Applying Game Achievement Systems to Enhance User Experience in a Photo Sharing Service

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ABSTRACT

Achievement systems are reward structures providing additional goals for players, and thus extending the play time of videogames. In this paper, we explore how applications other than games could benefit from achievement systems, and how users perceive this additional content in a service. For this purpose, we added an achievement system to a geo-tagged photo sharing service called *Nokia Image Space*. The results suggest that there is some potential in achievement systems outside the game domain. The achievements triggered some friendly competition and comparison between users. However, many users were not convinced, expressing concerns about the achievements motivating undesirable usage patterns. Therefore, an achievement system poses certain design considerations when applied in non-game software.

Categories and Subject Descriptors

H.5.3 [**Group and Organization Interfaces**]: Collaborative Computing

General Terms

Design, Experimentation, Human Factors, Theory

Keywords

Playfulness, User Experience, Achievements, Photo Sharing

1. INTRODUCTION

Achievement systems are secondary reward systems that have been developed for digital games. Players can complete optional sub-goals to earn achievement rewards that are visible to other players. As many sub-goals require thorough exploration, new play styles, and virtuosity, achievements are a relatively cost-efficient way of extending the lifetime of a game.

Achievement systems are a fairly recent addition to game design, but they can be considered a successful one, which is illustrated by the fact that they have been a mandatory feature for all Xbox

360 games since 2007 and that the massively successful massively multiplayer online role playing game *World of Warcraft* adopted them in 2008. Game services like Steam and N-Gage also feature achievements, while PlayStation 3 has a similar trophy system.

In this paper, we discuss the possibilities of creating a successful achievement system for a social non-game service. First, we discuss playfulness in productivity software and present a rough categorization on how achievement systems have been used in games. Then we present the results from a user study of a social photo-sharing service that included an achievement system.

1.1 Playfulness in Productivity Software

User experiences are often described with attributes such as fun, enjoyable, and aesthetically pleasing [8]. HCI researchers have argued that the product design should not only concentrate on improving effectiveness and efficiency, but designers should think about how users experience the product and how to design something that is pleasurable to use [6]. In addition, studies have indicated that playfulness can positively affect the subjective experience of using the system [12] and it can also encourage users to use the application in different manners [4].

In his psychological studies of play, Apter [2] has proposed that (challenge-induced) arousal can be experienced as pleasant in activities that do not have an external goal, while in a goal-oriented work arousal leads to unpleasant anxiety. This makes playfulness a sensible way of confronting new challenges.

Shneiderman proposes different methods to make user interfaces more fun [11]. Although his view is rather audio-visual, he also discusses fun in relation to a compelling content. Other researchers have tried to find out suitable game aspects for trials, identifying fantasy and curiosity as candidates that could be applied in the productivity software design [7, 5].

Some recent studies have explored how to add playfulness in non-game applications [3, 9, 10]. These studies have concentrated on audiovisual enhancements, layout or navigation with very little functional changes or new content. In this study, we included new content in the form of achievements to explore how they affect the playfulness of the service and enhance the user experience.

2. EARLIER WORK ON ACHIEVEMENTS

To create an understanding of typical achievement system designs, we conducted an expert evaluation of a portfolio of five games representing different game genres and target audiences: *Buku Sudoku (BS)* (featuring 12 different achievements), *Mass Effect (ME)* (46), *Grand Theft Auto 4 (GTA4)* (50), *Spore* (~100)

and *World of Warcraft (WoW)* (~750). While there is not enough space to present a detailed analysis, we constructed 14 rough categories (Table 1) to illustrate typical achievement systems in games. In *BS*, *GTA4* and *ME*, all achievements are readily visible in the UI. *Spore* and *WoW* feature some achievements that can only be viewed after completing them.

Table 1. Typical achievement categories in games

Category	Description
Tutorial	Try out the various features of the game. (*BS, ME, GTA4, Spore, WoW*)
Completion	Complete a part of the game. (*BS, ME, GTA4, Spore, WoW*) or optional sub goals.
Collection	Collect a set of game items. E.g. obtain a full set of Christmas clothing. (*WoW*)
Virtuosity	Play masterfully, e.g. by not dying at all. (*BS, ME, GTA4, Spore, WoW*)
Hard Mode	Succeed on high difficulty level. (*BS, ME, Spore, WoW*)
Special Play Style	Play in a special fashion. E.g. without violence or against a timer. (*ME, GTA4, Spore, WoW*)
Veteran	Play a lot, accumulating play hours or game actions. (*BS, ME, GTA4, Spore, WoW*)
Loyalty	Recognition for loyal players. E.g. subscribe the game for months or years. (*WoW*)
Curiosity	Funny random curiosities. E.g. jump from heights without dying. (*ME, GTA4, Spore, WoW*)
Luck	Get lucky. E.g. get a rare random item through luck (or perseverance). (*WoW*)
Mini-Game	Succeed in mini-games. (*GTA4*)
Multi-Player	Excel in multi-player in various ways. (*BS, GTA4, WoW*)
Paragon	Rare recognitions given to few top players, e.g. to the first player that completes some task. (*WoW*)
Fandom	Perform out of game fan activities. E.g. attend a fanfest or purchase a collector's edition. (*WoW*)

The different achievement categories aim for different benefits. While *tutorial* achievements seek to motivate players to learn the game, *special play style* achievements can extend the playtime by providing new ways to experience the content. *Paragon* and *virtuosity* achievements serve as communal status symbols. The players have several motivations to complete achievements, e.g.:

- *Social status* provided by the fact that other players can see and compare achievements.

