MECHANICS, SEMANTICS AND GUIDELINES

DESIGN FOR CROWDSOURCING
INTRODUCTION

The steady growth of crowdsourcing in recent years also brings significant challenges such as: increasing competition; delivering high quality output for clients; satisfying workers; broadening business activities; managing intellectual property.

With this white paper we want to highlight the role that design has to play in addressing the aforementioned challenges. Improper design practices can be detrimental for both requesters and workers alike. For example, requesters will choose for a platform that is easier to filter through workers and workers will choose for a platform that is transparent to the way it does business – including the platform’s reward structures. Good design practices pay off for businesses.

Prior research shows that following good design practices can have up to a 1 to 48 cost-benefit ratio (Nielsen, 1995).

WHAT DOES GOOD DESIGN PRACTICES MEAN IN THE CONTEXT OF CROWDSOURCING?

More specifically, in this paper we highlight three design dimensions that future crowdsourcing platforms need to take into account to excel in a globally competing marketplace.

1. DESIGN FOR NEW CONCEPTS

Although the number of crowdsourcing systems has been increasing, the application to design research and education has only scratched the surface of its potential. In the near future, we foresee the development of new novel systems & models that will allow for further growth.

A recent example of such a novel system: Apparition, comes from the academic domain (Lasecki et al., 2015). Apparition is a system that allows users to implement design sketches into actual working prototypes. As a user sketches the interface of an application, workers’ input in combination with artificial intelligence algorithms translate the sketches into actual elements, add animations and make those elements functional. In this example, design and implementation activities are blended into one platform.

Another example from the academic domain is CrowdCrit (Luther et al., 2014). CrowdCrit organizes (“scaffolds”) in several dimensions, design feedback that workers can provide to a certain design output. Workers can select from a list of both positive and negative critique statements. Those statements are based on well-known design principles. Furthermore, workers can visually annotate areas of the design that correspond to the provided feedback. This example demonstrates that with the right tools workers who are not
necessarily design experts can provide relevant and useful design feedback.

Beyond these two examples we believe that designers are well equipped to combine and create new concepts that would drive the further development of the field.

2. DESIGN FOR USABLE AND SUSTAINABLE SYSTEMS

Existing crowdsourcing systems face the challenge of self-evaluation. Once developers have their system up and running, they eventually face the question: how good of a system have I actually built? Heuristic evaluation (Nielsen, 1994), is a quick and robust method for providing initial answers to the aforementioned question. Heuristics are in simple words, a checklist of salient items that a designer needs to take into account for their design. Nielsen originally established and developed heuristics for web design.

The social and collaborative nature of crowdsourcing begs for an extension of heuristics for the purposes of evaluating crowdsourcing systems. For example, user involvement and the credibility of a crowdsourcing system are salient aspects for its development (Gurzick & Lutters, 2009). Such a list of heuristics still needs to be developed. At the Industrial Design Department of Eindhoven University of Technology, we have made the first step in this direction (Figure 1). Based on prior literature for building successful online communities (Gurzick & Lutters, 2009; Kim, 2000; Kraut et al., 2012) we have developed a tentative list of guidelines that would help crowdsourcing platforms to evaluate their platforms and in that way identify strengths and weaknesses. We argue that such a list is crucial for the sustainability of such platforms.

The heuristics are categorized in two levels:

**Level 1:** Each heuristic has one or more subcategories. For example, the heuristic: “Purpose” has three subcategories: clarity, visibility, and idealism.

**Level 2:** Each subcategory has one or more items. For example, the subcategory "clarity" has one item: "Is the purpose of the platform clear?". Each item is then rated in a three-point scale: “No”; the platform does not adhere to the heuristic; “Semi”: there is some evidence of an effort to adhere to the heuristic but this effort is not sufficient; and “Yes”: the platform fully adheres to the heuristic.

To give a concrete example, the heuristic “Moderators” has an item: “Are moderators trained or aware of the role the platform expects from them?”. New requesters might need help in formulating task instructions as well as providing feedback and appropriate incentives to workers. Therefore, platforms need to appropriately prepare requesters, especially the novice ones. Another item of the same heuristic is: “Can moderators be contacted by members about their acts?".
Here a moderator can be an administrator or a platform owner. Reciprocal communication is an act of fairness since by default administrators or platform owners are in a position of power.

