The Gauntlet: A Systems Approach for Community Challenges

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ABSTRACT

This paper describes and outlines the design evolution of a new platform, the Gauntlet, for creating and sharing user-generated challenges that can be carried out in real-world settings. We first describe related work in the field of pervasive games and discuss how we can use these game-like mechanisms to foster greater community engagement and environment immersion. Our study design, based on three design principles (social connection, motivation and opportunity) consists of a participatory design activity and design evaluation and reiteration of the Gauntlet user interface. We also propose how this platform can be used to foster greater community engagement and increase personal well-being

General Terms
Design, Human Factors

Keywords
Interaction design; pervasive games; community; groupware; locative-media

1. INTRODUCTION
The application of game mechanics in non-game settings (i.e. *gamification*) is widely used to improve user engagement and experience [4]. This technique has been applied in various settings, from business and finance to environmental sustainability and health and the trend only appears to be growing [4]. Suddenly, mundane tasks such as configuring different combinations of protein chains, in the computer game FoldIt, has made scientific research fun. At the same time, we are also experiencing a growing trend of games being played outside the limits of computer and video screens: pervasive games. The increase in pervasive gaming is due in large part to the increase in ubiquitous computing [3], where players can interact with their environment through PDAs. While gamification and pervasive games may sound like the same phenomenon, it is important to note the difference. On one hand, a system with no game like features is given game mechanics (gamification) and on the other hand, you are extending a system with game mechanics to real-world settings (pervasive games).

The system design proposed here, the Gauntlet, utilizes both approaches in developing a challenge-based game that can be played in the real word. Similar to most gamification approaches, the challenges proposed in the Gauntlet aim to encourage players to participate in activities and challenges in their community. These challenges are user generated and span various themes, with an underlying focus of improving communities (from neighborhood citizenship to environmental sustainable practices), while making real-world settings more interesting. The goal of this research is to understand how to design a platform that facilitates user participation and community (online and offline) engagement using game-like mechanics.

2. RELATED WORK
To provide a framework for our study, we have outlined previous work in pervasive games that aim to foster user participation and examine game mechanics

2.1 Pervasive Games
Pervasive games (e.g., Can You See Me Now [1]), have brought the excitement of game play into real world settings via game mechanics. In these games, users explore cityscapes to track down other players (Can You See Me Now) or fictitious characters (Uncle Roy) using clues and assistance from virtual online help. Other pervasive games explore transforming settings usually not associated as being "fun" into more exciting environments. In Blowtooth, players are challenged with "smuggling drugs" as digital information through airport security, without being caught by onlookers [2]. A more popular game, Geocaching, with millions of users worldwide, has also managed to transform cityscapes into large game areas [7]. Geocaching is an outdoor scavenger hunt (or game) where participations use mobile technology (GPS) to hide and locate hidden treasures (or "caches") anywhere in the real world, which are then shared online through a Geocaching community [7]. In fact, Geocaching is important for our discussion because it began as a simple Internet challenge in 2000, when an individual living in Oregon posted the coordinates of a cache that he hid in the woods online, and challenged other to find the cache [7]. Geocaching is also of particular interest to our study, as the game content is completely user generated: users are responsible for creating and maintaining caches.

2.2 Group Dynamics
The presence of an online community in Geocaching produces two, almost opposing, effects: *Social Pressure* and *Belonging*, which both may explain its success. The presence of an online community can cause social pressure for players who have hidden (created) caches to properly maintain them [7]. O'Hara also reported players feeling accountable and morally obligated when they had decided to "help" move hidden caches along to other destinations. Creators of the caches have also noted a sense of game reputation (online) – there is a pressure for them to create "good" or challenging caches. While these may sound like negative effects, they may in fact help progress the game.

User Participation

User participation for generating and maintaining caches relies on the creator of the cache. The motivation to create caches voluntarily is the cornerstone of Geocaching – without creators the game would simply not exist. The existence of a public forum, where players can share their experiences and give their appreciation to the creator likely plays a large role in this [7]. Having a forum to facilitate this communication (i.e. positive feedback – and negative feedback, to some extent) is perhaps maybe essential for any groupware game system, especially if it is possible to motivate and encourage positive behaviour between users. While this is an important consideration for our system, the role of "creator" and "finder" (in Geocaching) will have opposite weighted responsibilities. That is to say, creating challenges for other players in the Gauntlet will be less work than completing the challenges. Thus, techniques to motivate users to complete the challenges may prove more difficult. The mechanism of a public forum is therefore still very applicable in the Gauntlet.

3. STUDY DESIGN

The goal of this system design is to transform the direct and personal messages into an online platform, with open access, to allow anyone to post and share challenges with the online community.