- *Completionism.* Some players like to play games thoroughly. Achievements allow them to measure their progress and establish sub-goals.

- *Extended play time.* Hard modes and new ways of playing provide more value for the money spent.

Although most games grant no functional enhancements, there are some achievement systems such as in *ME*, which provide useful gameplay benefits. In *WoW* many achievements grant various visual avatar enhancements (with no utility value). Indeed, completing achievements has a self-contained goal. Players, who want to collect achievements, are rewarded by the collection itself, as well as the social status displayed to others.

3. NOKIA IMAGE SPACE

Nokia Image Space (NIS) is a multiplatform service prototype for location-based photo sharing. Mobile users take photos, which are automatically uploaded to *NIS* with position data: GPS coordinates, heading and vertical orientation. In addition, the users can upload audio clips, and group images into *Scenes*. The idea of *Scene* is to create sequences of pictures that may be related to each other by a spatial and/or chronological connection. A *Scene* can be visualized as a slide show mode on the web browser creating the impression of an immersive navigation in the 3D world.

In the web client the users can browse photos spatially, as the photos are presented in a spatial relation to each other, allowing the user to intuitively navigate the photos. In the web client the users can comment and rate photos taken by other users, and view each other's achievements (Figure 1).

3.1 Achievement System

An achievement system was added to *NIS* in order to experiment playfulness outside the game domain, and to get feedback on user reactions to new kinds of content. While achievements have been received well among gamers, and many gamers have become familiar with the concept, the applicability of achievements in other domains has not been studied.

Furthermore, we wanted to study the potential of achievements in teaching the users to utilize the various features of the service.

For the experiment, we implemented four achievements, based on the achievement categories identified in the expert

Figure 1. Achievements display on the web client

evaluation of the games: A) *First upload* belongs to the tutorial category. The users are rewarded five points for their first photo, sound, and Scene upload to the service. B) *Photos uploaded*, C) *Scenes created,* and D) *Sound clips uploaded* are Veteran achievements which reward the users for 10/25/100 photo uploads, 5/10/50 sound clips, and 3/6/20 Scenes created respectively. The purpose of these achievements was to encourage users to add new content to the service during the trial.

Compared to many achievements found in games, these achievements are rather simple in nature. As it is typical in games,

these achievements were sometimes completed unintentionally. This was a desirable feature in our prototype, as the surprise rewards motivate users to explore the achievements further and teach how the system works.

4. STUDY

An eight week field trial was conducted in the fall 2008 to evaluate how people would experience *Nokia Image Space* service as a whole. The achievement system was studied among other issues in the trial. A total of 20 participants were recruited for the study. One group consisted of Flickr users in Helsinki, Finland (age 30-45, 8 male, 2 female). The other group consisted of students in Nice, France (age 22-26, 9 male, 1 female).

Participants had Nokia 6210 Navigator phones as their mobile clients and they used their own computers as web clients. They were introduced to the service at the beginning of the trial. Later on, we assigned weekly tasks for them.

Both quantitative and qualitative data was collected during the trial. Regarding quantitative data, we recorded log data of the participants' use of the service, and asked them to rate their user experience on different aspects of the service. Regarding qualitative data, we interviewed participants both at the start and at the end of the trial. The first interviews were phone interviews, lasting 25 min per participant on average. The second interviews were conducted face-to-face, lasting 45 min each.

5. RESULTS

When the interviews were analyzed, three major groups of participants emerged concerning their attitude to the achievements in the service. The first group (6 users) was indifferent towards the achievements or disliked them mildly. The second group (6 users) appreciated the system. The third group (4 users) did not understand the purpose of the achievements. The rest did not mention achievements in the interviews.

5.1 Indifferent Users

The participants belonging to this group generally felt that the achievements were nice, but completing them was not personally motivating. Moreover, they did not appreciate the fact that the achievements emphasized quantity over quality.

> "It's nice, but generally I don't appreciate rewarding quantity over quality. It motivates you to take loads of pictures with nothing interesting in them." (FIN-17) [1]

> "It did not motivate me because for me what is essential is to take pictures that I like, it's not just about taking pictures for the sake of it." (FR-1)

Second, they emphasized that social aspects of the photo-sharing were not supported by the achievements:

> "In Flickr I get trophies when I get compliments from other users. [...] But these [NIS] rewards don't come from the other users, so I wasn't encouraged or interested." (FIN-13)

> "The goal was just to show to my friends things that meant something to me." (FR-1)

Even though these users made their indifference explicit, some of them nevertheless used the features:

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[1] Translated from French and Finnish by the authors.

