and fun (Prestopnik and Crowston, 2011), it was hypothesised that topical objects, which relate to current events or trends, might be more relevant to potential participants and therefore more effective in attracting engagement.

In order to test this hypothesis, a three week study was carried out on the live website involving curators posting topical objects alongside control objects and collecting related engagement data. Objects were considered topical if they related to trending hashtags on social media, current news or seasonal events. Objects were replaced on an individual basis when they did not receive any attention for three days or when the case was solved. The study involved 15 topical objects and 13 control objects. The topicality of objects was emphasised in promotional posts on the 10 Most Wanted Twitter account and Facebook groups.

The results show that topical objects generate significantly more responses on social media but overall receive similar levels of web traffic to control objects with comparable amounts of promotion, indicating that the effects of their topicality are largely confined to the social media channels where objects are promoted and do not translate into increased web traffic. Furthermore, players spent more time on the case pages for control objects than on the case pages for topical objects. This difference in engagement levels suggests that players could relate more deeply to control objects, which were selected due to their intrinsic quality of being remarkable in some way, than to topical objects, which were selected due to their relevance to current topics and trends. The results refute the hypothesis that topical objects, which relate to current events or trends are more relevant to potential participants and therefore more effective in attracting engagement. While topical objects lead to more social media responses, this does not translate to deeper engagement on the website which is key to the 10 Most Wanted concept.

The full topical objects study is available [here](#).

### 4.4.4 Engagement with the UK school curriculum

Younger audiences have responded well to the MoDiP collection. It was therefore hoped to engage them with 10 Most Wanted and to this end teachers' notes and work sheets relating to both the primary and secondary national curriculum have been developed. The timing in terms of the lesson planning did not make it possible to find schools able to trial them. This remains an area for development. The teachers' notes and worksheets can be seen at <http://10most.org.uk/documents>: teachers' resources.

## 4.5 Lessons learned

### 4.5.1 Platform choices

- Separate website works well as it enables developer greater freedom, develops a brand for the approach, and makes reuse easier.

### 4.5.2 IP issues

- Asking volunteers for a non-exclusive license to use submitted content respects their copyright without restricting future uses or interfering with other licensing models in use by the organisation
- A short form of the T&Cs as part of the sign-up procedure provides a well-defined check point ensuring that all participants have read at least the short form and understood the basic principles before contributing content.
- If separate social media channels are used for posting this information, make it clear how it will be used on another site.

### 4.5.3 Case notes

- Curators have mixed feelings about the use of player contributions in object documentation and the method adopted for integrating them with collection metadata.

### 4.5.4 Audience engagement

- Anecdotal evidence suggests the game aspects have been ineffective.
- Intrinsically interesting objects generate deeper and more sustained engagement than topical objects relating to current trends or events
- Facilitation by the museum is critical for nurturing the volunteer community, sustaining participation and turning contributions into evidence trails for collection metadata.

## 5. Future

10 Most Wanted is a slow-burner. As the graphs at Figure 2 show it is a concept that will gradually gather its followers, those with an interest in things plastic or who simply enjoy the mystery of the chase. MoDiP will support the website at least for another year and it is hoped that engagement will continue to build.

One way to add more users is by widening the net and having more evangelists, specialists and enthusiasts who can push forward the research and spread the word in other social groups. Effort will be made to recruit from social and industrial heritage and specialist interest groups. It is hoped also at the start of the new school year to find primary and secondary schools with the capacity and interest to trial the existing work sheets.

Issues highlighted by the various evaluations have led to platform developments and alterations to practice. Were the funding to be available, it would be productive to run the evaluations again using the existing evaluations as baselines.

Going forward from this point, an opportunity to investigate changing the balance of how the technical aspects of the project are structured could lead to significant results. The aim would be to shift the conversation away from social media and host it all within the 10 Most Wanted website. Social media would still make an invaluable contribution, but as a signpost to the website rather than as its discussion space.

This would provide a number of benefits:

1. Enable the adding of hooks to improve the game-playing aspects of 10 Most Wanted.
2. Provide a self-contained forum within which to build a specialist community.
3. Make it easier for users to keep their 10 Most Wanted identity separate from other social media personas.

Additionally the project has shown the need for more research into:

1. The integration of crowdsourced information with professionally curated collection metadata.
2. The relationship between gaming and engagement.

Projects of this type are needed in many other areas of modern culture and heritage if unique knowledge and insight that is available only from those who were there is not to be lost.

## 6. Further resources

### 6.1 Overview

The project produced a large amount of outputs, most of which are available for download to support similar efforts in other arts organisations. This includes technical information about the 10 Most Wanted crowdsourcing platform, guidelines for curators and an IP model and template for integrating user-generated content with collections metadata. In addition, the project makes various research reports available, including a comprehensive literature review of game-based crowdsourcing, an IP model review and survey, and several evaluation studies providing detailed insights into problems encountered and related recommendations how to address them.