One could claim that the platform SamaSource.org addresses in a higher level the heuristic of idealism. Idealism, one practical dimension of which is fairness, addresses the idea that the workers it employs (especially in developing countries) get a reasonably good rate for their work. SamaSource beyond providing fair pay for its workers, goes a step further in training the workers to acquire more digital skills and in that way move up the value chain. Another example of a platform that adheres to the “Idealism” heuristic is Prolific.ac that “endorses the principle of 'ethical rewards'”. They operationally define those as: the workers getting at least £5 per hour.

**COMMUNITY HEURISTICS FOR CROWDSOURCING**

![Diagram of Community Heuristics for Crowdsourcing](image)

*Figure 1:* Design heuristics (guidelines) for evaluating crowdsourcing platforms. These heuristics are based on literature for building successful online communities and we are currently evaluating their effectiveness.

The heuristics are meant to be applied in a certain platform, nevertheless for the purposes of highlighting their use we have applied them in eleven crowdsourcing platforms *(Table 1).* In that way we try to highlight aspects that the industry as a whole might need to take into account. For example, we found out that when it comes to their reputation (category under the heuristic: Platform) the platforms we surveyed seem to be doing well. Around 80% of them showcase their achievements such as growth, amount of contribution, amount of money distributed to workers. Most platforms often show this information in the homepage *(e.g. Figures 2, 3 & 4).*
Table 1: List of platforms of our heuristic evaluation.

<table>
<thead>
<tr>
<th>Platform</th>
<th>Description</th>
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<tbody>
<tr>
<td>99Designs</td>
<td>Graphic design competition marketplace</td>
</tr>
<tr>
<td>Amazon Mechanical Turk</td>
<td>A marketplace for work that requires human intelligence</td>
</tr>
<tr>
<td>Desall</td>
<td>Crowdsourcing the conception and participatory development of new products</td>
</tr>
<tr>
<td>Design2Gather</td>
<td>Product design competition mostly for mass production.</td>
</tr>
<tr>
<td>Electrolux Design Lab 2015</td>
<td>Global competition for design and technology students by Electrolux.</td>
</tr>
<tr>
<td>Innocentive</td>
<td>Innovation market with solutions to business, social, policy, scientific, or technical problems.</td>
</tr>
<tr>
<td>iStockphoto</td>
<td>Crowdsourced content market for photos.</td>
</tr>
<tr>
<td>Threadless</td>
<td>Crowdsourcing t-shirt designs, producing the most preferred designs per week based on community votes.</td>
</tr>
<tr>
<td>Topcoder</td>
<td>Online computer programming competitions.</td>
</tr>
<tr>
<td>OpenIDEO</td>
<td>Global community working together to design solutions for the world’s biggest challenges.</td>
</tr>
<tr>
<td>Quirky</td>
<td>A community company making invention accessible. (Evaluation based on the current situation of Quirky that has been declared bankruptcy since September 2015.)</td>
</tr>
</tbody>
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Figure 2: An example from 99designs homepage that prominently displays the exact number of satisfied customers (screenshot taken from https://en.99designs.nl/). Although this is an example of the platform’s reputation the rest of the website lacked more data that would support the platform’s achievement and growth.

Figure 3: This is quite a successful example when it comes to displaying the platform’s reputation with regard to its achievements. Samasource has a dedicated link to their main menu titled: Impact and in that dedicate page lists several statistics about its influence and growth (screenshot taken from: http://www.samasource.org/impact).
Nevertheless, there are also areas that platforms are not doing as well. For example, we find out that it is not evident that a platform moderator/administrator can be easily contacted (Figure 5).

In another example, we find out that the platforms we investigated do not attempt to stimulate their existing members to recruit new members (Figure 6).

Figure 4: An example from Design2Gather that shows the active designers in the platform ordered according to their country (screenshot taken from: http://design2gather.com/designer). Although this is a nice start to show off the platform’s growth, it could be better by making the map interactive.

Figure 5: Do platforms make it easy for a moderator/administrator to be directly contacted? We find out that out of the surveyed platforms, 45% do not have a way to personally contact the platform’s moderator/administrator. In another 20% of the platforms we eventually could find contact info - though it was a generic email. In only 35% of the platforms there was a clear contact to the moderator/administrator.
Based on this data we think that recruiting new members from existing ones is an underdeveloped area that platforms have a lot to do to grow. We do recognize that in some cases such a feature (inviting more people in the platform) might be perceived by existing members as competitive since more people means more competition. Nevertheless, there is no doubt that most platforms would benefit by having more members. To tackle such a challenge counter-incentives must be offered. Such incentives might include in-platform promotion of a member’s profile or virtual rewards such as the accumulation of platform points for strengthening one’s reputation.

