App Movement: Collaborative Design of Mobile Applications for Communities

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Abstract

There is an increasing demand to encourage inclusivity in the design of digital services. In response to this issue we have created App Movement [2], a platform that enables the promotion, collaborative design, and deployment of community-commissioned mobile applications. The platform facilitates collaborative customization of a common app template, for which the development and deployment of the app is fully automated. Launched in Feb '15 the platform now has over 2,300 members who have supported 30 campaigns, 11 of which have been successful, resulting in 8 apps being launched, with over 18,000 members actively contributing content. We discuss some of the implications of an open and shared design space, highlight conflicts of interest amongst the crowd and unpick the methods we utilized to set and manage expectations.

Introduction

Technology has become increasingly prevalent in everyday life, yet we as consumers rarely participate in the commissioning of technology due to the high levels of technical expertise, subject knowledge or resources required to do so. New models of technology commissioning and ownership are emerging to address
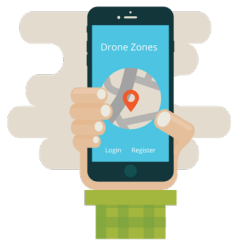
Figure 1. Start your campaign and engage the community in supporting the idea
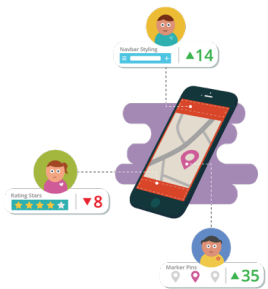
Figure 2. Collaboratively design the app together and vote on ideas.

Figure 3. The platform will automatically generate and deploy to the app stores.

this issue [1,3,4]. Scholz [4] introduces the concept of Platform Cooperativism wherein "worker- owned cooperatives could design their own apps-based platforms, fostering truly peer-to-peer ways of providing services and things". Within this model commodities and services are provided by, for, and to the benefit of, the cooperative. We explore this design space further through the deployment of App Movement, an online platform that facilitates communities to; propose and promote ideas for mobile applications in response to community needs, collaboratively design the concept through a series of configurable features, and automate the development and deployment of a customized app template.

App Movement

App Movement is a platform that allows communities to propose, collaboratively design and automatically generate their own mobile applications. The platform includes a semi-structured design area, that harnesses the power of crowdsourcing to collate ideas and understand requirements, see Figure 4. By abstracting the app development process, removing technical barriers and providing a complete solution for cross platform mobile application design and development; App Movement aims to empower communities with the ability to develop apps without extensive time or monetary commitments. The process starts with the creation of a campaign page, outlining the motivation and initial ideas for an app that could assist a community. This is then shared amongst the community who are encouraged to support the idea and distribute it as widely as possible in an effort to reach a predefined target number of supporters. Reaching this target shows there is a real need for the application and justifies the forthcoming efforts of the

community. At this point in the process the community are invited to participate in the design phase to contribute their own ideas as well as democratically vote on the configurable aspects of the application. Once this process is complete the app is automatically generated in Objective-C and Java using a set of automated build tools. The native applications are published to the Apple App Store and the Google Play Store, for the community to download and use for free. App Movement features an array of tools to assist communities throughout the process. The creator of a Movement can post campaign updates delivered via email to all supporters. Supporters are also kept up to date with daily emails during the support, design, and launch phase. The platform is integrated with social network sites via unique tracking links, appropriate markup to present items clearly in timelines, and sharing buttons are available throughout the platform. User generated content is also community moderated via a content flagging system.

An Open and Shared Design Space

Supporters of a successful campaign, known as a *movement* are invited to participate in a structured design process, where together, they collaboratively configure an app template. The process is split into a series of design tasks for each customizable aspect of the template; supporters contribute their own ideas to each task and/or vote on contributions submitted by others. Contributions and votes remain anonymous and can be withdrawn at any point. Users are encouraged to engage in discussion around each specific design task and the process as a whole. This discussion is not anonymous, and thus facilitates open expression of personal opinion, rationale and conflict amongst the crowd.
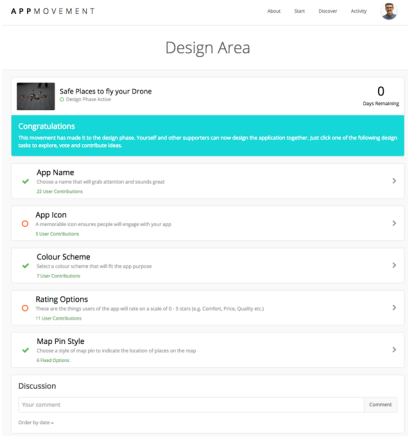
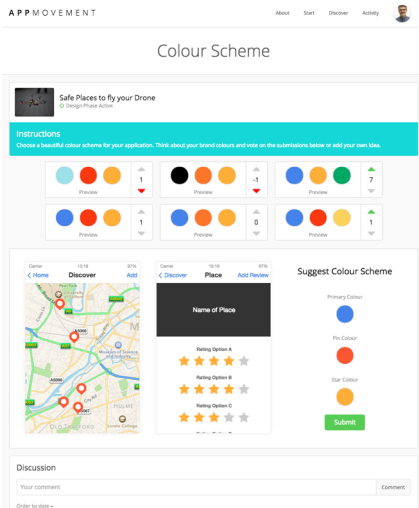Figure 4. Design area showing available design tasks.

