Design Principles: Crowdfunding as a Creativity Support Tool

Abstract
Creativity supports societal and economic prosperity. As such, HCI researchers have been concerned with creating technologies to support creativity. Crowdfunding offers a new type of creativity support tool where creators rely on the crowd to collect, create, relate, and donate creative work. With the rapid growth of crowdfunding platforms, design principles are needed to guide platform development. This paper presents design principles informed by Shneiderman’s Genex Framework for creativity support tools in order for designers to answer the call from Human Computer Interaction (HCI) to empower more people to be more creative.

Author Keywords
Crowdfunding; Interface Design; Creativity Support Tools

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

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CHI '12, May 5–10, 2012, Austin, Texas, USA.
ACM 978-1-4503-1016-1/12/05.
**Introduction**

Creativity supports social and economic prosperity [1]. In response, HCI researchers design technologies to empower more people to engage in creative work [2]. Examples of creativity support tools include graphic tools for creating 2D designs and 3D printing for creating new products on demand. Because creative work is often done in teams, designers of creativity support tools emphasize the importance of supporting collaboration between people with different resources to complete creative work, fostering a community of users to share their creations and techniques they have discovered for using the tools [2]. In this paper, we propose crowdfunding as an emerging creativity support tool that supports collaboration in a community of users who share technical knowledge as well as financial resources.

Currently, the development of crowdfunding platforms is taking off. In 2009, a handful of platforms existed. Today, there are over 200 platforms. Platforms fall into five categories [3]: Supporting projects, Investing in startups, Microcredit, P2P lending, and Donations; with the highest numbers of platforms in the Supporting Projects category (88 in total). Market reach ranges from national to global. Compared with all Internet users, participants tend to be childless and college educated, spend around 4-5 minutes per visit to the site and intend to come to the platforms from Facebook and Google and return back to these sites after leaving the platforms [4].

Crowdfunding encourages a diverse group of individuals to pitch their creative ideas to the crowd in anticipation of financial support [14]. Additionally, our research finds that creators and funders also use the platform to share creative ideas, search for creative inspiration and connect with other creative individuals [5]. Although the role of crowdfunding platform hasn’t been clearly positioned as a creativity support tool, it does encourage people to get their creative ideas exposed, recognized, validated and supported.

Design features such as online crowdfunding tutorials, search and online communication functionalities influence the behavior and interaction of creators and funders, which directly impact both community and business development, as well as the diversity of ideas that are realized. A better understanding of crowdfunding platforms as creativity support tools can inform future iterations of these platforms.

We begin by examining crowdfunding as a creativity support tool. Second, the paper will examine how Shneiderman’s Genex Framework can inform crowdfunding interface design. Third, we present principles and offer evidence from existing platforms. Lastly, we suggest limitations of the design principles and future work.

**Creativity Support Tools**

Creativity, defined as the novel and useful ideas [6], often demands collaboration [7] from diverse individuals with different resources to realize an idea. For example, online photo galleries such as Shutterfly, Kodak and Flickr encourage users to post photographs, create albums and share them with the online communities [8]. Online music service-rendering platform such as iTunes also support creativity, allowing individuals to collect songs from various artists, create mixes and disseminate them to an online community. These creativity support tools are...
characterized by their online, community based creativity process.

The Genex (Generator of Excellence) Framework
We employ Shneiderman’s Genex framework, an interface design framework for supporting creativity, in our analysis of the top three crowdfunding platforms for creative work: Kickstarter [9], RocketHub [10], and IndieGoGo [11]. The framework consists of four phases: collect, relate, create and donate [12]. The collect phase refers to how people produce creative works based on previous efforts while the relate phase refers to consulting with peers and mentors in the creative process. People experiment, think freely, learn from successful experiences, and produce their ideas during the create phrase. In the final donate phase, creative work is shared and disseminated among people, serving as foundation for idea collection.

Based on this framework, HCI designers have suggested design principles for creativity support tools such as supporting collaboration and balancing user suggestions [13]. Through participant observation, we use this framework and design principles to determine which design features currently facilitate creativity and which missing features could be implemented.

Design Implications: The Perspective of Genex Framework
We now describe eight primary activities under the four phases of the Genex Framework (Figure 1), analyze the corresponding features and suggest new features on three crowdfunding platforms.

![Figure 1. Overview of Crowdfunding Platform Design Features As Seen Through the Genex Framework](image)

* Abbreviations of 3 Crowdfunding Platforms: Kickstarter (K), RocketHub (Rh), IndieGoGo (IG)
browse on a single page with little scrolling necessary. This saves users time when reviewing projects.

Moreover, information visualization can help users to find meaningful patterns, clusters, trends, gaps, and explore relationships among various ideas and concepts. Data visualization techniques can be applied to crowdfunding in terms of visualizing information on steps to launch a project and projects information. Currently, creators can find step-by-step online instructions regarding how to launch a project on crowdfunding platforms. Kickstarter School visualizes 8 steps on how to launch a project with detailed information. IndieGoGo also provides visualized steps for creators, and the process is closely connected with users as they sign up for an online account; however, a timeline view could be designed to allow one to easily track the evolving projects of a single creator. Also, projects might be clustered by topic or funding goal, which help users to browse projects more easily.

