Episodic Volunteering in Open Source Communities

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ABSTRACT

Episodic volunteers, who prefer short term engagement to habitual contributions, are present in Free/Libre and Open Source Software (FLOSS) communities. Little is known about how they are viewed within their communities, how they view their communities, how community managers are managing them, or even how many episodic volunteers contribute to FLOSS projects and how much they contribute. Knowing more about the prevalence and management of episodic volunteers in FLOSS will help community managers make better decisions for engaging and utilizing these volunteers. My dissertation addresses these questions, providing a picture of what episodic volunteering looks like in the context of FLOSS communities.

CCS Concepts

•**Software and its engineering** → **Open source model;**
•**Social and professional topics** → *Project staffing;*

Keywords

Community Management, Episodic Volunteering, Free Software, Open Source, Volunteers, Volunteer Management

1. INTRODUCTION

My work will examine episodic volunteers in the scope of Free/Libre and Open Source Software (FLOSS) communities, drawing from what is known about episodic volunteering in general and the literature on FLOSS contributors. Episodic volunteers "prefer to have short term volunteering assignments or discrete task-specific volunteering projects rather than traditional long term volunteering opportunities" [3].

In recent years, non-profits and governments have observed that in general, the number of adults volunteering has increased while the number of hours contributed has not, suggesting an increase in the number of people volunteering episodically rather than habitually [4, 6]. Successful general volunteering organizations are adapting their practices to accommodate and make use of episodic volunteers [10, 11].

It is possible that this trend toward more episodic participation is also present among FLOSS volunteers, making this an interesting area of research in understanding FLOSS volunteerism. The proportion of volunteers to paid contributors in FLOSS projects has declined [16], but volunteers are still an important part of many communities. In the past it was established that the majority of work is done by a small core group [12], but social and technical changes stemming from the switch to distributed revision control may have altered contribution patterns by lowering barriers to entry [5].

Preliminary work has shown that community managers are aware of episodic volunteers in their communities [19], but there is little information on how such volunteers can be managed and inspired in an FLOSS context. If the general trend toward episodic volunteering is reflected in FLOSS communities, it will be necessary for community managers to adapt to effectively make use of people who prefer this style of volunteering. The purpose of my work is to understand the episodic volunteering in an FLOSS context.

2. RESEARCH QUESTIONS

The objective of my research is to understand episodic volunteering in its current state in FLOSS communities. Episodic volunteering has not been widely studied in FLOSS communities which means there are a number of questions which must be answered for the phenomenon to be understood:

- *What do FLOSS community managers know about the episodic volunteers in their communities?*

- *How common is episodic volunteering in FLOSS communities?*

- *What are the motivations and intentions of episodic volunteers in FLOSS communities?*

- *Which practices are being successfully employed in managing episodic volunteers in FLOSS communities?*

3. WORK IN PROGRESS

3.1 Gather Community Knowledge on Episodic Volunteers

What do FLOSS community managers know about the episodic volunteers in their communities?

The first phase of my research is to understand what FLOSS communities already know about episodic volunteering, which may contrast with existing practitioner advice. This study of current practice will allow for the identification of potential improvements.

In order to answer this broad question, two sub-questions are considered:

- *How do FLOSS community managers view episodic volunteers in their communities?*

- *How do FLOSS community managers manage episodic volunteering in their communities?*

The first sub-question explores the beliefs that community managers have about episodic volunteers. In section 3.3 I will examine how episodic volunteers actually feel. The gap between community managers' beliefs about episodic volunteers and reality will allow for the identification of practices from the general volunteering literature which may not be widespread in FLOSS communities (considered in section 3.4) but which could potentially improve how episodic volunteers are managed.

One of the beliefs about episodic volunteers which is commonly found in practitioner guides and literature is that they are undesirable. Because recruitment is expensive, effort spent on acquiring long-term volunteers is a more efficient use of resources [1, 15]. Nonetheless, episodic volunteers can already be found in FLOSS communities, answering questions on user support forums [18] and filing bug reports [20]. The gap between what is recommended and what appears to be actually taking place indicates that there is benefit in documenting and understanding current practice.

This research will be conducted as a case study of four FLOSS communities, selected to differ along the vendor– and community–managed dimension, and along the multiple– and single–project dimension. Interviews with community managers will be the primary source of data, supplemented with secondary materials such as web pages, mailing lists, and presentations.

At the time of submission, this research had been conducted and a paper based on the findings is in the process of being prepared for submission.

3.2 Determine the Extent of Episodic Code Contributions

How common is episodic volunteering in FLOSS communities?