To design the Gauntlet, we used an auto-biographical design approach [5]. Specifically, we began designing the Gauntlet based on a) core design principles, b) challenges presented in a design activity, c) evaluated the platform, and d) reiterated the design interface based on our own experiences as well as from findings from the design activity.

3.1 Design Activity

To explore and meet these design principles, we performed a participatory design activity. This activity consisted of 12 participants, who were asked to create and design their own challenges. Results and feedback from the activity were used to inform our final design.

3.2 Final Interface Design

The online Gauntlet platform comprises of three main pages: Home, Challenge Description, and User Profile.

Home Page

When users first visit the Gauntlet they are directed to the Home page (Fig. 1) where they can find a stream of challenges. The challenges are listed in sequential order based on how many other users have currently accepted that particular challenge. This default setting ensures that more interesting challenges (based on user preferences) rise to the top of the streaming challenges. Users can also choose to sort the stream of challenges based on most current, under the *Newest* tab, or by *Most Saved* or by *Random* order. These sorting options, found at the very top of the Home page, facilitate user preferences and increase the likelihood of finding more interesting challenges. There is also an option to search for any challenge based on keywords within the Home page using keywords under the Search bar, positioned on the top right of the page.

Each challenge (Fig. 1), on the Home page, includes a challenge number (top left), a short title (maximum 15 characters) to give the user a brief idea of the challenge, an icon image to represent the theme of the challenge (selected from a preexisting database), and a description of the challenge details (maximum 400

characters). In this example, "mapURself", users are challenged to:

"For the next 5 days, document where you go (i.e. your coordinates) using a map of your area and journal. Use a different color for each day."

In addition, each challenge contains a hyperlinked hash-tag label (e.g. #exercise) to categorize the type of challenge. When users create their own challenge, they must complete the template fields (i.e. short title, icon, description, label). Each challenge also contains three different action buttons: *Share, Accept,* and *Save.* The Share button allows users to share the challenge on other social media platforms (e.g., Facebook, Pinterest, Twitter, etc.).
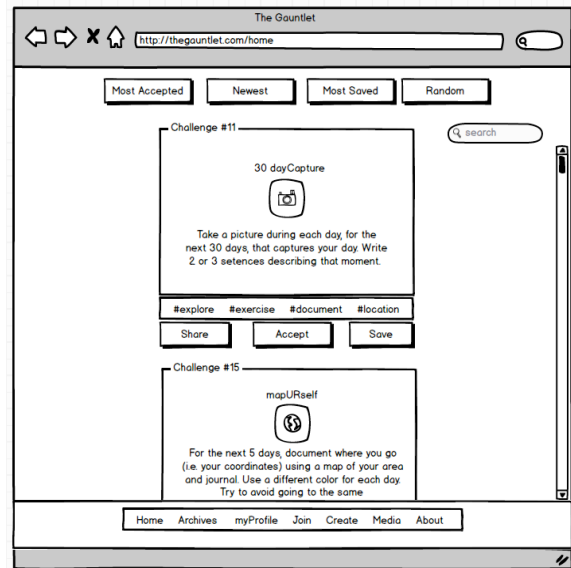

Figure 1. Home Page

Challenge Description Page

Users can then leave the Home page by clicking on any challenge, or by selecting any option at the bottom of the Home page. In this example, a user can click on the "mapURself" challenge (Fig. 2) and be redirected to the Challenge Description page (Fig. 3). This page contains the challenge details in the top left (identical to the challenge template), but it also provides the user with more specific details about the particular challenge.
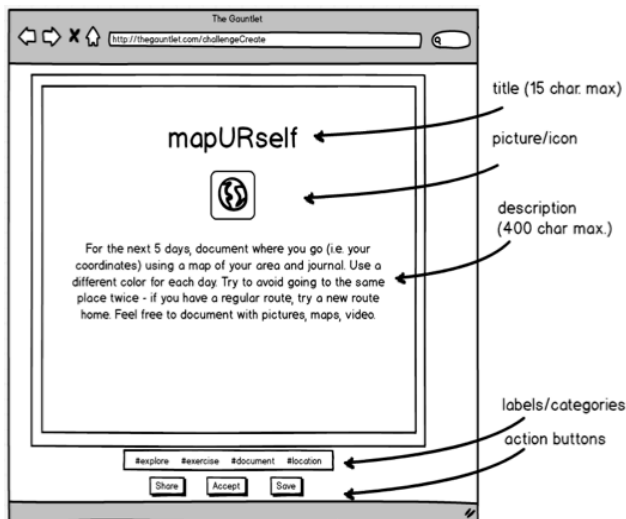
Figure 2. Example Challenge: MapURself