Overall, we can tentatively conclude that certain crowdsourcing platforms make a clear decision in whether to actively include their community. Platforms like iStockphoto and Amazon’s Mechanical Turk seem to narrow the community mechanisms down, when for example 99Designs embraces their community with an active community forum. We hope that this list of heuristics will be a useful tool for crowdsourcing platforms, that want to reinforce the community’s inclusion.

Beyond the aspect of heuristics, crowdsourcing has the potential of expanding to other niche groups such as: children or the elderly. For those types of groups a usable, easy-to-use interface and interaction is detrimental for acceptance. In the case of children, although their creative nature has been well documented in the design process in co-creation for new products and/or services, this has not yet extended to crowdsourcing (Manojlovic et al., 2016).

The only relevant example we are aware of which tries to bring
child-inclusive design and innovation is the LEGO Ideas platform. Children who must be at least 13 years old, can submit their own ideas for a LEGO product and if enough votes are given, the idea is actually produced by the company. If users are between 13 and 18 years old they are allowed to create and submit ideas, however parental consent is needed if the idea goes into production.

Companies have already included children participatory design projects as a source of inspiration for novel products (Markopoulos et al., 2008). Furthermore, since a lot of crowd workers come from developing countries, they face specific challenges such as language, technology and poor task design (Gupta et al., 2014). Design guidelines can support crowdsourcing developers for instance, to take into account the workers’ needs and create understandable task descriptions.

3. DESIGN FOR EXPERIENCE

Going beyond usability aspects, experiential aspects such as empathy and playfulness could significantly improve existing systems. For instance, empathy induced altruism is likely to motivate people in a crowdsourcing environment to produce better quality work. Here the hypothesis is that if a worker is able to empathize with the requester and the requester’s cause, the worker will deliver higher quality work. However, there hasn’t been any considerable investigation regarding how empathy can be effectively conveyed through user interfaces.

Prior research suggests that beyond financial rewards, altruism and practice of skills were the most important factors that motivate workers on crowdsourcing platforms. Empathizing with another person is a source of altruism (Huber & MacDonald, 2012). With altruism being one of the main motivators for workers, it is interesting to investigate whether empathy has an effect on the quality and quantity of the produced work. Due to the digital nature of crowdsourcing, it is difficult for workers to empathize with the requester. Workers are often not aware of the context, impact, or meaning of a task and know little to nothing about the requester’s background. Prior research (Khan et al., 2016; Marlow & Dabbish, 2014) shows that careful design of the task description can facilitate inducing empathy for the requester to the worker.

Furthermore, playfulness in technology may help in gaining a more meaningful experience and increase overall user experience (Lucero et al., 2014). There is already a large number of people working online, spending significant time on multiple crowdsourcing platforms. Several tasks in these platforms are frequently occurring, are repetitive and can be perceived as tedious and boring.

Designers can address this issue by incorporating playful elements on crowdsourcing platforms. Those playful elements could benefit the
overall user experiences not just in cases of tedious and boring tasks, but for any other crowdsourcing platform by introducing an element of surprise and fun. In that way, such a design intervention can impact the preference of working on these platforms. Nevertheless, designing for playfulness in crowdsourcing is not a trivial task. Such an endeavor raises questions such as: where in the platform to introduce playful elements? What kind of playful elements? How frequent? We envision that there are quite some opportunities to be explored when it comes to improving crowdworkers’ experiences; as in real life employees want to have a pleasant atmosphere in their workplace, crowdworkers’ experience could improve by including playful elements in such platforms (Figure 7).

Please rate your client / requester by dragging maximum 5 badge(s) on top of the client’s picture.

Figure 7: Example of a playful element in crowdsourcing. One could imagine a more playful way of providing feedback to requesters. Screenshot courtesy of: Eva Palaiologou, Ataur Rahman, Jelmer Kuustra.

CONCLUSION

With this white paper we would like to highlight the crucial role design can play for crowdsourcing platforms. We envision that designers are perfectly positioned to impact the further development of crowdsourcing in at least three dimensions:

1) conceive new, innovative platforms;
2) improve the usability and sustainability of platforms by strengthening the community ties;
3) create a pleasant user experience.
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