

Promoting Engagement in Open Collaboration Communities by Means of Gamification

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Abstract. Open collaboration communities depend on contributors. To reduce users' engagement problems with collaborative systems, the use of gamification has been discussed. However, most gamification methods are generic and do not emphasize the collaborative aspects. This research aims to define a process to promote engagement in open collaboration communities by means of gamification. The process will be refined through action research cycles.

Keywords: Engagement · Gamification · 3C model · Voluntary participation · Online communities · Open collaboration communities

1 Introduction

A typical open collaboration system is an online environment that enables the collective production of artifacts by means of a technologically mediated collaboration platform, offering few barriers to entry and exit and supporting persistent social structures but malleable. Thus, it generates socio-technical systems that provide new opportunities for people to connect and create together [1].

Open collaboration communities depend on new contributors [1,2]. It is necessary to motivate, engage, and retain new participants to promote a sustainable community [3]. According to Bista et al. [4], it is essential to have active contributors for sustainability reasons of an online community and strengthening the engagement can be one of the ways to motivate members to contribute. In this context, an important concept for the operation of open collaboration communities emerges: engagement.

According to O'Brien and Toms, engagement is a category of user experience characterized by attributes of challenge, positive affect, aesthetic and sensory appeal, attention, feedback, variety/novelty, interactivity, and perceived control by the user. The engagement model contains four distinct phases - point of engagement, sustained engagement period, disengagement, and re-engagement [5].

To reduce users' engagement problems with collaborative systems, the use of gamification has been discussed [4]. Gamification is the use of elements and game design techniques in contexts that are not games. The practice and theory of gamification aims to encourage participation and engage people [6]. As stated

by Brito et al. [7], game design elements have been used in collaborative software to engage users to achieve the group's goal. However, most gamification methods are generic and do not emphasize the aspects of collaboration.

For these reasons, we defined the following research question (RQ): How to promote engagement in open collaboration communities by means of gamification? Thus, this research aims to define a process to insert gamification elements throughout the development of open collaboration communities to promote engagement.

2 Background

Creating and maintaining a system that motivate and engage participants is a challenge. Bista et al. [4] declare that the establishment of a new online community with a sustainable level of engagement of members is challenging because: (a) bootstrapping - how to bring members to the community and keep them engaged during the initial phase of the community; (b) monitoring - how to monitor community activities under different categories such as reading, rating, comments, making friends, among others; and (c) sustainability - how to sustain community engagement not only during the initial stage, but also throughout a period of time.

According Kraut and Resnick [8], to become an online community of success, it must meet a number of challenges: start a new community, attract and socialize new members, encourage commitment, encourage contribution, and regulate behavior. Online communities can have more difficulties in overcoming the challenges because of three characteristics that are unusual in groups and conventional organizations. The first is the anonymity in which veterans may be less able to analyze anonymous newcomers and newcomers can be less inhibited by social responsibility. The second is the ease of entry and exit, which leads to high turnover and inhibits building personal ties or commitment to the group. The third is the text communication, which is prone to misinterpretation because it lacks the fluidity and nonverbal cues of face-to-face interaction.

Motivation and engagement are different when participation is voluntary, which occurs in open collaboration communities. As Baran and Cagiltay [9] state, on voluntary participation, individuals often seek professional development, and need to recognize the importance of socio-cultural environment, and how they benefit from the interaction with the system users.

The success of communities is dependent on the motivation related to participation of enough people, so that a critical mass of production can exist around a set of artifacts [10]. In the creation of online communities from scratch, designers face the critical mass problem in which the system has not yet enough content to attract users and also there are few users to create content that can attract other users [8]. Thus, the theory of critical mass highlights the tension between the individual's ability to derive benefits from the use of an interactive media and social or public benefits that may follow from individual use [11].

In seeking a solution to engagement issues, most gamification design guidelines are concerned to introduce reward elements like points, badges, and leaderboards (PBL). A reward-based project can result in putting collecting points as the main proposal instead of collaboration goal [7].

According to Deterding [12], game designers argue that the enjoyment of the game does not come from reward systems, but from significant choices in the execution of “difficult curious goals”. Most gamification implementations has put the least essential of games and represent as the core of experience [12]. Therefore, most gamification methods do not emphasize the aspects of collaboration [7], which represent the essence for creating and sustaining open collaboration communities.

