Mobile Technology for Nonprofits: Harnessing the Power of Crowdsourcing

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Contents

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This project is dedicated to Daniel H. Hess, who tried his hardest to fight Hodgkin's lymphoma.

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Introduction

What if your best friend was diagnosed with leukemia and needed a bone marrow transplant from a donor in order to live? What if the Be The Match Foundation is checking their donor registry, but is not finding any potential donors? What could you do? You would want to help him, in any way possible, find a matching donor.

You could jump on your computer and email all his friends and your friends about the vital need to find a matching donor. You could open up your web browser to share the message on Twitter and Facebook and employ your friends, their friends, and their friends' friends to get the message out. Telling as many people as possible could increase the chances of finding a matching donor for your best friend – improving the chances of saving his life. What could make this process easier?… Being able to make these connections from your smartphone.

According to the Pew Internet and American Life Project, 42% of cell phone users own smartphones (Smith, 2011) and 65% of adult Internet users are connected to social networking sites (Madden & Zickuhr, 2011). Smartphone usage is on the rise and currently there are no mobile applications for nonprofits that are taking advantage of the power of crowdsourcing to spread awareness.

Solution

A mobile app is one of the easiest ways a nonprofit can increase awareness, raise funds, and promote events. The portability and popularity of smartphones can strengthen the connection between users and the nonprofit they support. By creating an app that empowers users to easily participate and engage, more people might be willing to take actions and spread the word.

Purpose of the Document

This document presents a mobile app design that can help nonprofits harness the power of crowdsourcing, describing how the mobile app can connect and encourage users to promote fundraising events and donor drives. The document outlines the features of a model framework for a mobile app, which is easily customizable for use by individual nonprofits, and details the functionality of each of these features. It then focuses on the user research behind the app, explaining the user testing and final design of a working prototype of the model specifically tailored to the Be The Match Foundation.

Scope

This document covers the general functionality and features of a framework for an actual mobile application for the iPhone and iPod Touch devices. The success of the app for these devices could lead to the development of the app for the iPad or Android devices.

This document assumes that the secure capability exists to connect and sync the mobile app to a corresponding web site's backend databases and server to share information. This document covers the general functionality of the app, but the content within the app

must be specific to the nonprofit implementing this framework to best meet each organization's unique needs and goals.

Intended Audience

The target audience for this app is motivated young adults (18 years old and older) to 40-somethings. These users are tech-savvy, own smartphones, and are highly connected to networks of people via Facebook, Twitter, and other social networking services. These individuals are well versed with using apps, communicating with friends, and conducting advanced tasks (e.g., pay bills, purchase items, and play games) on their smartphones.

The app is aimed at users who would like to promote fundraisers and other events for a nonprofit. The users would be promoting events ranging from an annual fundraising gala to a potentially lifesaving donor drive for a lymphoma patient.

Literature Review

This literature review surveys several aspects involved with the application framework, which include: smartphone popularity, non-profits and technology, crowdsourcing, user motivations, persuasive technology, mobile social software design, mobile video journaling, and mobile application best practices.

Smartphone Popularity / Usage

Smartphones have been gaining popularity and are being utilized beyond their capabilities as a telephone. In a recent survey of 2,277 adults, the Pew Internet and American Life Project found that 35% of American adults own a smartphone and that nearly half (42%) of all cell phone owners surveyed possessed smartphones (Smith, 2011). Pew Internet defined smartphones as cell phones that operated on iOS, Blackberry, Android, Windows, or Palm operating systems. Within the findings, these smartphone users were quite acclimated to using the Internet from their smartphone. Pew Internet reported of these owners 87% used their smartphones to browse the Internet or check email and 68% used them to go online in a typical day (Smith, 2011).

While smartphone usage has gained popularity, a study conducted by Falaki et al. (2010) found tremendous diversity among users, where the average interactions with smartphones varied from 10-200 interactions and the average amount of data varied from 1-1000 MB per day. While there was a range of diversity in activity levels, the study learned each person on average had 50 applications installed on their smartphone (Falaki et al., 2010).

A study conducted by Thakur, Gormish, and Erol (2011) found that using smartphones as a tool to capture and create information for work purposes was just beginning. However, the potential for these numbers to increase is possible as the survey also found of those respondents that carried a laptop, 74% of them reported carrying them less often because of their smartphone (Thakur et al., 2011).

With the smartphone becoming increasingly prevalent in society, it is worth investigating their potential uses to benefit nonprofit organizations.

Nonprofit Organizations and Technology

Internet and computer technology has facilitated numerous social networks as well as become an integral part of daily life. As a result, nonprofits have been pushed to learn how both can be used to their advantage.

Miller discussed that consumers today live in a "networked society," which he stated refers more to the opportunity that people can create their own personal networks than to the technology that connects them (2009). With this considered, Miller expressed the need for nonprofits to shift from traditional methods of donation collection toward methods to fit this new peer-to-peer network society. Social networking services, such as Facebook and LinkedIn, made it considerably easy to share information and Miller encouraged nonprofits to harness that power. In one example, Justgiving, an online fundraising company in the United Kingdom, was getting steady traffic from Google.co.uk to their site. They recognized the potential for getting traffic from Facebook to their site and they created an application that people could add to their personal Facebook page. In the following seven months, traffic to Justgiving.com from Facebook surpassed the amount coming from Google.co.uk (Miller, 2009). The Justgiving Facebook app increased awareness through peer-to-peer network, encouraging new visitors who otherwise might not have sought out Justgiving on their own.

A core focus of nonprofits is fundraising; for many organizations, it is their main stream of revenue. According to Giving USA Foundation (2011), in 2010, individuals made 73% of the contributions to charitable organizations, totaling approximately $211.77 billion.

Goecks, A. Voida, S. Voida, and Mynatt (2008) reviewed the function of technology in nonprofit fundraising and identified six roles of involvement. Several of these roles included learning opportunities for consumers, where nonprofits share news, communicate information about events, as well as teach potential donors about their organization (Goecks et al., 2008). After learning about the nonprofit, consumers could recognize the nonprofit's importance and understand the need to make a donation.

In a more direct fundraising role, technology can enable donations, making it more convenient and easier for donors to contribute monetarily to the nonprofit (Goecks et al., 2008). For example, a "Donate Now" button on a nonprofit's web site allows for easy access to contribute. In addition, technology can allow for directed giving, where donors can make contributions to specific programs or individuals and understand their direct impact with the nonprofit (Goecks et al., 2008). This is increasingly important, as society has become more socially connected. People might be more willing to make a contribution knowing that it will impact a "friend of a friend" – someone in their social network.

Lastly, technology can help facilitate individual and community advocacy. Technology can provide tools for donors to share information about their advocacy. For example, the Causes application on Facebook allows users to share information about the organizations they support (Goecks et al., 2008). In today's networked society, this is a viable way to increase awareness and potential donations for a nonprofit.

Mobile technology with nonprofits is just beginning to take off. Currently, there are already mobile fundraising technologies in place such as donating via text message and smartphone applications. In addition, some researchers have recognized its potential to link individuals to volunteer opportunities.

Kane and Klasnja (2009) explored possible methods for mobile technology to connect users to volunteer opportunities with nonprofits. It can help extend conventional volunteer recruitment strategies by tapping into users' social networks and connecting people with common goals to encourage on-going volunteer involvement. They discussed how nonprofits can take advantage of mobile technology features such as geolocation, where users could be notified of volunteer opportunities near them (Kane & Klasnja, 2009).

There are currently services that allow nonprofits to receive donations or pledges via text message. Donations are nominal amounts billed to the user's wireless carrier account and pledges are open-ended amounts charged to a user's wireless carrier account or credit card (Causecast Mobile Fundraising, 2010). Some uses for text message donations include fundraising efforts for victims of natural disasters. In a 2010 survey conducted by the Pew Internet 11% of the 2,252 adults surveyed have made a donation via text message (Smith, 2010). Aside from that report, there is no in-depth research on the matter.

There are a handful of mobile applications for nonprofit fundraising, but none currently available are robust stand-alone applications. For example, mGive and Frendo are applications that link users to web sites where users can make donations from their mobile web browser (Mobile Accord Inc., 2011; Think Ahead Software LLC, 2011). The American Diabetes Association's Tour de Cure app connects their fundraiser participants to a mobile version of their online fundraising web site (CharityDynamics LLC, 2011). Similar to the text message fundraising topic, there is no extensive research on mobile fundraising application development, achievements, weaknesses, or best practices.

Crowdsourcing

In an increasingly networked society, crowdsourcing has become a successful tool in accomplishing tasks. Crowdsourcing utilizes "the power of 'crowds' of people to facilitate large scale tasks that are costly or time consuming with traditional methods." (Yan, Marzilli, Holmes, Ganesan, & Corner, 2009).

In *Here Comes Everybody*, Shirky explained several cases of how crowdsourcing can accomplish a variety of different tasks. He goes on to make the argument that by crowdsourcing, achieving success was often greater and faster than by using more traditional outlets (2008).

For example, Nupedia was a free, online-based encyclopedia with articles reviewed by selected volunteer experts. The intention of having a board of experts was to maintain a level of quality for the site, but it hindered the progress of adding content to the site. To

remedy the situation, Sanger, an employee of Nupedia, introduced a new strategy, which led to the development of Wikipedia. With Wikipedia, users can freely create and edit content on the online encyclopedia. In a matter of weeks, the number of articles on Wikipedia surpassed the number of articles hosted on Nupedia (Shirky, 2008). Today, Wikipedia hosts 20 million articles ("Wikipedia," 2011). By opening the site to have articles created and edited by anyone, much more work was accomplished in a quicker timeframe. Applying this open-source approach can add value in tasks that need widespread coverage in a timely manner.

There is a small amount of research done on computer/web-based crowdsourcing applications and the motivations behind them. This research provides a basic foundation for understanding what has been attempted and the motivations needed to facilitate successful participation.

Crowd-powered interfaces are applications that "rely on human activity traces or human computation to provide benefit to the end user" (Bernstein, 2010). In order to be successful, participation is absolutely necessary in crowd-powered interfaces. In evaluating three crowd-powered interfaces he helped develop, Bernstein recognized user motivation was a key determinant of success. He and his colleagues used social connectedness to motivate participants in crowd-powered interfaces (Bernstein, 2010).

Bernstein, Marcus, Karger, and Miller (2010) developed FeedMe, a Google plug-in that allowed users to easily share links with friends. By using this service, visitors could share specific articles that might be of interest to friends and colleagues. This personalization to specific interests and filtering for content and quality made recipients more likely to read these vetted articles (Bernstein et al., 2010b).

Another crowd-powered interface, Collabio, a portmanteau of "collaborative" and "biography," was created as an application on Facebook that lists tags about a user's personality, interests, musical tastes, and skills (Bernstein, 2010). Friends in the user's social network submitted tags about the user and also guessed tags submitted by other friends. The guessing feature was a game, which motivated friends to participate. The more there was participation, the more comprehensive the user's biography would be.

Developed by Bernstein et al. (2010a), Soylent was a crowd-powered word-processing application that relied on users to edit text. In this case, crowdsourcing was vital for its success because extensive technical editing is not something computers can do well (Bernstein et al., 2010a). The editors that participated were from Mechanical Turk, which provided payment as an incentive to participate.

AgreeRank, a voting system where users could agree or disagree with a person's blog post, was developed to encourage interaction among authors and readers (Cheng et al., 2007). Researchers developed this motivator because they recognized the success of a blog relied on the dynamic interaction of people willing to participate.

While crowdsourcing has had a mostly web-based presence, it is slowly making an appearance on mobile devices as well. For example, mCrowd was a demo developed to

connect mobile phone users with crowdsource-type tasks that require mobile device input (Yan et al., 2009).

Liu et al. (2010) created a mobile application that used crowdsourcing to power foreign language translation. In this app, users took photos of foreign language signs with their mobile photos and submitted them for translation. Others then translated the text and submitted the translation to the user. The application needed refinement since translations often required additional context for clarification and the replies were not always submitted in a timely manner.   Liu et al. (2010) recognized that the success of this application would heavily depend on participation from people. This initiated the need to research user's motivations to participate.

Individuals' Motivation

Motivation can be a driving factor in the success of an activity, especially with crowdsourcing (Cheng et al., 2007; Bernstein, 2010). Motivations include both intrinsic and extrinsic ones. Deci and Ryan defined intrinsic motivation as "an internal value of an individual toward the work itself" and external motivation as "an external value that is not directly related to work itself, but is primarily based on personal values and expectations" (as cited in Liu & Fang, 2010). While an application or task might have greater extrinsic motivations for participating (e.g., helping a good cause), intrinsic motivations can be valuable to recognize as well.

Liu and Fang (2010) conducted a study on the motivational factors behind the willingness and behavior of knowledge sharing amongst colleagues in a nonprofit organization. The survey concluded that internal altruism correlated to willingness to engage in knowledge sharing. The results also showed that while colleagues took opportunities to increase knowledge for self-growth, those opportunities created a spillover effect of knowledge sharing amongst coworkers (Liu & Fang, 2010). Even though the participants were intrinsically motivated, their activities created extrinsic motivations.

StoryBank, a video blogging application for mobile devices, shared short videos across low-literacy populations in India (Frohlich et al., 2009). Participants in StoryBank cited both extrinsic and intrinsic motivations for their collaboration with the program. Forty-four percent felt it was important to their community and 43% felt it was of personal interest to them (Frohlich et al., 2009).

On a larger scale, Wikipedia is free, collaborative, online encyclopedia with articles and content contributed by volunteers called Wikipedians (Schroer & Hertel, 2009). Schroer and Hertel (2009) conducted a survey among Wikipedians from Germany evaluating their motivations for contributing. The results indicated that Wikipedians were intrinsically motivated because they enjoyed participating and that satisfaction led them to continue participating. The researchers hypothesized that the benefits to Wikipedians were higher if their engagement was higher. However, it turned out that the costs were higher than the reward, probably because there is no reward for highly-involved contributors.