### 6.2 Further project information

Project website	<a href="http://10most.org.uk">http://10most.org.uk</a>
Project exhibition	<a href="http://www.modip.ac.uk/exhibitions/10most">http://www.modip.ac.uk/exhibitions/10most</a>
Technical report	<a href="http://10most.org.uk/sites/10most.org.uk/files/10_Most_Wanted_-_Technical_Report.pdf">http://10most.org.uk/sites/10most.org.uk/files/10_Most_Wanted_-_Technical_Report.pdf</a>
Literature review	<a href="http://itrg.brighton.ac.uk/outputs/10most/10most_lit_review.pdf">http://itrg.brighton.ac.uk/outputs/10most/10most_lit_review.pdf</a>
IP model review	<a href="http://itrg.brighton.ac.uk/outputs/10most/ip_model_review.pdf">http://itrg.brighton.ac.uk/outputs/10most/ip_model_review.pdf</a>
IP survey	<a href="http://itrg.brighton.ac.uk/outputs/10most/ip_survey_results.pdf">http://itrg.brighton.ac.uk/outputs/10most/ip_survey_results.pdf</a>
Expert evaluation	<a href="http://itrg.brighton.ac.uk/outputs/10most/expert_review_results.pdf">http://itrg.brighton.ac.uk/outputs/10most/expert_review_results.pdf</a>
Player survey	<a href="http://itrg.brighton.ac.uk/outputs/10most/player_questionnaire_results.pdf">http://itrg.brighton.ac.uk/outputs/10most/player_questionnaire_results.pdf</a>
Curator survey	<a href="http://itrg.brighton.ac.uk/outputs/10most/curator_questionnaire_results.pdf">http://itrg.brighton.ac.uk/outputs/10most/curator_questionnaire_results.pdf</a>
Topical objects study	<a href="http://itrg.brighton.ac.uk/outputs/10most/topical_objects_results.pdf">http://itrg.brighton.ac.uk/outputs/10most/topical_objects_results.pdf</a>

### 6.3 Tools and guidance

IP Model & template	<a href="http://itrg.brighton.ac.uk/outputs/10most/ip_template.pdf">http://itrg.brighton.ac.uk/outputs/10most/ip_template.pdf</a>
Curator guidelines	<a href="http://10most.org.uk/sites/10most.org.uk/files/Curator%20Guidelines.pdf">http://10most.org.uk/sites/10most.org.uk/files/Curator%20Guidelines.pdf</a>

## 6.4 Further reading

### 6.4.1 Crowdsourcing

*Key texts on crowdsourcing in cultural heritage:*

- Dunn, S. and Hedges, M. (2012). Engaging the Crowd with Humanities. A scoping study. Research Centre for e-Research , Department of Digital Humanities. King's College London.
- Eveleigh, A. (2012). Welcoming the World: An Exploration of Participatory Archives. Presented at International Council on Archives (ICA) Conference, ICA 2012, Brisbane, Australia, 20-24 August 2012 (pp. 1–10).
- Haythornthwaite, C. (2009). Crowds and communities: Light and heavyweight models of peer production. Proc. Hawaii International Conference On System Sciences (pp. 1–11)
- Oomen, J. and Aroyo, L. (2011). Crowdsourcing in the Cultural Heritage Domain: Opportunities and Challenges. Proceedings of the 5th International Conference on Communities and Technologies (pp. 138–149).
- Ridge, M. (2014) Crowdsourcing our Cultural Heritage. Ashgate. ISBN: 978-1-4724-1022-1.

### 6.4.2 IP and User-Generated Content

*Key texts on IP, social, production and user-generated content:*

- Elkin-Koren, N. (2011). Tailoring copyright to social production. Theoretical Inquiries in Law, 12(1), 309-347.
- Fisk, C. L. (2006). Credit Where It' s Due: The Law and Norms of Attribution. Georgetown Law Journal, Forthcoming Duke Law School Legal Studies Paper No. 102., 95, 49.
- Hetcher, S. (2007). User-Generated Content and the Future of Copyright : Part One - Investiture of Ownership. Vanderbilt J. of Entertainment and Tech. Law, 10(4), 863–892.
- Lee, E. (2008). Warming Up to User-Generated Content. U. Ill. L. Rev., 1459. Available [http://scholarship.kentlaw.iit.edu/fac\\_schol/358](http://scholarship.kentlaw.iit.edu/fac_schol/358)
- Petersen, S. M. (2008). Loser generated Content: From Participation to Exploitation. First Monday, 13(3), 1–8. Available <http://firstmonday.org/ojs/index.php/fm/rt/prINTERfriendly/2141/1948>

*Links to IP information pages*

Creative Archive Licence

<http://www.bbc.co.uk/creativearchive/licence/index.shtml>

Creative Commons Licenses

<http://creativecommons.org/licenses/>

UK Intellectual Property Office: What is copyright?

<http://www.ipo.gov.uk/types/copy/>

Web2Rights. JISC resources on IP in Web 2.0  
<http://www.web2rights.org.uk/documents.html>

Open Knowledge Foundation (OKFN)  
<http://okfn.org/>

OpenGLAM  
<http://openglam.org/>

Additional resources are listed in the *10 Most Wanted IP Review*  
<http://bit.ly/1pA40SP>

## 6.5 Other examples

### 6.5.1 Crowdsourcing platforms

Several successful crowdsourcing projects have grown into crowdsourcing platforms with ready-made tools and an existing user base for use by other projects:

Zooniverse	<a href="https://www.zooniverse.org/">https://www.zooniverse.org/</a>
Historypin	<a href="http://www.historypin.com/">http://www.historypin.com/</a>
Archives.gov (US)	<a href="http://www.archives.gov/citizen-archivist/">http://www.archives.gov/citizen-archivist/</a>

### 6.5.2 Crowdsourcing projects

Comprehensive list of crowd-sourcing projects on Wikipedia:  
[http://en.wikipedia.org/wiki/List\\_of\\_crowdsourcing\\_projects](http://en.wikipedia.org/wiki/List_of_crowdsourcing_projects)

List of crowdsourcing projects notable for their specific approach or their relevance to the arts:  
<http://www.digitalglam.org/crowdsourcing/projects/>

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