This research will help establish how common episodic volunteering currently is in FLOSS communities. If episodic volunteering is widespread in FLOSS communities, it will demonstrate the relevance of considering episodic volunteers as part of a community's volunteer management strategy. Conversely, if episodic volunteering is uncommon, it highlights an opportunity for FLOSS communities in need of volunteers to follow in the footsteps of mainstream volunteering organizations by adopting practices to accommodate the increasing number of people who prefer this style of volunteering.

It has already been determined that a large proportion of posts and bug reports are made by one-off contributors [18, 20], but it is unclear if this is the case for other types of contributions. Unfortunately, no community has yet created a consistent way of recording and recognizing all contributors.

Code contributions can be consistently and reliably studied, therefore my work will focus on this type of contribution. My research questions are as follows:

- *What proportion of volunteer code contributors participate episodically?*

- *What proportion of code is contributed by episodic volunteers?*

Early research established that roughly 80% of commits in an FLOSS project are made by 20% of the contributors [9, 12]. It has been proposed that the migration from centralized to distributed revision control provides social and technical mechanisms to enable one-off contributions [5, 13, 14], in addition to providing more accurate information about who authors (as opposed to commits) a change [2]. Rodriguez-Bustos and Aponte examined this prediction and observed fewer committers after a project moved to distributed revision control [17], but their work only considered one project and did not distinguish between volunteers and paid contributors.

This research will use statistical analysis to examine the contribution behaviors of volunteers across GitHub-hosted FLOSS projects by mining their commit artifacts. Volunteers will be distinguished from paid developers using the method described by Riehle, Riemer and Kolassa [16].

Currently, a research plan exists and data collection has begun.

3.3 Identify the Intentions and Motivations of Episodic Volunteers

What are the motivations and intentions of episodic volunteers in FLOSS communities?

Studies on episodic volunteering in general volunteering have primarily considered the motivations and intentions of episodic participants [8] in domains as diverse as wilderness maintenance [3], festivals [6], and healthcare [7, 8]. In order to determine to what extent findings from other domains of volunteering are applicable to FLOSS volunteering, I will replicate Bryen and Madden's interviews [3] in a FLOSS context. If FLOSS episodic volunteers appear to resemble other episodic volunteers, this suggests that management strategies might be applied in a FLOSS context. The interviews will also be supplemented with questions intended to confirm or reject the hypotheses of episodic volunteering in FLOSS derived from section 3.1.

The interviews are intended to help identify the most relevant questions about motivations and intentions to include in a broader survey and are therefore not intended to be representative but opportunistic. A more representative approach will be used for the survey, which will be promoted to the episodic volunteers identified as the result of the work in section 3.2 as well as at FLOSS events.

This portion of the research is in the early stages. I have compiled a short list of self-identified FLOSS episodic volunteers who are willing to be interviewed. I have not written a detailed research plan or interview script.

3.4 Determine Frequency and Effectiveness of Practices

Which practices are being successfully employed in managing episodic volunteers in FLOSS communities?

Having previously identified potential best practices for the management of episodic volunteers from:

- Practices community managers stated they used in managing episodic volunteers (identified in section 3.1),

- Practices identified by general volunteering researchers as useful in managing episodic volunteers, and

- Practices episodic volunteers identified as motivating or desired (derived from interviews in section 3.3).

I will create a survey for episodic volunteers, other contributors, and community managers. The version for episodic volunteers will be merged with the survey described in section 3.3.

In the common part of the survey, participants will be asked about the extent to which these practices are used in their community and the effect these practices have or that they anticipate they would have on them if employed. This will identify how widespread practices for managing episodic volunteers are, and which practices are effective in motivating episodic volunteers without discouraging other contributors. It will also indicate which practices might have a positive effect if adopted by community managers.

This work has not been started.

4. EXPECTED CONTRIBUTIONS OF DISSERTATION

My research will provide a better understanding of the episodic volunteers who are already contributing to FLOSS projects. With the completion of my research, we will have a better understanding of what community managers know about episodic volunteers and the practices they employ to manage them, how common episodic volunteering is in FLOSS communities, the motivations and intentions of FLOSS episodic volunteers, and the effectiveness of existing or proposed community management practices addressing episodic volunteers.

Community managers will be able to use this information to make informed decisions about if and how to address their episodic volunteers. It will also provide an understanding of whether episodic volunteers in FLOSS are similar to or different from episodic volunteers in other contexts, enabling researchers and community managers to predict whether the general volunteering literature offers models for understanding episodic volunteering.

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