As mentioned earlier in the evaluation of crowdsourcing, motivations for participating included social connectedness, competition, monetary incentive, and the act of participating in the activity. While the motivations run the gamut in these explored examples, it is important to recognize the possible intrinsic and extrinsic motivating factors and take advantage of them.

Mobile Persuasive Technology and Social Software

Mobile devices have lent themselves to facilitating persuasive technology and social software because of their ability to provide immediacy to the situation (Eagle & Pentland, 2005). While the uses of mobile devices for persuasive technology and social software are relatively new, there have been a few applications developed in this field.

One example of mobile persuasive technology was a texting program designed to assist users with smoking cessation (Riley, Obermayer, & Jean-Mary, 2008). With the program, users periodically received text messages to curb their smoking habits. Users would also text back when they needed help with smoking urges and the system would reply with coping strategies. After six weeks, 42% of participants did not smoke; of those that did continue, frequency of smoking was reduced. Participants found the mobile texting service an unobtrusive way to implement change.

Another example, UbiGreen was a mobile application developed to help users track transportation habits and to encourage them to make greener transportation choices (Froehlich et al., 2009). The application created awareness of the user's transportation performance and provided feedback through icons. Although the application was not intended to be a game, participants perceived it as one because it encouraged them to do better by scoring points or growing the tree graphic simulation. Social sharing also resulted with users participating in the study. While not part of the original design, users and their friends and family were engaged in the application through conversations about the users' progress.

In terms of mobile social software, Brereton, Roe, Foth, Bunker, and Buys (2009) explored mobile social design with technology-assisted ridesharing programs. The research investigated how mobile social software could facilitate a ridesharing solution. They determined that using a mobile component could reduce logistical issues, such as improving contact and communication among users and helping users find rides at spontaneous moments. Their findings revealed that if persuasive technology was used to get people to participate, it would only be successful if members of the users' social networks participated, it was easy to use and timely, and had a recognizable potential for success (Brereton et al., 2009).

Kane and Klasnja (2009) explained nonprofits could make the most of mobile technology by creating a mobile social software application. That application could boost volunteering efforts by using geolocation to notify users of nearby volunteer opportunities or connecting volunteers with each other.

More research needs to be done on implementing mobile social software, but the potential to use mobile devices more frequently to assist with persuasion is there.

Mobile Video Journaling/Blogging

Mobile devices have gone from voice-centric devices to multimedia devices with capabilities to capture images and video, upload content, and view content (Jokela, Lehikoinen, & Korhonen, 2008). In addition, the increased availability and strength of behind broadband connections to send and receive data have made it easier to share content.

Several research projects have been conducted about mobile video journaling or blogging in a variety of communities. From these studies, best practices and feasible uses have been developed.

MoViE, which stands for Mobile Video Experiment, was an application where users could shoot video using their mobile device and upload it to a social network sharing service (Multisilta & Suominen, 2009). While the interface was clunky compared to smartphone application interfaces, it was a step forward in using a mobile device as a means for video blogging.

StoryBank was another video blogging application for mobile devices (Frohlich et al., 2009). It was targeted to share information across low-literacy populations in India; in place of text buttons, iconography was used. In addition to shooting video, users could capture images, arrange their sequence, and add narrative audio to them. The project turned out to be effective where face-to-face storytelling was the norm. In the study, 68% of the users said the overall process of shooting and publishing the videos was easy (Frohlich et al., 2009).

Similar to StoryBank, Bidwell, Reitmaier, Marsden, and Hansen (2010) attempted to develop a mobile digital storytelling app for use among a rural community in Africa. This population did not have access to personal computers to record or share their life experiences digitally. The researchers felt an app like this could be successful instead of text-based documentation due to low-literacy among the population.

Considering these two projects were geared toward low-literacy populations, a logical conclusion can be made that a similar mobile video blogging app could be successfully designed and implemented for use by a literate population.

Juhlin, Engström, and Reponen (2010) took mobile video blogging a step further and created an application that broadcasted live video from a mobile device. While the concept seemed promising, the results of the study proved otherwise. Of the 178 broadcast videos created, 71 of them were of tests and demos of the application. The study concluded that while the technology was there, users needed to be educated on how to use the application, as well as basic filming techniques (Juhlin et al., 2010). Providing more support with guidelines and demos could help users be more successful with the application.

Mobile Multimedia Presentation Editor was an application developed for a Nokia mobile device, where users could create audio-visual stories and share them among friends and family (Jokela, Lehikoinen, & Korhonen, 2008). Users participating in the research

created presentations to share everyday events, invite people to events, or take note of items for shopping or homework. The researchers recognized that the app could lend itself to mobile journalism because everything could be accomplished using the application, removing the need for transferring data to another device for editing and publishing (Jokela et al., 2008). The results from the research led to some design principles for similar apps, which are discussed in the Mobile Best Practices section of this paper.

Mobile Application Best Practices

With mobile application development on the rise, best practices are being established to facilitate successful mobile application design. Best practices include methods in prototype development, interaction design, application usage and features, leveraging social networks, and interaction design.

Prototype Development

Two studies concluded that computer-based or digital prototypes yielded better testing results than paper or low-fidelity prototypes. Ince, Salman, and Yildirim (2009) created three types of prototypes – one on paper, one on a computer, and one on the actual mobile device the app would be installed. They tested simple and complex tasks on each and found the computer-based prototype produced more successful usability results than its paper-based counterpart and the paper-based prototype, even with a simple task, returned low success rates (Ince et al., 2009).

de Sá, Carriço, Duarte, and Reis (2008) developed a low-fidelity prototype consisting of hand-drawn sketches of screens and a digitally-produced prototype to test a mobile application design. The results concluded that participants in the study were more content using real devices.

Application Usage / Features

While the portability of a smartphone and the capability of an application to do everything one needs might seem appealing, it might not be as feasible or practical for the end user. For example, Jokela et al. (2009) developed the Mobile Journalist Toolkit, where users could write, photograph, edit, and publish newspaper articles all from a mobile device. They found that, while the app was more convenient for most parts of the process, users still relied on pen and paper for note taking because it was less intrusive and awkward for interviewees (Jokela et al., 2009).

Jokela et al. (2008) created the Mobile Multimedia Presentation Editor application, which allowed users to created media-rich presentations using their mobile devices. In the process of testing the application, they realized four design principles for this type of application. These included "flexibility, awareness of the task context, expressiveness, and personalization" (Jokela et al., 2008).

The first principle of flexibility recommended allowing free-form editing to allow users to be more creative when creating their presentations. The second principle was awareness of the task context and was connected to allowing flexibility. With free-form editing capability, users needed to know where exactly they were in the application so they did not feel lost. Another principle recognized was expressiveness – the tools and

quality of the presentation had to be high enough to convey the message in the way the user intended it to be presented. The last principle was personalization, where users felt able to customize their presentations with an expansive set of visual/audio elements. Users felt that a small set of elements were basic and made their messages generic and impersonal.

The survey conducted about participating in volunteer activities and how technology could help support such opportunities by Kane and Klasnja (2009) concluded that any application developed should show a user's impact, decrease costs to volunteers, reward users, and avoid overwhelming users with information. By focusing on these aspects, volunteers would be more likely to participate repeatedly.

In the survey results, users were not motivated to continue volunteering because they felt their participation was not helpful (Kane & Klasnja, 2009). If there was some way to show how a user's participation was beneficial, users might be more willing to participate again. Another determination was that users preferred that the cost (such as time and travel) to volunteer be lowered. Using geolocation capabilities, an app could notify users of nearby volunteer opportunities. While some users might not be able to volunteer time, the app could encourage them to make donations in a convenient manner. Respondents also mentioned being recognized and rewarded for participating in a volunteer activity would motivate them to participate again (Kane & Klasnja, 2009). Recognition and reward could come in the low-cost form of thank you messages or other positive feedback. Lastly, respondents acknowledged how overwhelming it was to receive newsletters or invitations to volunteer opportunities. Recommendations based on the survey include tactfully alerting users with relevant volunteer opportunities.

In *Tapworthy*, Clark (2010) emphasized the need to design with simplicity in mind. In terms of performing tasks, Clark explained iPhone users are accustomed to accomplishing "short dashes of activity" or "microtasks" on their iPhone. Because of this mindset, it is important to keep tasks small and efficient. Clark stressed determining the most important task of the application focus on developing that feature, instead of cramming the application with too many features.

Leveraging Social Networks

There is a tremendous amount of content on the Internet and it can be overwhelming to figure out what content one should read. Bernstein et al. (2010b) created the FeedMe plug-in for Google Reader allowing users to share articles of possible interested with selected people in their circle of friends. Bernstein et al. (2010b) recognized that e-mail is the leading method of sharing and that sharing with small audiences worked best because of the level of personalization. FeedMe was developed using existing social connections and did not require a profile to start, which simplified things for users – they did not have to sign up for another social network account and rebuild social connections for that account.

In the survey about volunteering and technology to support volunteer opportunities, many respondents acknowledged that they volunteered because a friend or family member was

already participating (Kane & Klasnja, 2009). Thus it is important for any nonprofit application to take advantage of existing social connections.

Interaction Design

According to the Fogg Behavior Model, in order to have a successful targeted behavior, not only does the user's motivation and ability have to be optimal, but the user also has to have a trigger to perform the targeted behavior (Fogg, 2009). Fogg classified triggers into three categories: spark, facilitator, and signal triggers. Spark triggers helped motivate users, facilitator triggers made it easier for users to participate, and signal triggers reminded users to perform the targeted behavior (Fogg, 2009). These triggers, to name a few, include text messages, alarms, and prompts. Using triggers in interaction design could better persuade users to execute that behavior.

In terms of human factors, the iPhone's keyboard entry method faced criticism because it was a small surface and required a lot of keystrokes to compose lengthy pieces of text (Zhai et al., 2009). Zhai et al. (2009) developed ShapeWriter as a potential solution, where it used a single sliding gesture to create each word. However, the iPhone's software development kit (SDK) did not allow for third party keyboards to be implemented system-wide (Zhai et al., 2009). Rather than trying to change the standard, it is important to recognize the hindrances of lengthy text entry and make efforts to reduce it.

Another consideration with interaction design is targeted surface area. Clark (2010) recommended designing in terms of 44-pixel touch areas, which is the size of an average fingertip.

Application Design

Background Information

This section explains in depth the features of this mobile application. Overall, the interaction design of the app follows a sequential, linear path to help guide the user through the app with ease. The first step or course of action is always listed at the top and then followed by the next steps.

Customization

The basic framework of the app and its functionality will be structurally the same. The application can be customized for any nonprofit that hosts fundraisers or other public events. The written content can be customized with guidance provided by subject matter experts. Interface elements, such as background color and splash screen, can also be customized. Available elements for customization are denoted throughout the design explanations. To put the app and its functionality into better context, the working prototype has been created and customized for the Be The Match Foundation.

Be The Match Foundation

The Be The Match Foundation facilitates unrelated bone marrow and blood stem cell transplants to people with leukemia, lymphoma, and other life-threatening diseases. In

addition to needing monetary donations to facilitate the transplants and fund research, Be The Match needs bone marrow and blood stem cell donors for their donor registry.

Nomenclature

For consistency, this section describes the areas, buttons, and actions where applicable in terms defined by the *iOS Human Interface Guidelines* written by Apple, Inc. (2011).

Document Flow

The app has four main features, which are learn about the nonprofit, link an event, promote an event, and donate money to the nonprofit. This section of the document will go over each main feature, as well as the MyStats and Setting features. A complete information architecture diagram of the app is available in Appendix E.

Splash Screen

When the app launches a splash screen is displayed. This screen can be customized with the nonprofit's logo and related imagery. Selecting **Start** displays the Main Menu screen.

Main Menu

The Main Menu screen offers six options for the user (Figure 1). These are listed in a linear fashion in the order the user would most likely interact with the app. The design considered the user might have been asked to download the app in order to help promote an event, but might not completely understand the mission of the nonprofit or the app's capabilities. With that determined, the first option is **Learn**. **Link an Event** and **Promote an Event** are listed after since the next step would be linking an event and then promoting it. **Donate** provides the user access to make a contribution to the nonprofit. The **Settings** option displays the Settings screen, where the user can configure various app settings. Finally, **MyStats** provides the user with access to statistics about their activity within the app.

The six options are accessible from the Main Menu screen, as well as from the tab bar on every subsequent screen in the app. Icons are used to help the user identify the six options. These icons are also repeated in the tab bar.
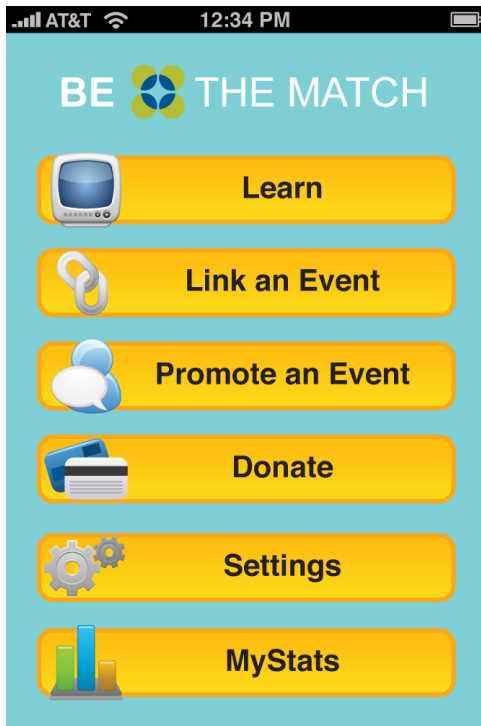
Figure 1. Main Menu screen with six options.

