Exploiting Social Software to Build Open Source Communities

Imed Hammouda, Timo Aaltonen and Petri Sirkkala
Department of Software Systems
Tampere University of Technology
P.O. Box 553, FI-33101 Tampere, Finland
firstname.lastname@tut.fi

Abstract

This paper describes work in progress on how to build open source communities. The proposed approach is based on exploiting existing social software communities and applications to attract users and developers to the software to be released. The approach is being evaluated in the context of the NoTA platform, which is a system architecture for mobile and embedded devices developed initially at Nokia. The first results of the marketing campaign have been encouraging. Yet, a well-defined evaluation framework needs to be constructed and applied in order to measure the effectiveness of the approach.

1 Introduction

In the past few years open source has gained much attention from both academia and industry. Even though the number of open source software is remarkable, it is still far from obvious how to start and run a successful open source project [4, 10]. In concrete terms, starting an open source project is in fact building a *community* of users and developers for that project.

Developing online communities in general is a complex practical activity [9]. In the case of open source communities, certain organization patterns [6], social structures [3], and specificities of the software to be released have to be taken into consideration. The problem can be considered as delicate since open source projects (and the communities behind) vary, among others, in size, domain, business and support model, and licensing scheme.

In this paper, we present a community building approach for open source software that is based on exploiting social software networks and applications. The idea is that the availability of social software applications has resulted in the constant emergence of online communities. A selected set of these communities can be used to pass invitation messages among their members to join the open source project. This technique is often referred to as *viral marketing* [2].

We proceed as follows. In Section 2, we discuss viral marketing in the context of releasing open source software. In Section 3, we show how the proposed approach has been applied to build a community for a software platform that has been originally developed at Nokia. Finally, we conclude with final discussion in Section 4.

2 Marketing Open Source Software

In the early days of the Internet, online communities have mostly been formed through the use of emailing lists, or message boards. Today, most communities are built around social software technologies that allow their members to interact, share, and meet other individuals, with similar interests and goals. Examples of social software include content management systems such as blogs, knowledge and collaboration management systems such as wikis, social networks such as MySpace, user content sites like YouTube, and social bookmarking / folksonomies such as del.icio.us. Recently, social software communities have become a good target for viral marketing campaigns.

In this paper, We borrow the concept of viral marketing to promote a software to be released, eventually forming an open source community for that software. Our approach aims at developing an effective framework and a set of efficient mechanisms for marketing open source projects to online communities.

For a viral marketing campaign to be effective, a well-defined marketing plan has to be built first. For the purpose, marketing departments often refer to the 7 P's of the *marketing mix model*. In this work, we have tailored the 7 P's model to meet the specificities of marketing open software platforms. The tailored model is then used to identify ingredients for the viral marketing campaign: attractive marketing environment, compelling information, target communities, viral messages, and request handling processes.

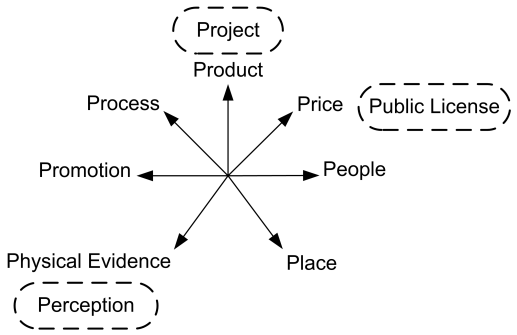

Figure 1. Modified 7 P's of Marketing Mix Model

2.1 A Modified Marketing Mix Model

The marketing mix model has been at the center of product and service marketing processes for decades. Initially, the model has been proposed in the context of products [5] and consisted of four pillars: the actual *Product* to be marketed, the *Price* of the product, the *Place* where the product is located, and the *Promotion* mechanisms to get the product known. The model has been later extended for services [1] bringing in three more pillars: the *People* that are around the business, the *Physical evidence* representing the ambiance of the marketing environment, and a *Process* for how people get the product.

However, Product, Price and Physical evidence do not fit well the principles of open source. Instead, we may refer to *Project*, *Public license*, and *Perception* respectively. This is illustrated in Figure 1. In the following, we present justification for the proposed model, discussing the revised 7 P's in the context of open source.

- *Project*: When building an open source community one should think of the target software as a project that results into products, rather than a product. A project needs organization, process, support, etc. Furthermore, a project should have a vision statement that is communicated clearly to the community. Also in practical terms, the project should have an attractive name, slogan, logo, and description.