Figure 5. Design task for contributing app color schemes

Xu *et al* [7] note the limitations of online critique, stating the importance of relevant skill, appropriate motivation, and availability or time. The design tasks do not assume supporters have any specific skills and are high-level enough for the majority of the supporters to engage. The one exception to this is the design of the app icon, which assumes a level of technical experience in producing digital artwork. During our deployment, we found there were fewer contributions for this task, a likely result of this barrier, however we found discussions around the contributions to be rich. An active crowd relies on high-levels of motivation. Unlike crowdsourcing platforms such as Mechanical Turk, App Movement does not offer monetary rewards for engagement and relies solely on the will of the community to offer contributions. Our findings suggest that the act of participating in the design of a valued community asset is rewarding in it's own right. Similar to other crowdsourcing platforms, the design process is divided into a set of manageable tasks. A user can contribute to a task in a matter of seconds by voting on the content shared by others, alternatively they can spend a little longer and post their own ideas to the community. These varying levels of commitment provide different entry points for the community to engage, with the hope of improving the overall output.

Standing out from the Crowd

Drawing from previous work by Suler *et al* [5] we opted to provide anonymity by default throughout the design phase, detaching users from their contributions. Our intention was to eradicate directed questioning, criticism and favoritism amongst the crowd. Despite this, some users sought ways to attribute themselves to contributions in the discussion areas. This self-attribution often occurred inadvertently as a means of explaining the reasoning behind a contribution or to argue in favor of a proposition. One user made the following comment: *"hi mamas! the green icon is my idea and i think its beautiful."* a clear example of self-promotion in the design process of one app. A different user who posted "DroneSafeZone" and "Drone Safe Zone" as app name suggestions commented "I like the variations on 'Drone Safe Zones' as its specific to the app..." this was an example of a user exploiting the status of anonymity to promote their suggestions without directly affiliating themselves with specific suggestions.

Power Struggle

People have certain expectations when publishing content online. It is not unreasonable to assume one retains complete and continuous control along with the ability to adjust, modify or remove any content one shares online. However, issues arise when this content is a call to action with which individuals align themselves with. Within App Movement individuals create a campaign page with an initial description of their idea. Once the campaign gathers support from 2 or more community members they lose the privilege to end or modify their campaign. This restriction plays a key role in safeguarding supporters from joining a transient campaign that might not represent their initial expectations. During our deployment there were numerous occasions where this hard restriction proved problematic in the eyes of the creator (the result of revoking privileges from a user). Movement creators were surprised to find they couldn't fix errors or add new details in the campaign description. We were contacted numerous times and had to justify the restriction, often manually making the changes on behalf of the user. Within a typical software

development project, the design decisions are often led by an individual or a group of stakeholders. Within our context the majority of the communities who participated in campaigns had appointed leaders with specific preconceptions of how their apps should look and function. App Movement attempts to eliminate this hierarchy within a community, awarding each member with the same level of influence in shaping the outcome of the process. We would like to explore the effect this shift of control had on the final design, and how those involved responded to the equal distribution of responsibility amongst the community.

Setting Expectations

App Movement is an ambitious platform that must remain cautious of over-inflating user expectations. When we started development of the concept it was our goal to provide numerous app templates that could be appropriated by communities to tackle a wealth of problems. With this in mind the platform was designed in a way that suggests it could meet a diverse range of demands. However, as it stands the platform is limited to a single template for location-based review apps. There were several factors that restricted the transparency of the platform and these were corrected. A clear outline of each of the steps in the process combined with examples of produced apps proved vital when conveying the abilities of the platform.

Future Work

We are currently working to integrate a new application template into the platform, in an order to offer a greater range of tools to support communities. The new template is a knowledge sharing application, where users can request and publish short 'How To' guides around a specific subject e.g. a student app with guides for changing a light bulb, taking meter readings or bleeding a radiator. This new template will provide an opportunity to create new design tasks for the crowd to tackle and allow us to further study the dynamics of the crowd during this unique collaborative environment. We also wish to explore the effects of a weighted design phase following on from the work by Vlachokyriakos *et al* [6]. Where those who have the most impact during the support phase, garnering the most supporters through social media channels, are awarded with the highest level of influence. We hypothesis that a weighted design phase could incentivize supporters to promote campaigns and result in a more suited community-driven information resource.

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