Customization

For branding, the nonprofit's logo is displayed at the top.

Learn

One of the main components of a nonprofit is educating people about who they are and what they advocate. The Learn section of the app is designed to quickly and easily educate the user about their mission and help the user educate others if necessary (Figure 2). By giving users this type of electronic press kit, a consistent message can be promoted on behalf of the nonprofit. This section of the app provides a starting point for conversations about the nonprofit and the app.

There are four parts in this section and they include: an introductory video, an elevator speech, other supplemental resources, and information about the app itself.

Figure 2. Learn About Us screen with four options.

About Us Introductory Video

Taking advantage of smartphone capabilities, there is a short introductory video that users can watch. To watch the video, the user selects the video thumbnail in the About Be The Match Video cell. The video plays at full-screen in the smartphone. The video will provide an engaging and inspiring overview of the nonprofit, much like a commercial. The video message is something the non-profit creates and posts to the Internet. The app pulls this video message from a site like YouTube or other video-sharing web site.

Elevator Speech

Recognizing how the user and their peers might be busy and have limited time, there is an elevator speech about the nonprofit the user can read or share with others. Selecting **About Us in 30 Seconds** in the About table directs users to a screen with the elevator speech. Calling the selection "Elevator Speech" was avoided since users might not be familiar with this business buzzword.

Additional Resources

Selecting **More About Us** displays a screen, where users can learn in-depth information about the nonprofit. The write-up in this section is longer than the elevator speech, but still succinct since the content is being displayed on a smartphone. This section also contains links to appropriate pages within the nonprofit's main web site. For example, this section can link to a nonprofit's page on volunteering, upcoming events, or news releases. These links would open in the smartphone's web browser.

About This App

Selecting **About This App** takes the user to the About This App screen that explains the main capabilities of the app (Figure 3). The Learn, Link, Promote, and Donate cells each briefly describe those features so users can quickly get the gist of them. There are **More info…** links available for the Link and Promote cells if the user would like more in depth descriptions.
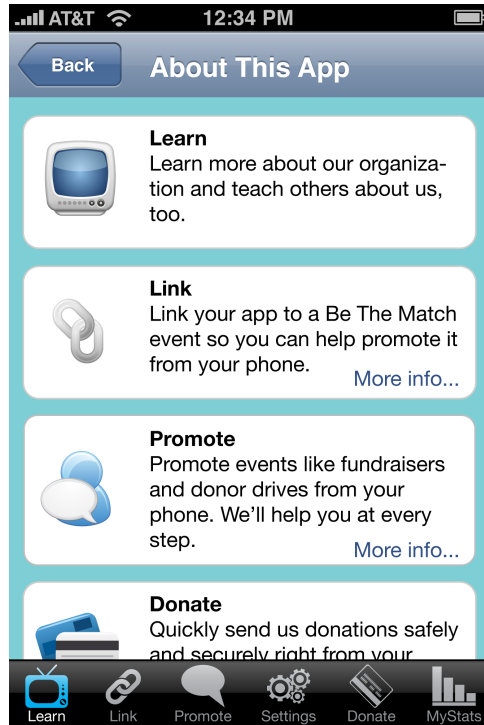

Figure 3. About This App screen

Customization

Nonprofits can customize the introductory video, as well as the content that is accessible from the About table.

Link an Event

Pre-requisite

Prior to linking an event to promote, the event has to be registered with the nonprofit on their web site. When an event is registered, an identification number is generated for it called an Event ID. The app uses the Event ID to link the app to the event. Any links generated inside the app for the event also reference the Event ID. When registering the event, event coordinators define basic information such as title, date, time, and location of the event. After the event is registered, anyone with the app can help promote the event. URLs created and sent through the app will direct recipients to the event's web site, where they can find out complete details to the event, as well as make donations.

Information About Linking an Event

At the top of the Link an Event screen is the Information cell (Figure 4). This cell provides basic information on linking the event to the app and how the user can obtain an

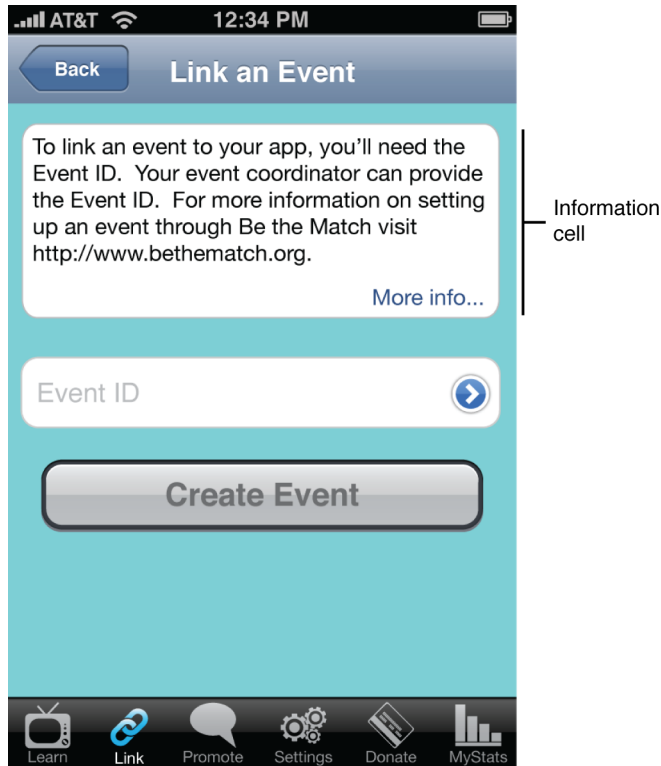Event ID. Selecting **More info…** from the cell provides the user with more details on generating an Event ID.

Figure 4. Link an Event screen.

Linking a New Event

To link an event to promote, the user will select **Link** from the Main Menu screen or from the tab bar on any screen. The Link an Event screen will display and the user can enter the Event ID and select **Create Event**. After the user selects **Create Event**, the app takes the Event ID and links the event with the app. When the event is successfully linked, a confirmation alert message is displayed (Figure 5). The confirmation explains the event is linked and the user can begin promoting the event from the Promote section. In addition, the app adds the event to the Promote section and populates it with the event's date, title, and other pertinent information.

Figure 5. Link an Event screen with the alert message confirming the event has been successfully linked.

Customization
The Information cell, as well as the content accessible from **More info…** is customizable.

Donate
Donations are one of the main ways nonprofits generate funding for their services. The app features a donation section, where the user can easily make monetary contributions to the nonprofit (Figure 6).

To make a donation, the user selects **Donate** from the Main Menu screen or from the tab bar on any screen. On the Donate screen, there is an Information cell, where the user can read brief text explaining why their donation is important. The user can select **More info…** from the Information cell, which provides more in-depth information on how the donation can help make a difference.
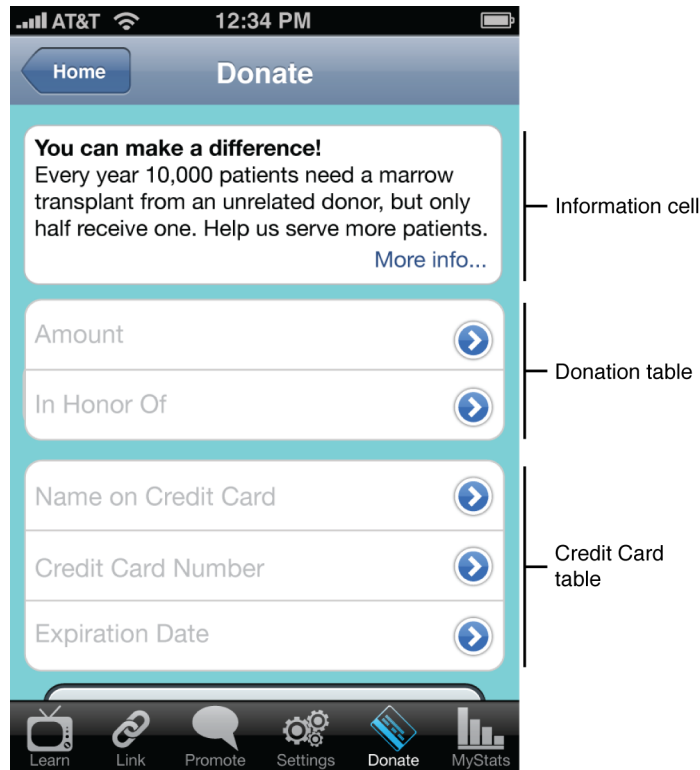
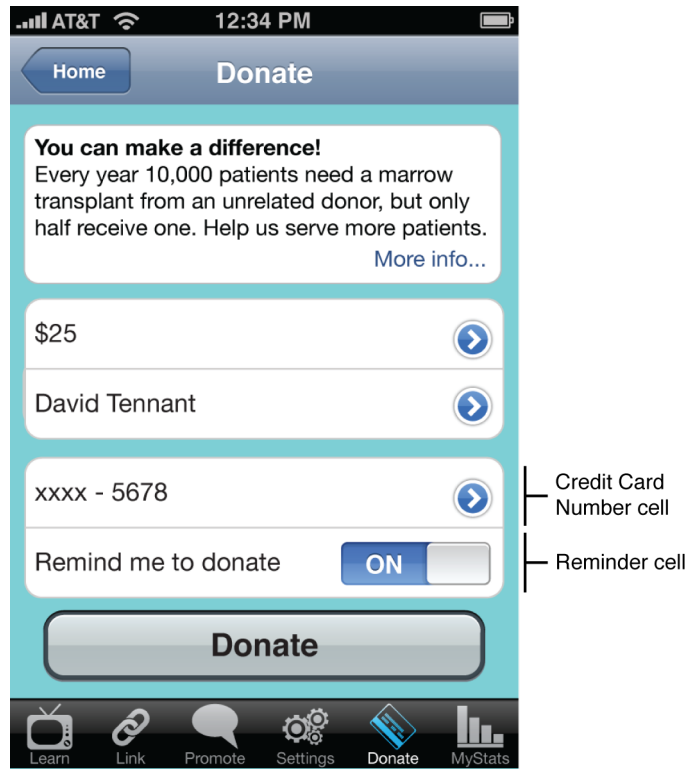**Figure 6. The Donate screen when it is initially displayed.**

Figure 7. The Donate screen with all the cells completed.

Donation Details

Below the Information cell, there are the Donation and Credit Card tables. The cells in these tables are selectable, where the user can enter relevant information. Detail disclosure buttons are used to prompt the user that these cells are selectable.

Under the Donation table, the user can nominate an amount to donate and can also make the donation in the honor of an individual. Depending on the nonprofit, it might be appropriate for users to make the donation in honor of a friend or a loved one who has passed away or is related to the cause.

User donations are paid via credit card and users can enter their credit card details (i.e., name, 16-digit credit card number, and expiration date) in the Credit Card table. The credit card information is saved to the app to make donating in the future easier. The ease of use can help encourage users to donate again. After the credit card information is entered, only the last four digits of the credit card are displayed in the Credit Card Number cell, which is still editable. In addition, the Reminder cell appears below the Credit Card Number cell. In this cell, the user can turn on the switch to be reminded to make donations in the future. If the switch is on, the user will be reminded monthly to make a donation. This feature can be disabled from the Settings section, which is accessible from the Main Menu screen and also from the tab bar.

Below the Credit Card table is the **Donate** button, which remains disabled until all the required donation information is entered. Once all the fields are complete, the **Donate** button becomes active and the user can select it (Figure 7). After it is selected, an alert message is displayed asking for donation confirmation (Figure 8). The user can select **Cancel** to cancel the donation or **Donate** to submit the donation. After the transaction is made, the Donation Success! screen is displayed (Figure 9).
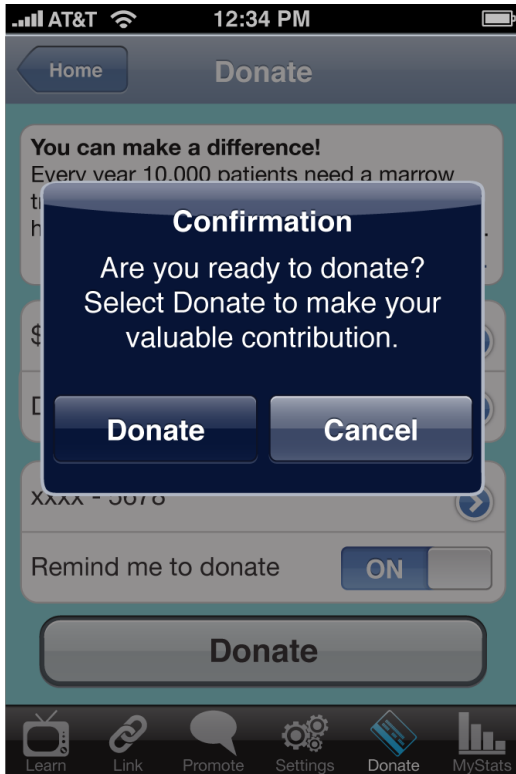
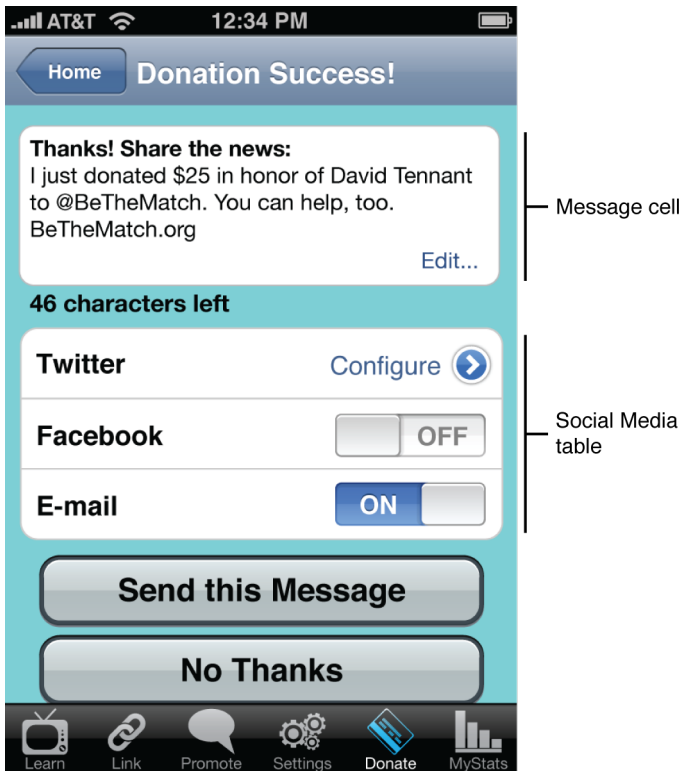**Figure 8. The Donate screen with alert message to execute the donation.**

Figure 9. The Donation Success! screen where the user can share this news among the user's social networks.