2. Relate Phase: Offer Feedback and Validation Mechanism
According to the Framework, a key part of most creative processes is collaboration or consultation with other people, and it is important for people to consult peers and mentors at early, mid, and late stages of the creative process. Crowdfunding platforms make collaboration and consultation with others easier and faster in the process. It supports online communities through providing feedback and validation, which are critical to creativity. Creators receive feedback from their funders and crowdfunding platforms as they launch the projects; their ideas are validated and supported publicly.

Crowdfunding platforms generally communicate with its creators and funders using Online Contact Forms (Kickstarter and IndieGoGo) or email (RocketHub and IndieGoGo). For ideas exchange and feedback between creators and funders, blogs, online updates and comments are often used. Future improvements may include communication channels for observers and synchronous discussion and service support. Currently, IndieGoGo’s “DIWO Live! Service” experiments with such improvements every Friday at 12 pm PT. During this time, members ask questions in real time, receive tips from the founders, and learn from other members. This service also allows “observers”, potential participants to crowdfunding, to join the community with minimal effort.

3. Create Phase: Enable People to Generate Associations Among Creative Ideas; Provide Room for Experimentation; Make Successful Exemplars Available; Store Search and Browsing Histories and Funding Records
According to the Genex Framework, visual presentation helps in presenting substantial information and showing important relationships. Visual cues facilitate recall, association, and discovery. Currently, creators are unable to explore or identify relationships or associations among creative projects through current visual presentations. Offering people ways to input and make associations is the first step - creators can launch their “creative formula” starting with a synthetic, precise description of it using keyword or short-phrase formats; funders can tag projects they find interesting to create their own associations of the projects.

Second, the Framework emphasizes the importance for users to save the simulation sessions and analyze or
discuss their performance with peers or mentors at a later time. So far, none of the crowdfunding platforms we analyzed allow creators to experiment, try out or run simulations as they launch a project. They have to learn by doing. We suggest unsuccessful projects to be shared online with password protection to increase the likelihood of being re-launched successfully or receiving helpful advice or comments in the future.

Third, contributions of exemplars, templates and processes stored and shared through digital libraries support creativity. So far, few tips and strategies to successfully launch a project or campaign are shared or publicly distributed. This type of knowledge is often hidden and can only be discovered through interpersonal communication, self-research or advice from organizational experts. Thus, there exists a need to share knowledge of best practices and exemplars online.

Fourth, crowdfunding platforms could provide users with a way to store their projects’ browsing or searching history as well as their funding records over time. In this way, people can save time and continue their activities starting from the last time they stopped, and know how much they have spent on funding projects.

4. Donate Phase: Disseminate Results to Inform and Connect the Community
Creators need better tools to donate, disseminate, and store their results when work is completed. The Genex Framework suggests that email, listservs, digital libraries, and the Internet are excellent tools for disseminating results.

Current crowdfunding platforms work with press media (e.g. NY Times, Wired, CNN) and social networking services (e.g. Facebook, Twitter, Google+) to disseminate results of creative work and promote creators’ projects. Creators use social networking media to drive people to the platforms; funders read press articles and messages from their social media groups to learn about current and new work. These help to drive traffic to crowdfunding platforms.

To better inform and connect members in the community, we suggest crowdfunding platforms include recommendation features for users such as integrating “see what your friends are funding” or “you may be also interested in funding these projects.” Such recommendations are similar to Amazon’s successful effort to offer personalized recommendations to customers based on spending history and interests matching. Additionally, platforms can also collect audiences funding interest by asking them to input key words about the projects they might be interested in while registering an account online, similar to the selective dissemination of information (SDI) service used by information retrieval professionals. Customized information services may also send out notifications to funders about new initiatives of creators they previously funded, as well as personalized newsletters including funder’s funding history and their friends’ funding activities.

Limitations
Design implications are inferred and predicted in this research are based on the Genex Framework. User testing and validation is needed. Furthermore, design implications will consider the costs and organizational priority of the crowdfunding provider.
Future Research
Examining crowdfunding through the lens of the Genex Framework revealed a number of areas for future research. First, we will validate the design principles through gathering expert opinions as well as conducting interviews with creators and funders. Second, we will examine how the design of crowdfunding platform changes over time to meet societal needs or respond to economic issues over time. Third, we will investigate the role of social networking media in supporting the crowdfunding business and sustaining a new type of online communities.

Conclusion
Internet-based crowdfunding platforms connect thousands of creators and funders together, empowering people to realize their creative work. Further, the platforms allow more people to participate in the creative economy than before, potentially leading to increased economic and social prosperity. By effectively designing such tools, as HCI designers, we can increase the impact of our tools and productivity in the world.

Acknowledgements
We give special thanks to Patti Bao and Lauren Scissors for their valuable comments.

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