> "I didn't get enthusiastic [...] I tried to get something to every category, but it wasn't a matter of life and death." (FIN-11)

> "It didn't hurt my experience, I just don't feel it is important. [...] When I was making Scenes, it guided me a little. I looked at these levels and thought that if I'll do a few of these, I'll get a bar filled. But that's all." (FIN-17)

> "But the whole rewarding thing didn't do anything for me. [...] I looked at it once or twice to see how well I was doing in comparison with them, but it wasn't that important." (FIN-16)

As a summary, the indifferent group expressed on a general level disapproval of the quantification aspects and possible unwanted patterns of use. They commented that personally they did not get anything out of it. However, some participants were subtly influenced, and the achievements had some curiosity value.

5.2 Appreciative Users

The participants belonging to appreciative users liked the friendly competition and comparison with other participants that the achievements triggered in the service. They did not find the achievements as a core feature of the service, but it was a nice supplement for the users. Some of the appreciative users found the achievements motivating:

> "At the beginning it triggered me to see other people's pictures because I told myself: 'Hey, they have more points than I do!', so I was sad [...] So it pushed me to look what others were doing because I didn't not know yet how to use everything, the Scenes and the sound. [...] So it was a kind of semi-competition, well at least it made me laugh." (FR-2)

> "Yes, I was saying that it was really nice. It makes you play a bit to compete; it makes you feel like taking more pictures [...] I was looking at their points and was trying to do more." (FR-8)

Others appreciated the achievements and recognized the possible value for the service, even though they did not feel they would affect their own usage patterns:

> "It's quite interesting; at least it makes a little classification between users etc. I found it quite nice. [...] It did not push me to use the service more than that actually. No, no." (FR-6)

> "It might actually be a little kind of friendly competition [...] It can motivate, but me for example it didn't motivate me by itself." (FR-7)

There were also comments about positive social aspects related to the achievements:

> "These things are nice. You should allow [better features] for comparison with others, would make this much cooler." (FIN-15)

In short, the appreciative users considered the achievements valuable, but not critical, for the service.

5.3 Confused Users

Some participants did not understand the purpose and use of the achievements in the service, and thus disliked them. The *NIS* user guide explained the achievements very briefly, basically stating that there are optional sub-goals in the service, and by completing them the user will earn points that can be compared with other users. This open-ended simplicity was a central cause of confusion: it was difficult to understand why collect points when no prize is given and they cannot be used for anything.

> "I did not quite understand what was the purpose of [the system]." (FR-3).

"It's not bad, but I didn't quite get it what was the purpose of it. For example, the difference between, if one person has 0 or 100? […] I do think that a goal would be needed, a kind of a way to spend these points in order to get something out of it." (FR-10)

Partially the confusion may have resulted from the fact that the UI was in English: the term *'Achievements'* seemed to be problematic especially for the French participants.

6. DISCUSSION

Overall, participants' reactions to the achievement system were mild and somewhat indifferent. The appreciative users did not find the feature essential, and the participants who did not appreciate the achievements did not strongly oppose them either. Even the most critical users were indifferent in their comments, just stating that while the achievements did not motivate them personally, it could be valuable for someone else. This result matched our expectations; the achievements did not play a key role in the system. However, many participants used different features in the prototype and the achievements helped users to learn these features in the service.

Achievements are likely to work best with an already existing good user experience. Extending the lifetime of a service with an achievement system works, when the users already appreciate the product, and just need more things to do. On the other hand, providing status symbols for loyal users is the most efficient when the symbols connect users with something they already appreciate.

One finding of the study is that immediate and explicit feedback is almost a necessity for an achievement system. Users need to be notified immediately when they gain an achievement, to remind them of the existence of the achievements, to reward them on the spot, and to arouse their curiosity towards achievements. In our prototype, achievements were not visible on the mobile client, which left the users confused about their progress in this respect.

The achievement system implemented for this study was very simple and the participants suggested many improvements to it. Similar ideas that were presented by the participants were also discussed during the design phase, but they were not included in the evaluated version. For example, participants would have appreciated achievements rewarding for photo quality and for shooting new areas. This could be transferred to e.g. the *Explorer* achievement described as "*Take a photo at least 100 kilometers away from the nearest photo.*"

Another finding from the study is that an achievement system in productivity software should encourage and reward desirable use. This was highlighted by many participants during the interviews. Designers should carefully seek valuable use patterns and encourage those. In addition, the design can complement the game-like interaction design (see e.g. [1]). For instance, a photo sharing service would benefit from users rating and commenting pictures actively, as well as from people cleaning clutter and photographing new places. In collaborative products the users could grant achievements to each other. This would enhance the social aspects of the product.

7. CONCLUSION

Based on our study, achievement systems seem to be a viable option to add some mildly hedonic value to existing products. The viability relates to cost-effectiveness; while the added value is not huge, they are also relatively cheap to implement. Since not all users enjoy achievements, a well-designed system should allow users to opt out effortlessly.

Achievements seem to have particular value in introducing new features. In the future, we will investigate ways to use achievements not only to add value to the user experience, but also to benefit the entire service through encouraging desirable patterns of use.

8. ACKNOWLEDGMENTS

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