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From the Donation Success! screen, the user has the option to share the news with his/her social networks that the donation was just made. The Message cell is pre-populated with a message about the donation details (i.e., amount, honored donor), a shortened URL to the nonprofit's donation web page, and the name of the nonprofit as a hashtag or its Twitter name. Similar to the Message cell of the Promote section, this is customizable for flexibility, but pre-populated for convenience. The user can edit the message by selecting **Edit…** in the Message cell. The message should be kept to fewer than 140 characters. There is a counter under the Message cell to prompt the user how many remaining characters are available in the message.

Once the user is satisfied with the message, the user can choose which social media outlets to use to share the news. From the Social Media table, the user turns on the switch for the corresponding social media network. If a social media network has not been set up, a **Configure** link is displayed in place of the switch. By selecting **Configure**, the user can input their account settings for use within the app.

After the user selects with which social media networks to share the news, the user selects **Send this Message** at the bottom of the screen. The message is then shared with the selected social networks and an alert message is displayed. The alert confirms that the message has been shared and displays the user's statistics for making donations. When the user selects **OK** from the alert message, the user is taken to the Main Menu screen. If the user chooses to skip this entire step, the user can select the **No Thanks** option and the user is taken to the Main Menu screen.

Customization

The nonprofit can customize the initial message that appears in the Information cell on the Donate screen, as well as the subsequent content accessible from the **More info…** link. The initial message should be compelling enough to encourage the user to donate, but also succinct enough so the user does not ignore the message. The nonprofit can also customize the pre-populated message in the Message cell on the Donate Success! screen.

Promote

The Promote section of the app is the most engaging part of the app. This section allows the user quickly and easily to market upcoming fundraiser events or donor drives to his/her social networks. Promotion takes form in video, photo, or written messages that are distributed to the user's social networks through Facebook, Twitter, or email.

There are two main sections under the Promote an Event screen, which are the Information cell and the Events table (Figure 10).

The Information cell contains a short write-up about the Promote section and how the app will help assist the user through the promotion process. Selecting **More info…** provides the user with more information on the importance of promoting an events among social networks and how the app specifically helps.

The Events table lists the all the available events the user has linked with the app. Each event cell displays the name, date, Event ID, and location of that event. Each event cell

is selectable as indicated by the detail disclosure button. When the user selects an event, its corresponding Event screen is displayed (Figure 11). The user can also unlink the event from the app by swiping across the event's cell. This will display the **Delete** button, which the user can select to delete the event from the app. The deleted event will be removed from the Events table.
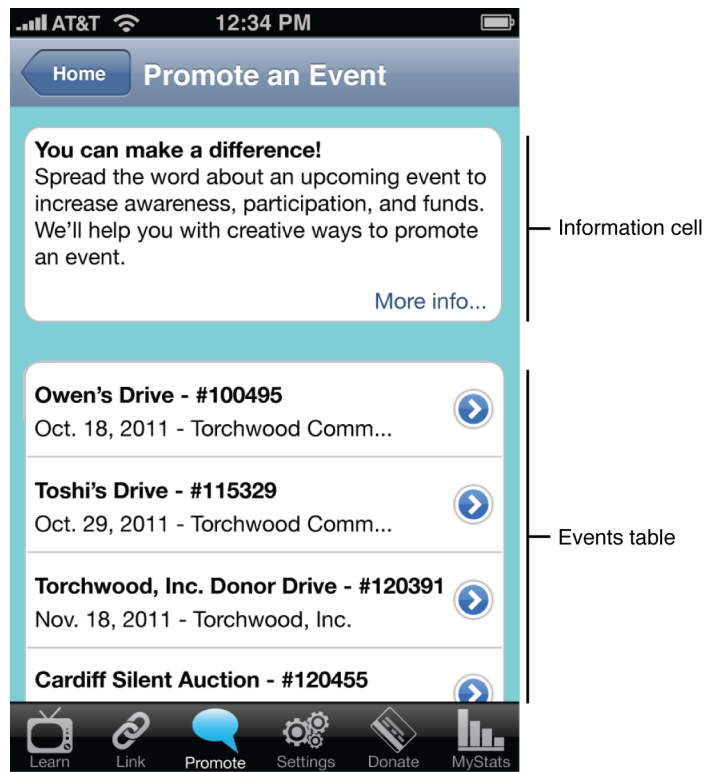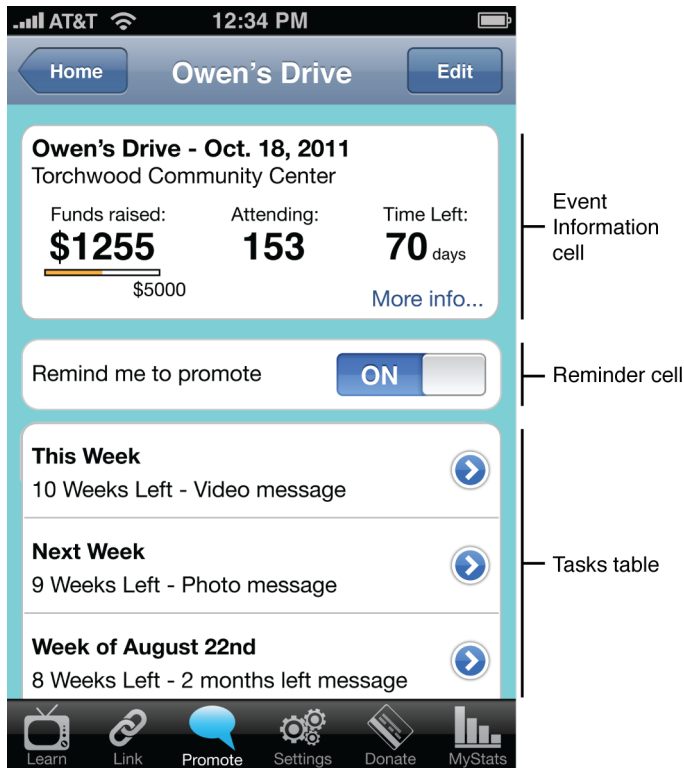

Figure 10. The Promote an Event screen.

Figure 11. The Event screen for a specific event.

Event Screen

The Event screen is titled at the top with the name of the event. On the Event screen there are three sections. These sections include are the Event Information cell, Reminder cell, and Tasks table.

Event Information

In the Event Information cell, the basic information about the event is displayed. This includes the event name, date, and location, as well as statistics about the event. The statistics are listed to inform the user how well the combined promotion efforts for the event are going. If the event is fundraising, the goal amount and amount raised are listed. If the event is hosting people, the number of confirmed attendees is listed. Lastly, the number of days left until the event is displayed. By quantifying the event, the user can determine if it is necessary to increase promotion efforts. The user can select **More info…** to view more event details and statistics.

By selecting **Edit** in the navigation bar, the user can edit the Event ID. This is helpful in case the user entered the Event ID incorrectly. There is also an option for the user to unlink the event from the app.

Reminder

The Reminder cell is a setting where the user can be reminded to promote the event. If the user turns on the switch, the user will be reminded once a week to promote the event. The user can turn off the alerts for this event from this screen or from the Settings section of the app.

When the alarm goes off, an alert message displays on the user's phone with the application title and the message, "Don't forget to promote [name of event] this week!" In the alert message the user can select **View** or **Close**. Selecting **View** opens the app to the event's screen, where the user can begin the task for that week. Selecting **Close** closes the alert message and the user can resume using the smartphone.

Task List

The Tasks table lists the weekly tasks that the user needs to perform to promote the event. When the Event ID is linked with the app, the app calculates how many weeks are left until the event and sets up the tasks according to the remaining time. The first two tasks cells are listed as **This Week** and **Next Week**. The tasks after that are listed by their date, for example, **Week of August 22nd**. When a user selects **This Week** or another week, the app displays the task for that week. The current task is enabled, while all future tasks are disabled until the week of that task. This helps pace the user through promoting the event.

Past Tasks

The user can view tasks from past weeks by scrolling to the bottom of the event's screen. Because each task is time sensitive, the user cannot resend past tasks.

Performing Tasks to Promote an Event

When the user selects the **This Week** cell, the task for that week is displayed (Figure 12). The task's screen describes the task for that week and provides the necessary tools to perform the task. Tasks vary each week, but they all include an Information cell and a Production cell.

The Information cell contains basic information about the task for the week. Selecting **More info…** from the Information cell provides the user with more details about completing the task and the importance behind the task.

The Production cell contains the tools needed to perform the task. For example, if the task is to record a video message, the Production cell contains a video thumbnail area, a **Record** button, and a **Help** button. There is a **Help** button for every task and when selected a Help screen is displayed (Figure 13). The Help screen contains a Sample cell and a Tips cell. The Sample cell provides a sample of the task for that week for inspiration and guidance (i.e., a video message). The Tips cell includes a bulleted list of helpful tips for the user. The **Help** button is accessible from each week's task including future tasks to help users plan ahead.
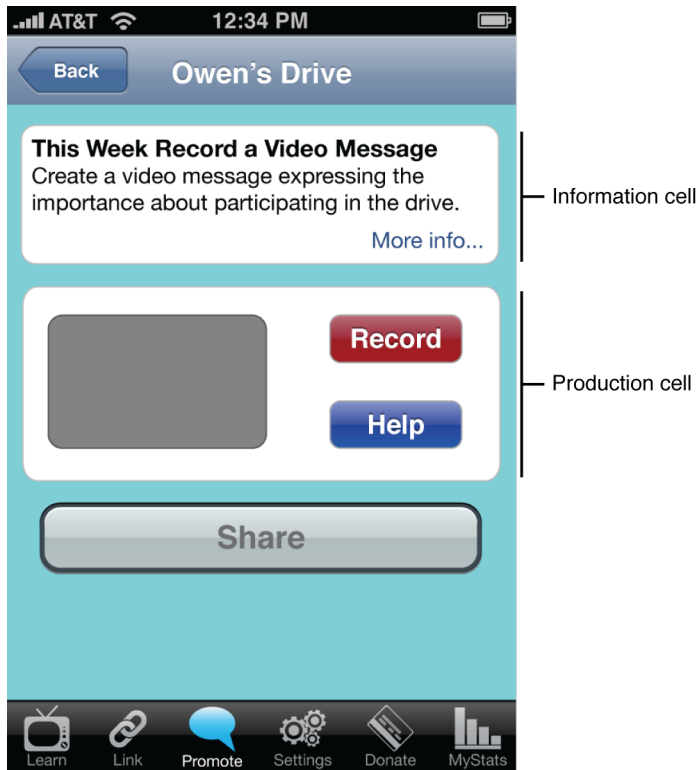
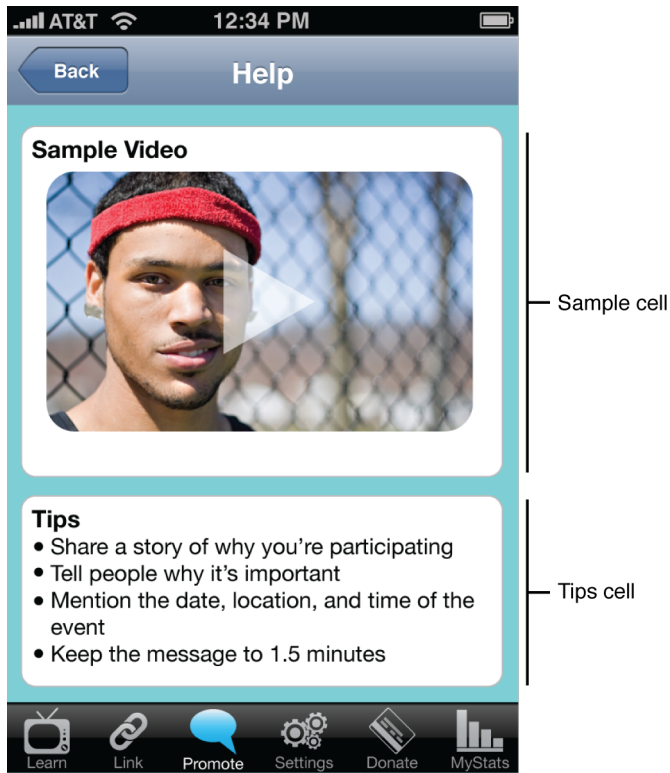**Figure 12. The Task screen when it is originally accessed.**

Figure 13. The Help screen with sample video and tips.