- *Public license*: Open source software comes with no price for its users. Instead, using, modifying, and redistributing source code should be practiced according to rules defined in a public license. Open Source Initiative (OSI) [8] is the authority of open source licenses. Currently, there are around 70 open source licenses accepted by OSI. It is important to choose a license that is attractive to the target community.

- *Place*: In the context of open source, the place dimension is twofold. On one hand, the place of marketing efforts should be specified. On the other hand, the geographical regions where the target communities could reside should be defined. Typically, a WWW site is used for the former. It is the place where the community members can download the software, get information about the ongoing project(s) and if possible have own open source projects hosted. If the site is mirrored, then the mirrors are also part of the place. It is recommended that the WWW site follow the principles of open source communities. For the latter dimension, the marketing effort should primarily focus on target regions or countries.

- *People*: In open source projects, the People dimension is represented by the community around the project. Typically, a project community is built from a heterogeneous set of interest groups including universities and research institutes, existing open source communities, social networks, non-governmental organizations (NGOs), and governments. We refer to these as *meta-communities*. It is important to identify meta-communities with active members and individuals with high social networking potential. Another aspect of the people dimension is the human resources needed to carry out the marketing activities.

- *Promotion*: In order to market the target platform to the different meta-communities, one should use different marketing *channels*. The channels range from social software to scientific conferences. The promotion efforts should be carried out before the release date (e.g. invitations sent out for a release event) and after the release date (e.g. social content sites, mailing lists and bog sites). Example marketing channels include WWW site (the primary marketing channel), social content sites such as YouTube, mailing lists, and blog entries by famous bloggers. Other traditional channels include magazines, stands in industrial conferences and exhibitions, talks in industrial and scientific conferences, and workshops. Once the promotion channels have been identified, effective *viral messages* should be formulated for every channel. Example kinds of messages include videos, news blurbs, blog entries, and e-mail messages.

- *Perception*: For online communities, the physical elements of a marketing environment are of low relevance. Instead, what is more important is how the community perceive the mission and the potential of the open source project through its infrastructure and promotion messages. Also, the infrastructure (e.g. WWW site) should be designed to support the organization and objectives of the project. Perception should take

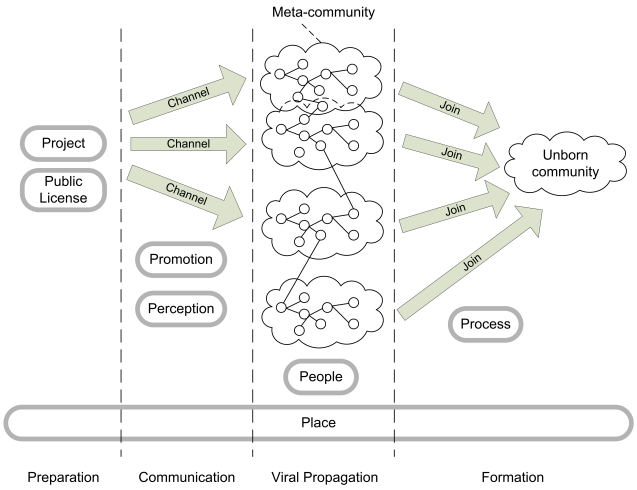

Figure 2. A Viral Model of Marketing

into consideration the specificities of people (e.g. geographical and cultural differences) and channels (formal e-mail messages versus home-made social media). In other words, the project environment and the marketing means have to be appealing to the corresponding target community.

- *Process*: By process we mean how the elements of the infrastructure should be coordinated to guarantee access to the open source project including access to source code, contributing to the project (patches, wish lists, bug reports, bug fixes, documentation, and developer support) and reaching other community members. Another important aspect of process is the resources needed to execute the marketing plan. Prior to the actual marketing activities, one should define the exact action points and the corresponding resources.

2.2 A Viral Model for Releasing Software

In our approach, we use the modified marketing mix model to identify the key elements required to launch a community building campaign. Once identified, these elements should be properly documented, thus constituting what we would term as a *platform release plan*. The plan needs then to be executed, monitored, and assessed as the community builds and hopefully grows. The release process itself is based on the principles of viral marketing.