Figure 3. Challenge Description Page

Users can view who created the challenge and visit their profile description page (see Fig. 4). Users can also see how many other users have completed that challenge, or are currently doing the challenge, represented as a graph with a time frame. Users can also view a *Difficulty Rating* of the challenge, on a five point scale (with five being the hardest), which is voted on by other users. The purpose of this function is to allow users to see how difficult other users found the challenge, rather than the subjective opinion of only the one creator. Geocache uses this latter approach (creator decides on difficulty rating), but we believe a greater approximation of the difficulty can be created by multiple sources. The difficulty ranking function also allows users to search for harder or easier challenges based on their preference. Found next to the *Difficulty Rating*, the creator of the challenge can select *Where* the challenge occurs. For example, the challenge could be specific to a location, such as a park, a city, such as Vancouver, or perhaps doesn't require a specific location (i.e. anywhere, set as the default option). The creator also decides *When* the challenge must be completed by. The decision to have a due date was inspired by participant feedback in the design activity and also from the idea that a due date will put more of an onus on the user to complete the challenge. In addition, the inclusion of a due date means that users will be completing the challenges during the same time frame. This feature allows for more shared experience and the sense that you are doing the challenges with other users (at a distance, but not entirely asynchronously). A challenge that expires will be sent to the archives and still be viewable, but would not be able to be completed as a Gauntlet challenge. This does not prevent users from doing the challenge, it only means that there will be no Completed action available. There is also always the option of a user re-creating an expired challenge.
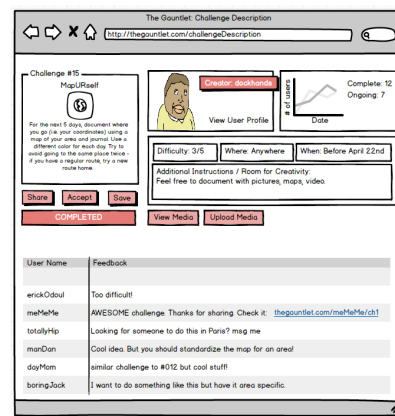
The creator of the challenge also has an option to share Additional Instructions. This feature, as recommended from our participants, allows the users to give more details to the user and allows flexibility for them to include anything they could not include in the main description. Here, the creator can share things such as risks or dangers (if the challenge presents some form of risk), stipulations or special rules, or suggested advice for more fun and creative challenges (including things like special twists). The purpose is to allow for more flexibility and autonomy for the creator and users. With regards to more dangerous, harmful or hurtful challenges, users are given the power to anonymously flag challenges they feel are not appropriate, and the challenge may be subject to removal.

Once users have completed a challenge, they can select the Completed action button. Because there is no way to supervise if someone has actually completed the challenge, users can click the Completed action without actually doing the challenge. However, because the focus of the Gauntlet is about users challenging themselves (i.e. actually doing the challenge) based on motivating factors, and not on how many challenge users can complete, we don't view this as problem and therefore we don't intend to place much emphasis on how many challenges users can complete. At the same time, users are encouraged to share media of their experience while completing the challenge. Users also have the option to view media uploaded from other users who have completed the challenge.

Lastly, each challenge description includes a forum board where other users can comment on that particular challenge. Here users can give feedback to the creator and other users who are considering doing the challenge, such as how difficult the challenge was, what they thought of the challenge, and post questions to other users. This option also serves to promote our design principle of online and offline social connection. Users can communication and coordinate completing challenges together, or collaborate on creating something unique to the challenge (either from different locations across the world, or together in the same location). For example, in mapURself, users could coordinate creating a large sketch on a map, of say a simple figure, based on their shared coordinates of where they travel to for that particular challenge. The collaboration of projects and ideas are endless, we only need to provide the opportunity for users to share ideas and coordinate.

User Profile Page

Social connection is further facilitated through personal user profile pages (Fig. 4). Users can visit other pages by clicking on creator descriptions, hyperlinked usernames in the online forum board, or by searching for usernames. Users can also decide to add users to their Circle or Follow users. By adding a user to your circle, you can more easily coordinate completing challenges together as "knots", as discussed previously. Users are also given the option to Follow users who they believe share similar interests or are creating and completing interesting challenges.