Once the user performs the task, a thumbnail of the piece in the Production cell is displayed (Figure 14). If the piece is a video or image, the user can select the thumbnail

and view the video or enlarged version of the image. When the task is complete, the **Share** button becomes active and the user can select it.
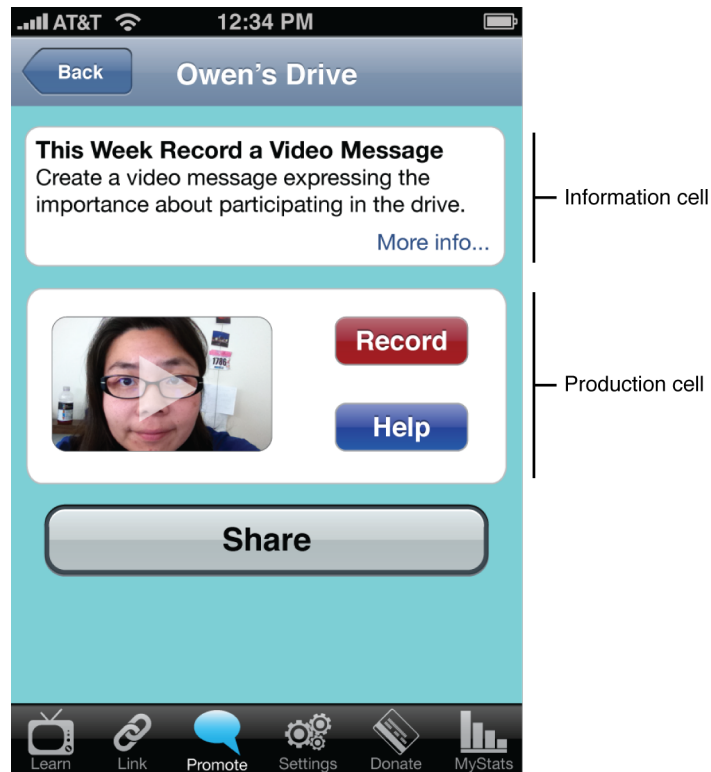

Figure 14. The Task screen after a video is recorded.

Types of Tasks

There are four basic tasks used in promoting events. These include:

- Recording a video message
- Taking a photo and creating a message
- Creating a collage of images and adding audio (voice or music) to it
- Writing a short narrative message

The goal of the using these types of tasks is to create compelling messages to get users to join the cause – either through donating, participating in the event, or spreading the news about the event among their social networks.

Recording a Video Message

More and more people are accustomed to watching short videos on the Internet and their phone for entertainment, as well as for informational purposes. In this task, the user creates a short video message using the smartphone and then disseminates it among his/her social networks. The video would be a short, two- to three-minute clip and the message content will vary depending on the week. The user can record the video message from the app or select a video from the smartphone's library. Once the video is selected, a thumbnail of it is displayed in the Production cell. The user can select the thumbnail to replay the video message.

Taking a Photo and Creating a Message

Similar to the video message, the user takes a relevant photo using the smartphone. The user can also select a photo from their smartphone's library. Once an image is selected, a thumbnail of it is displayed in the Production cell. The user can select the thumbnail to see a larger version of the image.

Creating a Collage and Adding Audio

This task is a hybrid of the two prior task types. The user can take a series of photos, select photos from the smartphone's library, or use both to create an image collage. Once the series of images is selected, the user can pair the series up with audio – either a recorded narrative or music. The user can select up to ten images and arrange them in any order and match it up with an audio clip that is a maximum of one minute long. Once the collage is created, a thumbnail of it is displayed in the Production cell. Like the video message, the user can select the thumbnail to view the collage.

Writing a Short Narrative Message

This type of task is the most basic form of digital communication. It allows the user to compose a compelling, but brief written message to distribute. A preview of the message is available in the Production cell and selecting the preview displays the entire message. Messages that extend beyond 140 characters will be abbreviated and appended with an abbreviated URL that recipients can follow to read the message in its entirety.

Sharing the Message

After the user has created the message for that week, the user needs to disseminate it to his/her social networks. To share the message, the user selects **Share** and the Share Message screen is displayed (Figure 15). The Message cell is pre-populated with a message about the upcoming event (i.e., name of event, time left, type of message created) and a shortened URL to the created message. The message is pre-populated for convenience, however the user can customize it by selecting **Edit...** in the Message cell. The message should be kept to fewer than 140 characters.

Recipients can view the created message by selecting the shortened URL. The URL will redirect recipients to a web page where they can view the created message, as well as obtain details about the event, links for more information about the nonprofit, and options to donate to the event or nonprofit. A wireframe of this web page is included in Appendix F.

When the user is satisfied with the message, the user can choose which social media outlets to share the news. From the Social Media table, the user turns on the switch for the corresponding social media network. If a social media network has not been set up, a **Configure** link is displayed in place of the switch. By selecting **Configure**, the user can input their account settings for use within the app.

After the user selects with which social media networks to share the news, the user selects **Send this Message** at the bottom of the screen. The message is then shared with the selected social networks and an alert message is displayed (Figure 16). The alert confirms that the message has been sent and displays the user's statistics for promoting

events. When the user selects **OK** from the alert message, the user is taken to the event's screen.

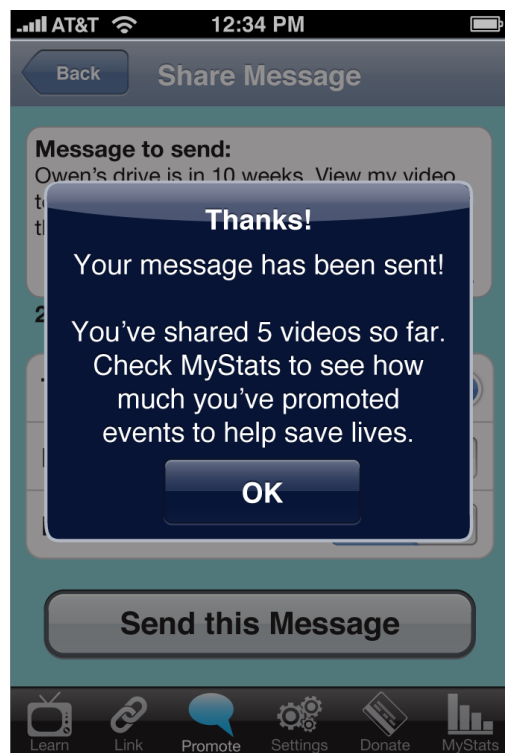Figure 15. The Share Message screen.

Figure 16. The Share Message screen with an alert message confirming the message has been sent.

Upon returning to the Event screen, the task for the week has a green checkmark in the cell indicating the task is complete (Figure 17). The user can still select the task to either review what they have sent or to send the message to more recipients for that week. After that week, the task is moved to the Past Tasks table.
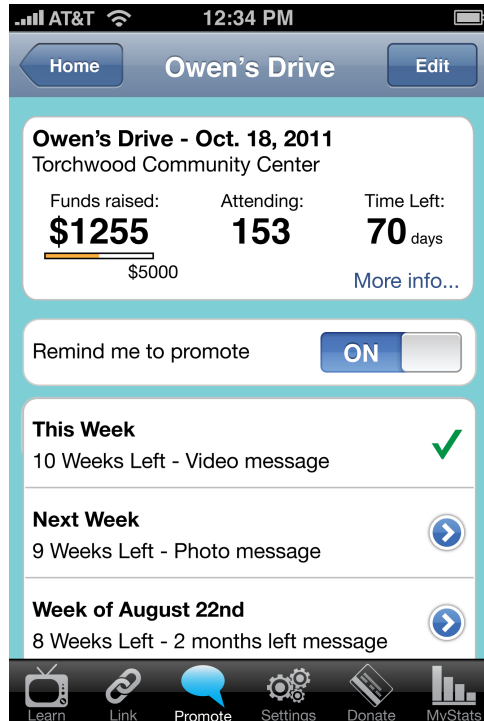

Figure 17. The Event screen for a specific event with the task for this week checked off.

Customization
The nonprofit can customize the content and schedule for each task. The nonprofit can also provide the samples and tips under the Help screen of each task to guide and inspire the user.

MyStats
The MyStats section is accessible from the Main Menu screen and from the tab bar on any screen (Figure 18). This section displays statistics about the user's activity with the app. It quantifies the user's participation so the user can see how involved he/she has been in making a difference. This feature provides a gamification effect, which might motivate the user to participate more.

While this section is completely customizable for the nonprofit, some of the stats could include:
- Number of donations made
- Total amount donated
- Number of events promoted
- Number of videos created
- Number of images posted
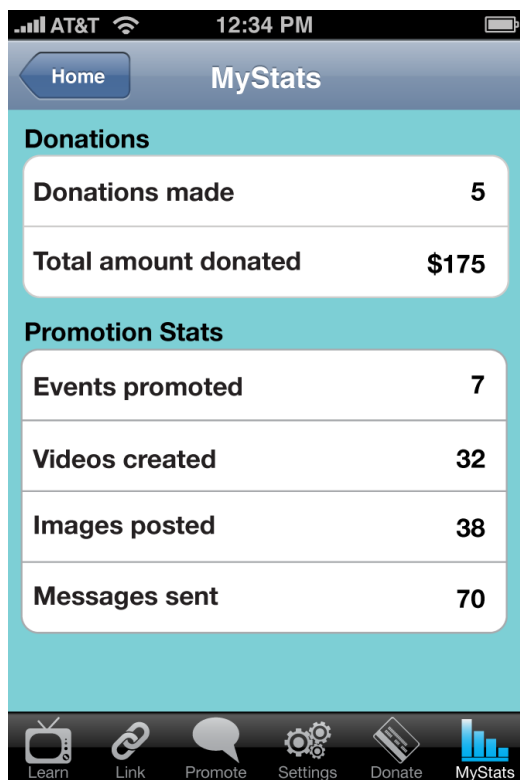- Number of messages sent

Figure 18. The MyStats screen.

Settings

The Settings section is accessible from the Main Menu screen and from the tab bar on any screen (Figure 19). This section allows the user to configure and modify social network accounts, alerts, and credit card settings. Each cell is selectable and the detail disclosure buttons signal this to the user.
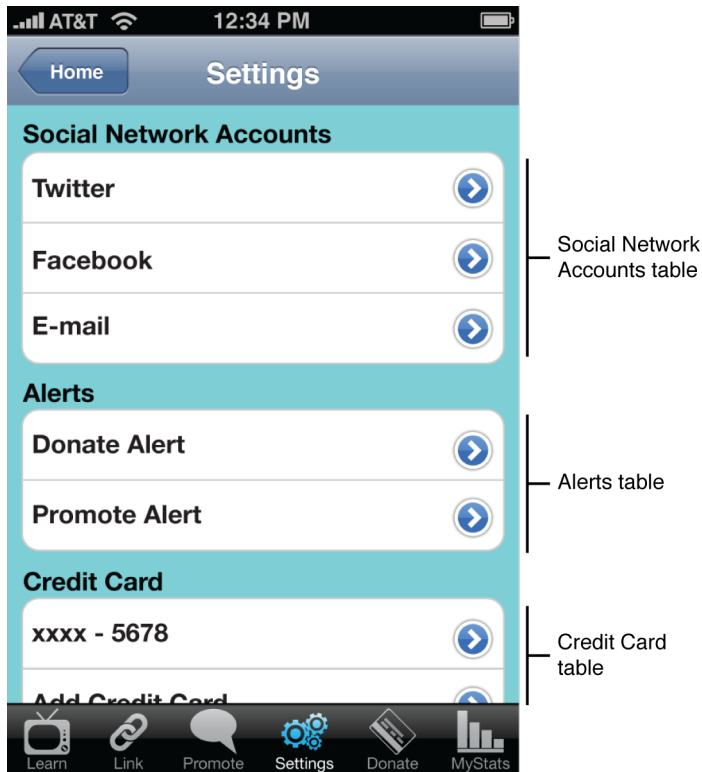
Figure 19. The Settings screen.

Social Network Accounts

For convenience, users can configure social network accounts from other sections of the app if they have not previously been set up. However, they cannot change the settings from those screens. From the Social Network Accounts table, the user can modify or deactivate an account.

Alerts

From the Alerts table, the user can switch the app alerts on and off. Selecting **Donate Alert** allows the user to switch the alert on and off, as well as set the frequency of the reminder. The user can choose to have the alert remind them once a month, bi-monthly, quarterly, or semi-annually. Selecting **Promote Alert** allows the user to switch the alert on and off to remind them once a week to promote the event.

Credit Cards

From the Credit Card table, the user can add a credit card or update the information on a previous added credit card. The user can also delete credit and additional credit card from this table.

User Research

A digital prototype was created and tested on the target audience. Participants tested out the main functions of the app to figure out how well the app was designed and if the concept of the app made sense. Based on the results, the app's design was modified.

Digital Prototype

The prototype was developed to test certain features of the app. A digital prototype was chosen because it could be tested on the actual device and could provide a more accurate idea of the interaction design. The features selected for prototype development were typical actions that a user would perform using the app. The development of the prototype was limited to the tasks the users would be performing, but included access to some other sections. To put the prototype in context, it was customized for the Be The Match Foundation.

Storyboards were drafted to guide the design and programming of the app. Adobe Fireworks was the main software application used to develop the prototype. Graphical elements were created in Adobe Illustrator and then imported into Fireworks. The interactivity of the prototype was programmed in Fireworks by creating hotspots and linking them to corresponding screens. The digital prototype uploaded to a web server and then ported to an iPhone 4 device with the iPrototype code package.

Prototype Testing

Pre-test Survey

Prior to trying out tasks on the app, each participant was issued a pre-test survey to determine the participant's level of familiarity with smartphones and smartphone capabilities. The survey collected basic demographic information, such as age, gender, and smartphone type. The survey asked how often the user performed 18 specific tasks on his/her smartphone. The participants answered the survey using a six-point Likert scale.