Figure 2 presents a temporal perspective to the release process. The process goes through four main phases. During the *preparation* phase, target meta-communities, promotion channels, marketing messages, and needed resources have to be identified. Also project details, public license, and website have to be fixed. During the *communication* phase, marketing channels are put in action. Each

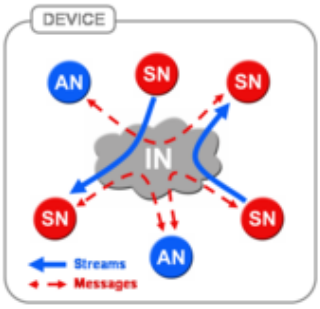

Figure 3. NoTA Architecture [7]

channel should target a specific meta-community. The message that each channel carries should be formulated taking into consideration the target meta-community so that the project is perceived in a positive way.

During the *viral propagation* phase, the promotion message is virally spread among the members of the target communities. As a matter a fact, meta-communities do overlap in the sense that they share common members. It is also possible that the promotion messages propagate from one meta-community to another. Finally, during the *formation* phase interested members join the new community. At this phase, a well-defined process to manage the community is needed.

In the figure, we have placed the 7 P's in the phases where they are exhibited the most. Perception for example is also relevant to the viral propagation phase as the spreading of messages highly depends on how people perceive the project. Also, process is relevant to the communication phase as the promotion activities need a well-defined process.

3 Evaluation

In order to evaluate the proposed approach, we have applied our methodology to build an open source community for NoTA [7], which is a modular service-based architecture framework for embedded devices developed originally at Nokia Research Center. The platform has been officially released in mid June 2008. Figure 3 depicts the main architecture of the platform. A NoTA application can be built by providing Service Nodes (SN) and Application Nodes (AN) that communicate through the NoTA core (the software that is released) via two basic means of communication, namely control messages and data stream messages.

For the NoTA project there are two forms of contribution, either to the NoTA core itself or through building applications on top of the platform (in terms of service and application nodes). Using the proposed approach, we have

prepared a release plan for the NoTA software. The release plan consists of the marketing actions that need to be done. For each identified meta-community, proper marketing channels and messages have been identified.

For example, we have advertised the platform to flight simulator communities as one of the first platform applications has been a distributed flight simulator. The marketing message has been formulated using an amateur video, which can can be found at the project website, introducing the platform and inviting the community members to join the project. As example marketing channels for this meta-community, we have used YouTube as a general social content site and we are planning to use FlightSimTube as a more specific channel. In this paper, we do not discuss the details of the marketing plan.

The marketing campaign for NoTA is still ongoing. The early results of the marketing plan have been encouraging. We plan to build an evaluation framework to measure the effectiveness of our approach. For the NoTA platform, the evaluation criteria could include the following.

- number of users subscribed to the mailing list;
- number of downloads of the software;
- count of webpage hits;
- number of views for the social media;
- number of projects built on top of the platform;
- number and kind of contributions received;
- amount of requests/feedback/inquiries received;
- geographical distribution of the community members, web-site access, and media views;
- sources for getting to know the project;
- participation in project events and meetings.

4 Discussion

In this paper, we have presented work in progress on developing a framework for forming open source communities. The framework is based on social software technologies. Like any other online community, building an open source community is a socio-technical challenge [9]. From the social aspect, a community should consist of people interacting together and assuming different roles, a shared purpose that provides a reason for the community, and policies for guiding people's interactions. From the technical perspective, computer systems are needed to support and mediate the interactions among people.

Compared to other communities, however, the purpose dimension in an open source community is relatively clear: all people activities and interactions are for the purpose of evolving an open source software. Here, it is assumed that the community members share common interest (of different kind and level) towards the software project. Given this observation, we have reformulated the community building problem as the challenge of bringing interest to the project, or marketing the project to the people. We then have exploited existing marketing techniques and strategies to promote the software to target social software communities.

The idea of promoting open source software using viral marketing is not novel. For example, a viral marketing model has successfully been tried for advertising the TYPO3 content management framework [11]. What is essential however, is to keep the viral model specific to the open source principles regarding the adopted marketing instruments and target communities for example.

One of the critical issues in viral marketing is how to formulate the promotion message in such a way to increase the chances of spreading the messages among the meta-community members. We are working on developing techniques for amplifying the marketing messages with viral ingredients that suit the principles of open source. Also, we plan to learn from other case studies to be carried out in the context of this research.

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