3 Solution Proposal

Fuks et al. [13] define that “collaboration may be seen as the combination of communication, coordination and cooperation. Communication is related to the exchange of messages and information among people; coordination is related to the management of people, their activities and resources; and cooperation, which is the production taking place on a shared space”. The 3C Collaboration Model is used in the literature for classification of collaborative systems. Collaborative systems are designed to facilitate group activities, even if users are in different places and times.

Taking into consideration that open collaboration communities are built from collaborative systems or groupware [13], it is possible to analyze them from the 3C collaboration model. The objective is to define a process to include gamification elements in development of open collaboration communities. This process includes a conceptual model, that supports the modeling in the analysis phase of the project; software components, engagement metrics, considerations abouts development and tests of gamification elements, and evaluation methods. The description of the process will be performed with formal notation, namely, Business Process Modeling Language (BPML).

The features of open collaboration communities arranged according to gamification elements, and the recommendations for association of engagement problems will be described using patterns, to put them under the same analysis component with a standard format - name, context, problem, solution and examples [14]. The aim is to facilitate the systematized mapping, where collaborative features patterns are associated with gamification patterns. For example, to the feature of comment that is classified as communication in the 3C model, which gamification elements improve the engagement in this type of feature, considering its context of use.

The gamification aims to engage users, but engagement, as O’Brien and Toms [5], has four distinct phases -point of engagement, sustained engagement period, disengagement and re-engagement. The collection of engagement data from the user interaction is a bridge between the disengagement and re-engagement, since it allows to understand what needs to be explored to bring the user to a new point of engagement.

The point of engagement relates to the bootstrapping, sustained engagement period relates to monitoring, because it is necessary to measure the engagement to sustain it and disengagement relates to sustainability, since it is necessary to perform actions to promote re-engagement. Therefore, the process will be described by means of the distinct phases of engagement.

4 Method

To achieve the objective of this research, an action research will be performed throughout the development of two open collaboration communities. The goal is the understanding of the real problem in a specific context and the application and refining of the process. The action research cycles are composed of the following steps: plan, act, observe, and reflect. The cycles developed before and after the definition of the process will be compared. The usability testing and the diary studies technique will be performed with system users to collect qualitative data on the user experience, especially related to the engagement. The data obtained in action research and in application of questionnaires and interviews with experts will be the basis to analysis with Grounded theory, and statistical analysis will be performed over the engagement data of systems where the action research has been applied. The process will be refined with experts through interviews using the methodological triangulation. The dependent variable of this research is the user engagement with the community, while the independent variables are the elements of gamification, the tools of collection and analysis of engagement and engagement metrics.

5 Performed Activities

The completed activities in the current state of research are the literature review to understand the areas involved in the research, a preliminary gamification element list based on the literature review, the preparation of one of the projects in which the action research is being carried out, and the development of the action research in this project.

For project preparation, the following activities were required: composition of a team with five members to work in software development; development of key collaborative features for user interaction; insertion of analytical tools for monitoring user interaction with the system, namely, Google Analytics and CrazyEgg; and implementation of user actions logs for engagement data analysis.

In the cycle 0 of action research, the engagement data were collected prior to insertion of gamification, therefore, in subsequent cycles it will be possible to evaluate the evolution of engagement with the input of gamification elements according to specific collaboration features. A remote usability testing through SurveyGizmo and Loop11 tools was realized. The results are being analyzed in order to integrate the collected data in the logs of user actions, analytical tools and remote testing tools.

From the usability testing in earlier versions of the system it was defined a preliminary group of gamification elements to the cycle 1 of action research, which was implemented in parallel to the other activities of cycle 0, but not including the results in the system version in production. The cycle 1 of action research included gamification elements originated from an ad-hoc approach to compare the results with subsequent cycles where the proposed process will be instantiated.

6 Final Considerations

For reasons of sustainability of an online community, it presents itself as a need to have active contributors, and strengthening the engagement can be one way to motivate members to contribute. To reduce users' engagement problems with collaborative systems the use of Gamification has been discussed. However, most gamification methods are very generic and do not emphasize the aspects of collaboration [7].

This research proposes a process to promote engagement in open collaboration communities by means of gamification. The process will be defined by an action research in two collaborative systems in development and analysed with statistical methods, usability testing with users and diary studies, as well as validations of experts, through interviews and questionnaires, promoting methodological triangulation.

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