Testing with the Prototype

The participant was given background information the app, the Be The Match Foundation and how a user could use the app. After the explanation, the participant was asked to try four tasks using the app prototype. Each task and mock data for the task was presented to the user verbally and on a cue card. The participant's hand gestures using the app were recorded with a Creative Live! Cam Socialize HD AF webcam mounted on a hand-built testing palette.

The four tasks tested were:
- Task 1: Making a donation
- Task 2: Setting up an event to promote
- Task 3: Promoting an event
- Task 4: Teaching a friend in-person about the nonprofit

Post-test Survey

After finishing the tasks, the participant was given a post-test survey to provide feedback on his/her testing experience using the prototype. The participant evaluated the usability of each task and the overall app using a five-point Likert scale. The participant also rated how likely they would use the app on a five-point Likert scale. The survey also included three open-ended questions about the features of the app.

Research Results

Pre-test Survey

Nine individuals (five female, four male) participated in the research study. All but two users had the iPhone 4 as their personal smartphone. The participants ranged from 25-55 in age, with the average age being 37.8 years old. The participants' experience with smartphones ranged from six months to six years with the average experience being 2.7 years.

Participants most frequently checked email (5.7), texted (5.7), surfed the web for information (5.1), took photos with their smartphone (5.2), and checked social media sites (4.9). Participants least frequently recorded audio (2.6), uploaded videos (2.6), and performed monetary transactions (paid bills (2.2), made donations (2.2), and donated via text (2.1)) using their smartphones. Activities that fell in between included playing games (3.9), watching videos (4.7), and uploading photos (4.3).

Complete details of the pre-test survey results are available in Appendix D.

Prototype Issues

Creating the prototype in Fireworks introduced certain limitations in the interactivity available to participants testing the app. Namely, all the screens were static graphics and did not allow the user to dynamically input data such as text or dates. There also was no blinking cursor to cue the user that the field was successfully selected after being tapped. This caught participants off guard, but most were able to adjust and perform the tasks in the session.

Usability Observations

The users were fairly consistent with their actions when testing the prototype. Overall, most participants read very little text and immediately dove into tasks. Users sought out elements that stood out on the screen, for example the orange **Donate** button, the green **Add** button, or white cells with text (as opposed to the text on the aqua background). Users expected a linear flow for completing screens and tasks, because they kept trying to scroll further down in the screen to see what else followed. Users also did not use the tab bar to access other features of the app. Instead they were accustomed to using the **Back** or **Home** buttons in the navigation bar to access features through the Main Menu screen. This might be because the tab bar had only five options listed and not all six with the selected one highlighted.

Task 1: Making a Donation Using the App

The first task was to make a donation to the nonprofit in honor of an individual. Even though the screen was set up in a linear fashion, several participants skipped completing the Donation table and went immediately to the green **Add** button. Most participants followed the screen in a linear fashion and expected the **Donate** button to be large and at the bottom of the screen instead of small and in the navigation bar. Participants were able to figure out where the **Donate** button was because its orange color stood out from the rest of the screen. Even though this was not part of the task, many users gravitated to posting the message to their social networks.

Task 2: Setting Up an Event to Promote

In the prototype, users had to add an event to promote through the Promote section. Users were confused for two reasons. First, they thought the words "set up" meant actually coordinating the event itself and not "set up the event to promote it." Secondly, they did not think initially go to the Promote section to do this. Instead they went to the Main Menu screen looking for a "Set Up" option and reluctantly selected Promote since it seemed to be related to it. From the New Event screen, many users skipped reading the instructions and immediately directly to the Event ID cell to add the event. Participants completed the task quickly. However, several felt they had to do more, because after the confirmation message, they were directed to the Promote screen with several, which had several options on it.

Task 3: Recording and Sending a Video Message

In the third assignment, users had to promote an event by performing the task for that week. This was accomplished by selecting the event from the Promote screen to get to the event's screen and then selecting **This week's task** to see the Task screen. Some users struggled with this assignment since they did not understand the concept. This is possibly because there is not anything available that is similar and, thus, they do not have a mental model of this process.

In terms of interface design, most participants quickly skimmed or outright skipped reading the instructions on the Task screen. Half of them focused on the Video Message area, while a few immediately started tapping the **Share** button. Participants only began to read the instructions when they became stuck with the assignment. Not many participants accessed the Tips and Sample screen, but it was probably because the buttons did not stand out visually and did not look like buttons. Once users selected **Record** and saw the video thumbnail display, they understood the concept of promoting the task.

Participants were more successful with sharing the message, probably because the activity seemed more natural. Users were able to configuring the social network from Share Video screen and switch previously configured social network on and off with ease. Participants consistently looked for a big **Post** or **Share** button at the bottom of the screen to deliver the message. As this was not available in the initial prototype, they reluctantly selected the small **Post** button in the navigation bar.

Task 4: Teaching Others the Nonprofit

For this task, users had to teach someone in person about the nonprofit. There were four options including a video, two text screens, and a screen with external links for further information. More than half of the users did not touch the video at all, even though it was the first item on the screen. Of the four that did access the video, only one person accessed it first and the rest accessed it after going through the elevator speech. Most started with the elevator speech because the cell was labeled **30 Second Explanation**. After that screen, most followed the linear order of the options on the screen. Some users commented that they liked how the descriptions were limited because in their experience most nonprofits want to overwhelm users with their mission, causes, and services. Users also commented that this task felt very natural to them because it is something they are used to doing.

Post-test

Overall, participants felt the app was easy to use (1.8). Teaching others about the nonprofit proved to be the easiest task (1.0). According to the participants, making a donation (1.4) and setting up an event (1.7) were easy to perform as well. They found the task of promoting an event to be easy, but more difficult than the other tasks (2.2).

Complete details of the post-test survey results are available in Appendix D.

Impacts on Design

As a result of the testing, several improvements were made to the design of the app. Overall, the text was shortened and printed in a larger font size for easy readability. The new text provided just enough information to give the user context for that screen. **More info…** links were added in case the user needed or wanted more information on the matter. Sections were framed in white cells to help focus the user on portions of the screen, which could help users find their place after being interrupted. The new design tried to funnel the user from the top of the screen to the bottom. Where possible, main action buttons, such as **Donate**, **Send this Message**, or **Share**, were added at the bottom, which is a more logical location. These buttons were larger than the previous ones in the navigation bar to show users what the obvious next step should be.

All six options were added to the tab bar, with the current section's button highlighted so the user would see where they were in the app. Detail disclosure buttons were added to every cell to indicate to users that the cell was selectable.

Main Menu Screen

The participants really sought guidance on where to go. In the new design, the options on the Main Menu screen were put in a linear manner according to how most users would chronologically work with the app (Figure 20).
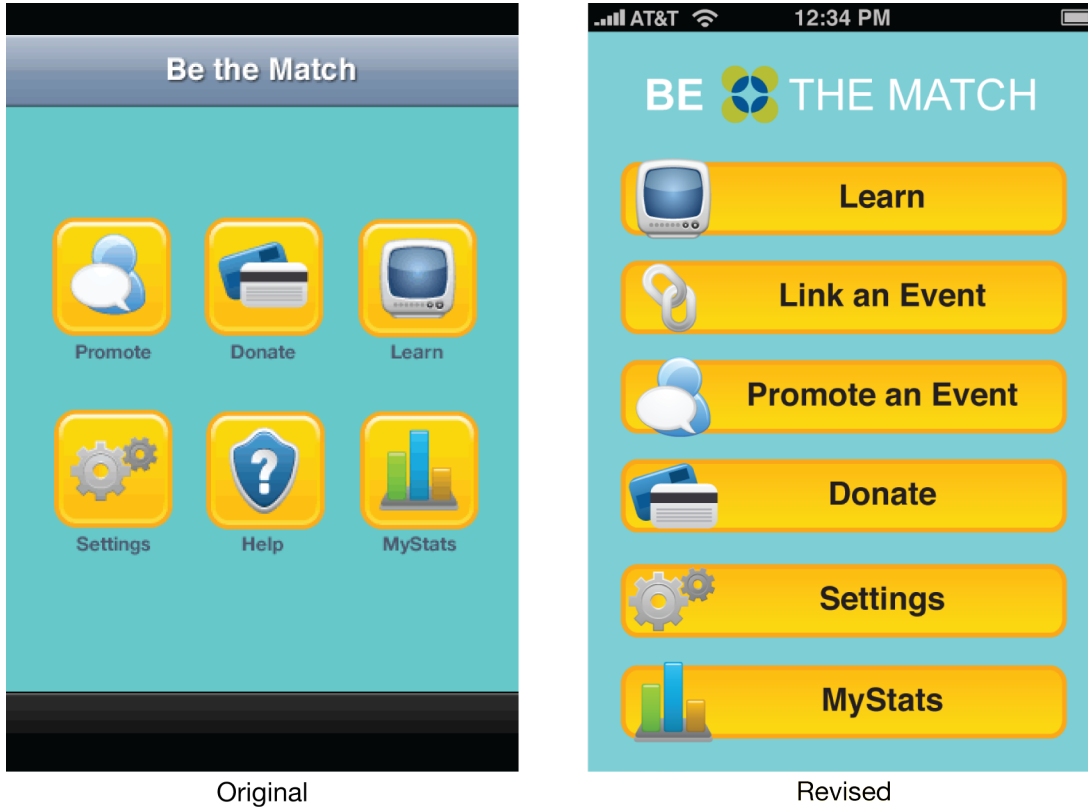

| Original | Revised |

Figure 20. Original and revised designs of the Main Menu screen.

Donate Screen

The overall flow for the Donate screen was linear, except for the actual submittal of the donation. The redesigned version revised the **Donate** button to be larger and moved it under the Credit Card table (Figure 21). Detail disclosure buttons were added to the editable cells, so users would understand what was editable. The amount of text was reduced and a **More info…** link was added for additional information. The Reminder cell was added to the Credit Card table to make remembering reoccurring donations easier for the user and thus more likely for the nonprofit.

Original   Revised

Figure 21. Original and revised designs of the Donate screen.

Link an Event Screen

"Setting up an event to promote" was changed to "linking an event" to avoid confusion with the actual process of associating the event to the user's smartphone. This feature was also moved from the Promote section to its own Link an Event section. Like the Donation section, the text was reduced, but if the user wanted more information, the user could select the **More info…** link (Figure 22).
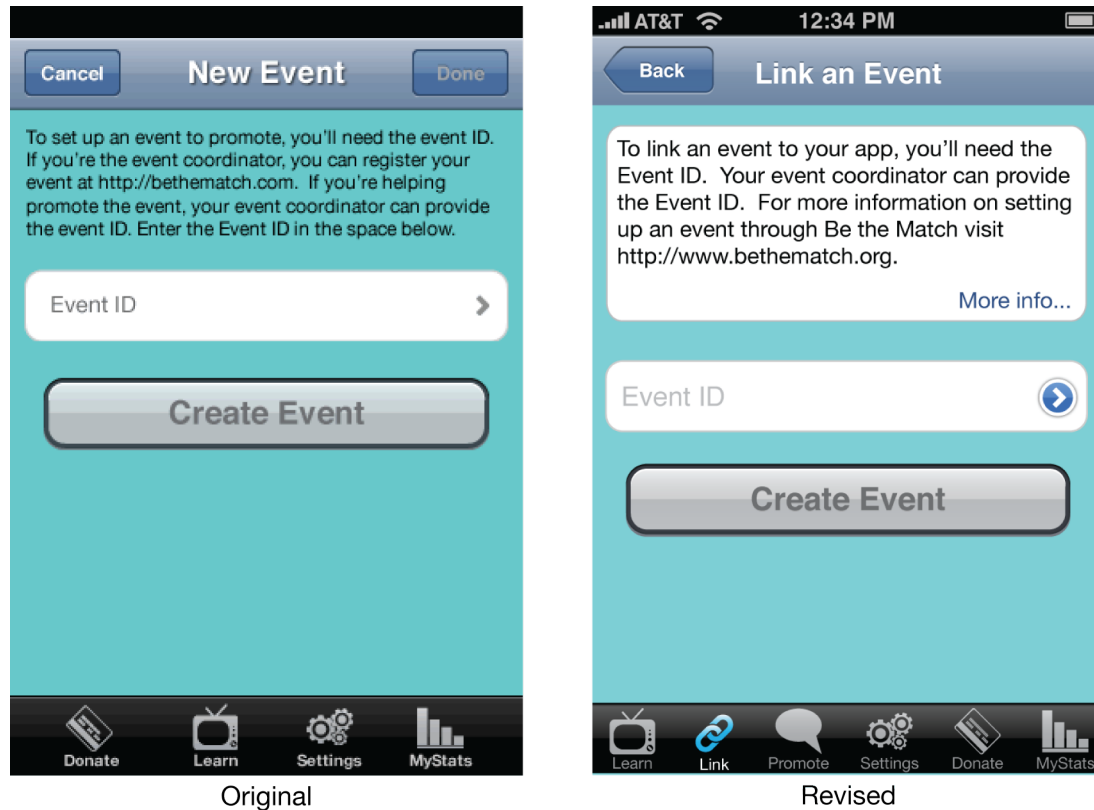

| Original | Revised |

Figure 22. Original and revised designs of the Link an Event screen

Promote Screen

In the Promote section, the instructions were reduced and **More info…** links were provided. On the revised Promote screen, the events in the Events table were listed in bigger cells with larger font (Figure 23). Detail disclosure buttons were used in the cells to indicate they were selectable.