Below on the User Profile page, users can catalogue and view each other's Completed, Accepted, Created, and Saved challenges, which are represented by their Short Title and Icon. Each challenge posted here is linked back to the Challenge Description page. Users can also view and catalogue Media documents that they have uploaded for each specific challenge. The Media page is described in the following section.
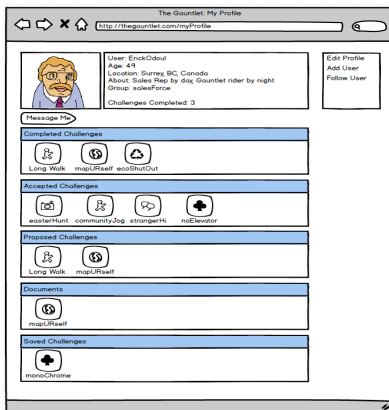

Figure 4. User Profile Page

DISCUSSION

The system design presented in this paper sets out to create a platform in which users generate and accept challenges in real-world environments. The interface design of the Gauntlet also meets the original design principles. In other words, we believe users have the ability to feel socially connected, are motivated to use the platform and complete challenges, as well as are provided with an opportunity to explore the design flexibility of the platform to meet their needs. We also believe the Gauntlet will be fun and interesting for users to explore as they complete challenges. We also believe that users will be given an opportunity to push their comfort zones and test their abilities. Lastly, we also feel that challenges within the Gauntlet will encourage users to experience novel activities and explore new environments.

However, we believe that the Gauntlet could also have further implications. We question if the Gauntlet could be used to facilitate positive change in local and global communities. For example, in future work, we would wish to explore if the Gauntlet could be used to increase environmental sustainable practices. For instance, users could be challenged to not use plastic bags when purchasing items from a shopping store. We also would like to explore if we can increase personal well-being through challenges. For instance, could the Gauntlet be used to promote physical activity in users, where they are challenged to complete physically demanding challenges? Neustaedter [6] examined the role of physical activity in their online pervasive game *See It*, where players are encouraged to use hidden clues to actively explore real-world settings in search of hidden treasures (though early findings of their analysis may suggest that See It does not adequately support physical activity). Lastly, we also are interested if the Gauntlet could be used to increase community citizenship and engagement. The online platform, Fix My Street, has users report problems in their neighborhoods, such as graffiti and litter. But could a platform like the Gauntlet go beyond just 'reporting problems' to facilitate and coordinate users to fix the problem themselves? We imagine Gauntlet challenges could be used to increase positive changes and fix real problems in communities.

Furthermore, we believe that the Gauntlet could serve as a valuable platform for mass collaboration projects. One advantage of such a platform is that it pools together a collection of creative, willing, like-minded users that are otherwise dispersed throughout the Internet. Collaborative initiatives like Flash Mobs or Improve Anywhere rely on top-down instructions (often coordinated through mailing lists) but do not provide an open platform (like the Gauntlet) for an exchange and discussion of user generated ideas. We would like to explore these ideas in future work.

While the future implications of the Gauntlet sound promising, it is important to recognize its current limitations. The major limitation in designing a user-generated system is scalability and recruiting users. Because this system requires user-generated content to function, and because users will only use the platform if other challenges are posted, a catch-22 is presented. As Shirky [8] states in his novel Cognitive Surplus "Projects that will work only if they grow large generally won't grow; people who are fixated on creating large scale future success can actually reduce the possibility of creating the small-scale here-and-now success needed to get there". Therefore, we propose that the Gauntlet be first designed to serve a smaller network (20-30 individuals) – large enough to operate, but still a reasonable number to recruit as potential participants. We also propose that this system take advantage of its "Share button" which allows users to post the challenges on other social media platforms to increase Gauntlet awareness. Lastly, past research has also focused on the growth and sustainability (i.e. scalability) of pervasive games [6]. We intend to investigate this further in our future work.

Another concern is the issue of users dishonestly claiming to have completed a challenge when they have not. As previously discussed, we would try to avoid this behaviour by placing less of an emphasis on completing a challenge. But perhaps we could go even further by removing all details on "Completed Challenges", thus removing the option of being dishonest. However, this may jeopardize user incentives and motivation in actually doing a challenge. Thus, this issue will have to be examined further in future work.

Finally, we believe Gauntlet's design interface still needs evaluating and potential improvements as it recruits more users. The design evolution process is still in its infancy. We believe more users will provide more information on how we can better improve the system, and this is something we intend to elicit in the future: user feedback.

CONCLUSION

This paper has described a platform, the Gauntlet, that hosts user-generated challenges and activities that can be completed in real-world settings, within the same realm of pervasive games. We have also discussed current pervasive games and suggest how we can use these game-like mechanisms to foster greater community engagement and environment immersion. The evolution of the

design interface, based on three design principles (social connection, motivation, and opportunity) and a participatory design activity was demonstrated to reveal a hypothetical example of such a platform. We believe future work is needed to explore how the Gauntlet can be used to increase personal well-being (through increased physical activity and social connections) as well as be used to improve community citizenship.

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