| Original | Revised |

Figure 23. Original and revised designs of the Promote an Event screen

This same design was applied to the Event screen (Figure 24). In addition on the event's screen, a Statistics cell was created. This provided a visual cue for the user to see how well the event promotion was doing. If it was doing poorly, the user might be motivated to promote more intensely than they might have been. A Reminder cell was added to make it easier for the user to turn on this feature, rather than having to navigate to select it from the Settings section.
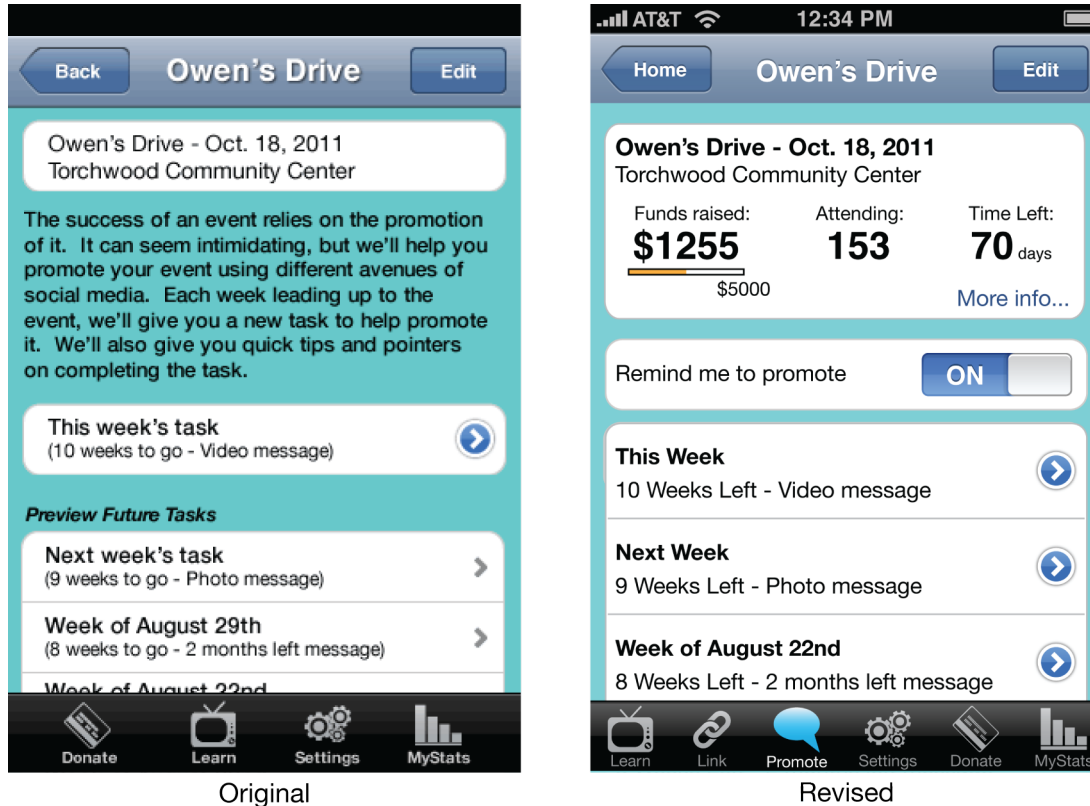

Original   Revised

Figure 24. Original and revised designs of the Event screen.

The actual Task screen was simplified and sections were contained into cells (Figure 25). The Production cell was created to hold the preview thumbnail and the controls like **Record** and **Help**. The controls were redesigned to look like buttons to cue the user. The **Tips & Sample** button was relabeled to **Help**, which would be a more recognizable term for the user.
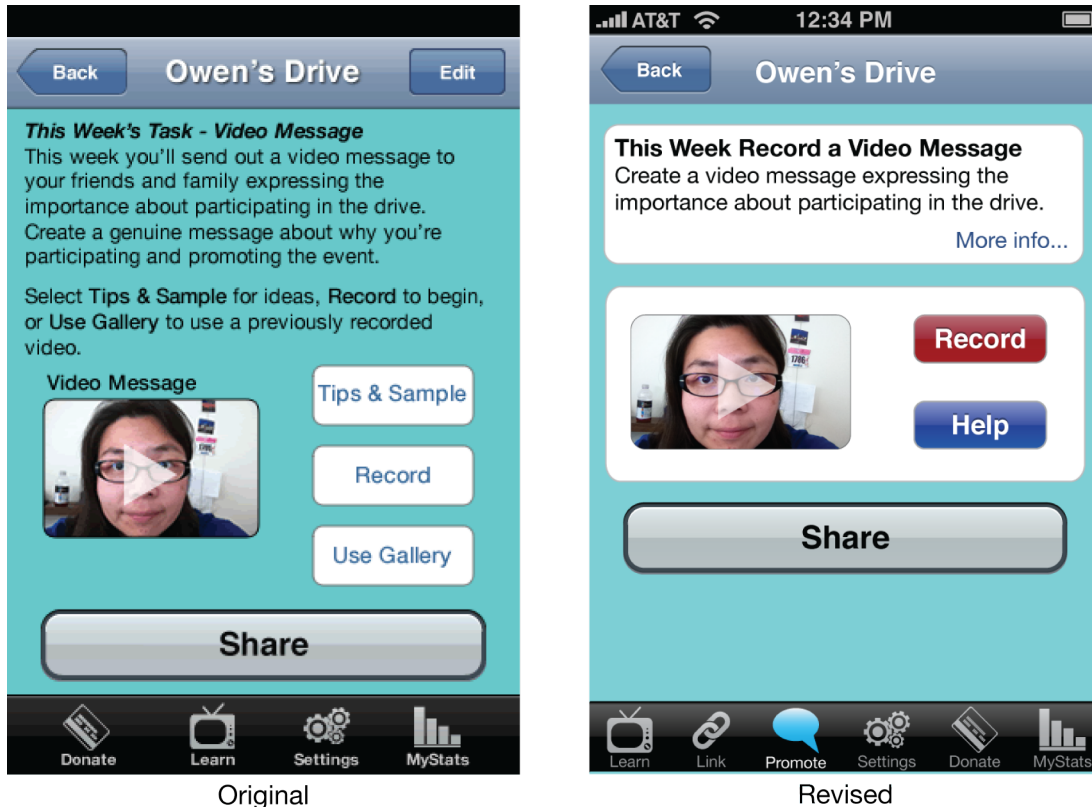

Original   Revised

Figure 25. Original and revised designs of the Task screen.

On the Help screen, the sample and tips sections were switched (Figure 26). The sample was placed on top of tips to guide the user toward the actual sample and then to the tips if the user needed them.

Original   Revised

Figure 26. Original and revised designs of the Help screen.

On the Share Message screen, the original **Done** button in the navigation bar was renamed **Send this Message** and moved to the bottom of the screen (Figure 27).
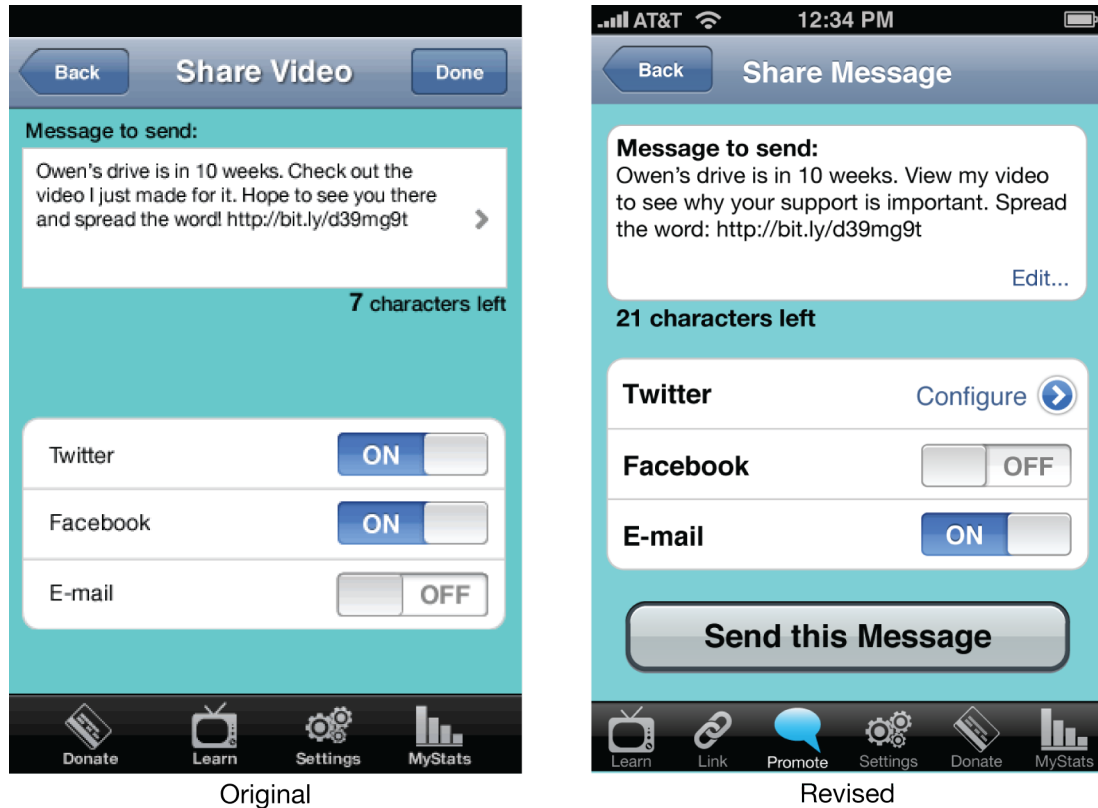

Original   Revised

Figure 27. Original and revised designs of the Share Message screen.

Learn Screen

To persuade the user to share the video, the screen was redesigned with the video as a larger thumbnail and framed within a cell (Figure 28). The other options were chunked into the About table. The Help section, which not many people accessed in testing was renamed to About this App and moved into the About table.
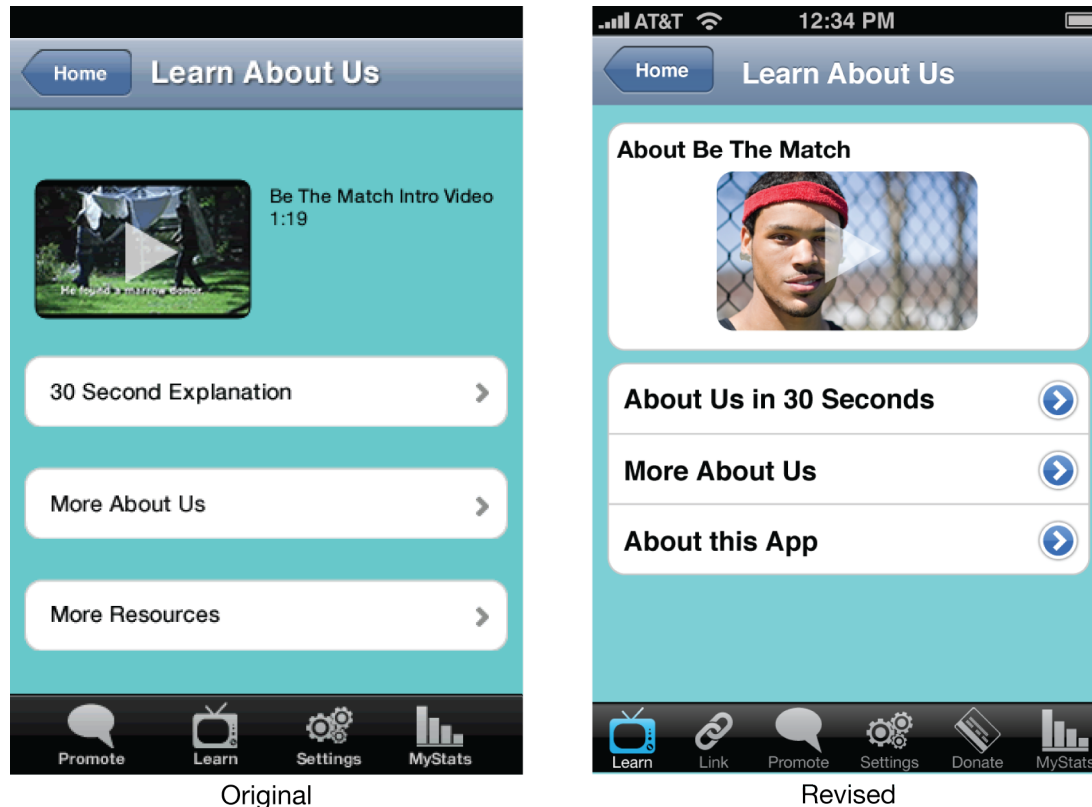

Figure 28. Original and revised designs of the Learn About Us screen.

Redesigning the app's interface in this manner was done reduce confusion and help guide the users through the features in a more linear, logical, and natural way.

Considerations and Expansion

While this document outlines the design of the app, there are other considerations that need to be investigated to bring this app to full development. Once the app and the corresponding web site (where all the links are directed) are created, the app will easily lend itself to other similar fundraising efforts.

Security

For the actual development of the app and its corresponding web site, special considerations will have to be given to security. Users will be storing account information to social networks and providing credit card information. The information and transactions will respectively need to be securely stored and executed.

Corresponding Site

The corresponding web site and all of its functionality will have to be designed, tested, and developed. Special considerations will have to be explored in terms of data storage and how data will be shared between the app and site.

Potential Expansion

The current design of the app is focused on fundraising and promoting events for individual people or causes. This app can be expanded to help promote different types of fundraisers. For example, the American Diabetes Association's Tour de Cure bike fundraiser has multiple participants that are trying to raise money for diabetes awareness and research. The app can be tailored toward individuals who are trying to raise funds to participate in the event. The rider can use the app to promote his or her participation in the event and the need for financial contributions. In this use case, rather than serve as a fundraiser for the actual event, the app would fundraise for an individual in the event.

If the mobile app does well as a means to fundraise and promote events, the app could be expanded to help individuals coordinate fundraisers or donor drives. Often, a person might want to help and has the time and energy to devote, but does not know much about planning an event on a large scale. The app could serve as a toolkit to empower ordinary people to become event planners. For example, the app would walk an individual through all the steps for planning an event and provide guidance along the way, starting from selecting a date and a venue and moving through to promotion and execution of the event. An app like this would easily lend itself to development on a tablet device, as well.

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Appendices

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Appendix A: References

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Appendix B: Pre-test Survey

Mobile Technology for Non-Profits: Harnessing the Power of Crowdsourcing
Thesis Project by Michelle Chin

Participant Pre-Test Survey

Age:	
Gender:	
Occupation:	
Highest Level of Education:	
What kind of smartphone do you currently own?	
How long have you been using smartphones?	

How often do you do the following activities on your smartphone?

	Very Frequently	Frequently	Occasionally	Rarely	Very Rarely	Never
Check email	☐	☐	☐	☐	☐	☐
SMS/Text message	☐	☐	☐	☐	☐	☐
Make phone calls	☐	☐	☐	☐	☐	☐
Play games	☐	☐	☐	☐	☐	☐
Pay Bills	☐	☐	☐	☐	☐	☐
Play music	☐	☐	☐	☐	☐	☐
Surf the web for information	☐	☐	☐	☐	☐	☐
Check social media sites (e.g., Facebook, Twitter)	☐	☐	☐	☐	☐	☐

	Very Frequently	Frequently	Occasionally	Rarely	Very Rarely	Never
Communicate on social media sites (e.g., Facebook, Twitter)	☐	☐	☐	☐	☐	☐
Take photos	☐	☐	☐	☐	☐	☐
Record video	☐	☐	☐	☐	☐	☐
Record audio	☐	☐	☐	☐	☐	☐
Upload photos to social media/sharing sites (e.g., Facebook, Flickr, Instagram)	☐	☐	☐	☐	☐	☐
Upload videos to social media/sharing site (e.g., Facebook, YouTube)	☐	☐	☐	☐	☐	☐
Watch videos from video sharing sites (e.g., YouTube, Vimeo)	☐	☐	☐	☐	☐	☐
Made a monetary donation to a non-profit organization either through an app or via text message	☐	☐	☐	☐	☐	☐
Other: _____	☐	☐	☐	☐	☐	☐

Appendix C: Post-test Survey

Mobile Technology for Non-Profits: Harnessing the Power of Crowdsourcing
Thesis Project by Michelle Chin

Participant Post-Test Survey

Rate these statements based on your experience with this app.

	Very difficult	Difficult	In between	Easy	Very easy	N/A
Completing Task 1	☐	☐	☐	☐	☐	☐
Completing Task 2	☐	☐	☐	☐	☐	☐
Completing Task 3	☐	☐	☐	☐	☐	☐
Completing Task 4	☐	☐	☐	☐	☐	☐
Overall, how difficult was the app to use?	☐	☐	☐	☐	☐	☐

	Definitely	Probably	Possibly	Probably not	Not at all
How likely is it that you would download and use this app?	☐	☐	☐	☐	☐
How likely would you donate if you received a photo in a message?	☐	☐	☐	☐	☐
How likely would you donate if you received a video message?	☐	☐	☐	☐	☐
How likely would you make a donation using this app?	☐	☐	☐	☐	☐

Please answer the following questions.

1. What is the most useful feature of this app?

2. What is the least useful feature of this app?

3. Do you have any other comments about the app?

Appendix D: Pre-test and Post-test Survey Results

Participant Demographics

Age	Gender	Occupation	Level of Education	Type of Smartphone Owned	Length of Smartphone Experience (Years)
25	Female	Counselor	Undergrad	iPhone 4	0.5
38	Female	Project Manager	Undergrad	iPhone 4	2.5
33	Male	Graphic Designer	Undergrad	iPhone 4	1
34	Male	Instructional Designer	Graduate	iPhone 4	6
37	Female	Project Manager	Graduate	iPhone 4	4
51	Male	Project Manager	Undergrad	iPhone 4	2
55	Female	Grad Student	Graduate	Android	1.5
32	Female	Web Developer	Graduate	Android	4
35	Male	Motorcycle Shop Owner	JD	iPhone 4	3
Avg. 37.8					**Avg. 2.7**

Pre-test Survey Results

How often do you do the following activities on your smartphone?

	Check email	Text	Make calls	Play games	Pay Bills	Play music	Surf the web for info	Check social med. sites	Comm. on social med.	Take photos	Record video	Record audio	Upload photos	Upload videos	Watch videos	Make donations	Donate via text	Other
	6	6	4	3	1	2	4	5	5	5	2	1	5	2	2	1	1	n/a
	6	6	2	4	1	5	5	6	6	5	4	3	5	3	4	1	1	n/a
	5	5	4	2	1	1	5	1	1	5	3	1	1	1	5	1	1	n/a
	6	6	6	3	3	5	6	6	6	6	6	4	6	4	6	3	1	n/a
	6	6	6	4	4	5	6	6	4	5	2	1	3	1	6	4	2	n/a
	6	6	6	5	4	5	5	6	6	6	6	3	6	4	5	5	5	n/a
	6	6	6	4	1	3	5	4	4	5	5	3	4	3	4	1	2	n/a
	4	4	4	4	2	5	4	5	4	4	3	3	4	1	4	1	3	n/a
	6	6	5	6	3	6	6	5	4	6	4	4	5	4	6	3	3	n/a
Avg.	**5.7**	**5.7**	**4.8**	**3.9**	**2.2**	**4.1**	**5.1**	**4.9**	**4.4**	**5.2**	**3.9**	**2.6**	**4.3**	**2.6**	**4.7**	**2.2**	**2.1**	n/a

Post-test Survey Results

Rate these statements based on your experience with this app.

	Task 1	Task 2	Task 3	Task 4	Overall
	1	1	2	1	1
	1	2	4	1	2
	2	3	2	1	3
	1	2	1	1	1
	1	1	3	1	2
	1	2	1	1	1
	3	1	2	1	2
	2	2	1	1	2
	1	1	4	1	(Blank)
Avg.	1.4	1.7	2.2	1.0	1.8

How likely would you…?

	Download the app	Donate if shown a photo	Donate if shown a video	Donate using this app
	4	4	4	4
	4	3	4	4
	4	4	4	4
	3	3	3	4
	3	4	3	4
	4	4	4	4
	4	1	4	3
	3	4	4	4
	3	3	3	4
Avg.	3.6	3.3	3.7	3.9

Open-ended Responses

1. What is the most useful feature of this app?

- It is well designed and easy to use
- Resources and other info about the organization
- I can see the "Promote" feature being useful. I would donate to a charity if it was sent over email by a friend.
- Promote: one person can be empowered to make a donation but to empower/elevate others can motivate them to donate
- Task lists
- Donation – simple, easy to user, and really the heart of the app

- Help people promote event for matching donors
- Promote area as this is not something that is out there right now.
- Ease of donation.

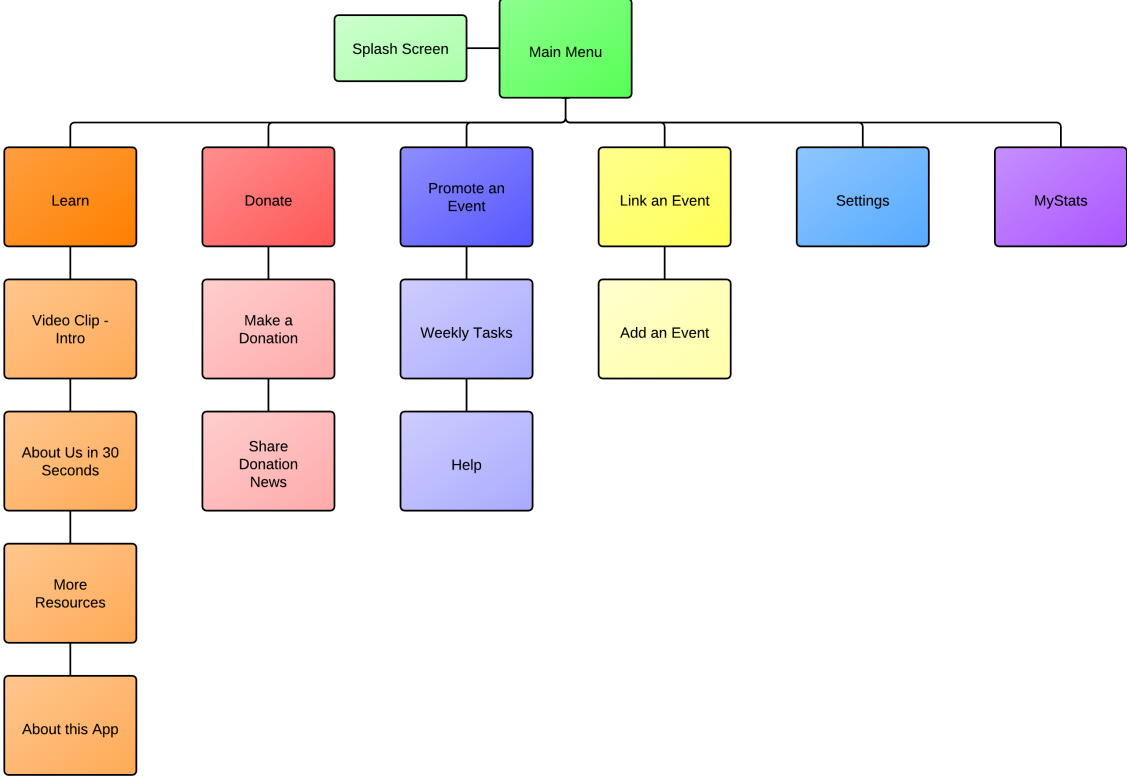2. What is the least useful feature of this app?

- I don't know how useful the video feature is…
- None – all the features were useful
- N/A
- Help: just goes to show how easy this design is to use. :)
- Learn
- None that I used. They all seemed necessary.
- Not sure
- Help, though I can see how it's necessary. Maybe if it was accessible through top menu bar so it could be context-specific
- Promoting projects with videos.

3. Do you have any other comments about the app?

- Michelle is wonderful!
- It made the donation process easy and helped guide you through the process to spread the word – loved it!
- Great job… would like to see full prototype!
- It would be cool to incorporate G+ in the promote feature or to give people tips to make their $ stretch – easy fundraisers, asking if their company matches, etc.
- Easy to use and navigate
- Blank
- Think about steps you need to do to promote events, liked the stats area, donate was easy to understand, use less text, include big buttons for donate, users may be stressed b/c they have a sick friend
- Maybe a way to share info about the cause without being directly connected to an event (like some sort of share function in the learn); could MyStats somehow compare to others even if link to main site…
- I think the addition of a help button vs. the tips button would help when promoting projects. My guess though is that proper reading and more patience (and sleep) would have simplified the tasks
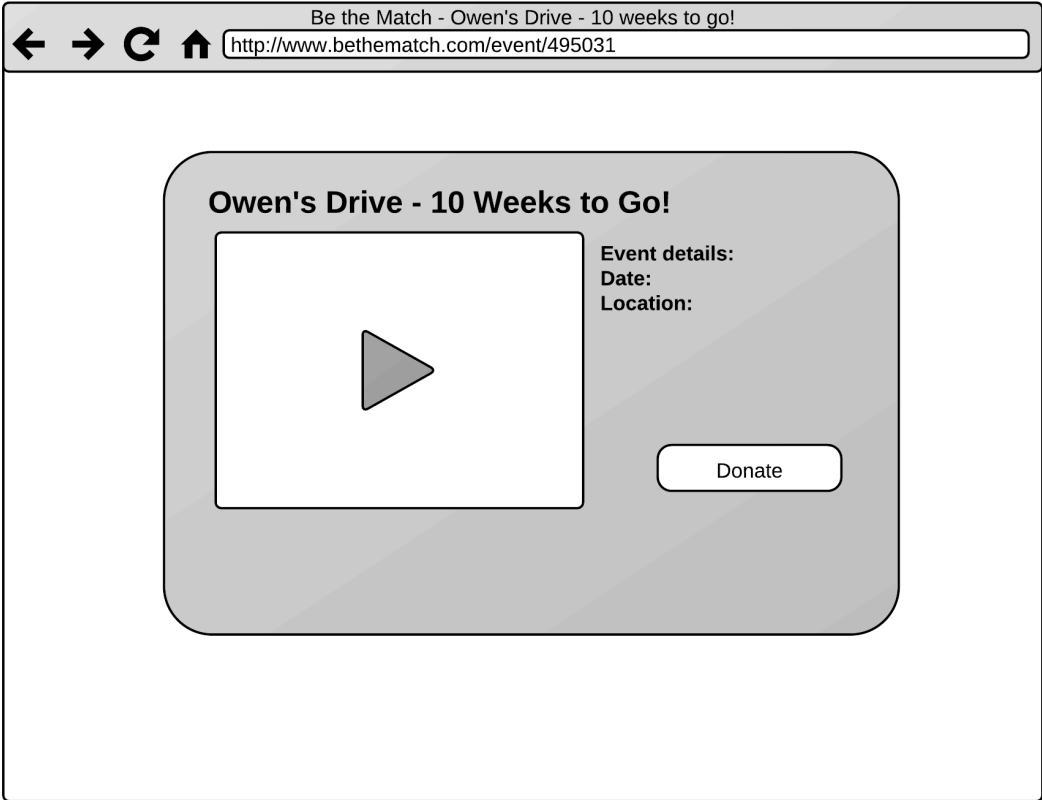
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Appendix E: Information Architecture

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Appendix F: Wireframe of Corresponding Web Site

Be the Match - Owen's Drive - 10 weeks to go!

http://www.bethematch.com/event/495031

Owen's Drive - 10 Weeks to Go!

Event details:
Date:
Location:

Donate

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