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Lessons Learned from the Development and Marketing of Mozilla Firefox Browser

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ABSTRACT

Open source software projects have succeeded by attracting a community of developers and end users. Typically end users are the largest and least influential group in the community. In recent years, it is becoming apparent that a large and engaged user base is a critical asset for the success of an open source project. This case study identifies the factors that may have contributed to the initial success of the Firefox browser launch. First, the Firefox developers tended the usability needs of non-technical users; Second, the community created mechanisms to recognize and reward end users for their contributions other than writing code, such as project marketing. The lessons learned may benefit other OSS projects that intend to target non-technical users.

Keywords

Open Source Community, Community Marketing, Case Study, Firefox Browser

INTRODUCTION

End Users in Open Source Community

Open Source communities are voluntary communities committed to develop, improve, support and maintain Open Source Software (OSS) projects. OSS licenses its users to access, modify and distribute the source code freely, provided that they would not redistribute the derived work under a more restrictive license (http://www.opensource.org). Linux, Apache, and MySQL are among the most well known OSS projects.

Essentially, the success of an OSS project relies on support from, and cooperation among various groups involved in its community. Different roles and responsibilities that community members play can be roughly categorized into four groups: including project owners/core developers, patch submitters, bug reporters and end-users. Project owners/core developers are a small group of people who contribute most of the code and control the software releases. In the case of Apache project, for example, the core developers accounted for over 80% of the coding (Mockus et al, 2000). Patch submitters involve a slightly larger group who examine the source code in detail and submit patches to add features or to fix bugs. Bug reporters are comprised of an even larger group who download and compile the source code and report the bugs. In many OSS communities, potential developers become familiar with the program by submitting bug reports, earn a reputation as a programmer through the quality of the patches they submit, and finally are recognized as “hackers” by the members of the core group (Raymond 2001, Ye et al, 2002). End-users, on the other hand, are mostly interested in using pre-compiled binary software, and they tend to be less technical than other members of the community, and may not necessarily have the expertise to contribute at the source code level. But because they do not play an active role in developing code, their voice is often ignored by the more technical savvy members, and their involvement with the community remains very limited.

The past OSS research has mainly focused on the phenomenon of OSS development, in particular, the role of developers and their incentives for voluntary participation (Fitzgerald & Kenny, 2003). However, as Open Source movement spread around the world and more end users become members of Open Source community, more research should be directed to OSS use (Jin et al, 2007). In other words, we need to better address the roles as well as the needs of end users within OSS communities. Indeed, Benson et al (2004) argue that addressing usability concerns should be the first priority of OSS movement in general, because their wide adoptions among non-technical users are vital for OSS projects to ensure market share and competitive advantage.

Research Questions

Notice that the composition of an OSS community could vary significantly depending on which stage the project is in. According to Raymond (2001), most OSS projects are initiated because their founders “scratch their own itch” by creating software solutions to solve their own problems. Before an OSS project developed into a reliable product, the project tend to attract capable programmers who have the same itch to scratch, therefore are willing to dedicate their time and expertise to improve the project. During this stage, the line between OSS developers and OSS users may be blurred, because developers
are typically consumers of their own products as well (Feller & Fitzgerald, 2000). At the same time, the involvement of non-technical users in the community could be very limited.

However, during the later stage, as an OSS project becomes more functional and mature, its community size will increase and more non-technical members will join as end users. For example, when Mozilla 1.0 was released, the community consisted of about 30 core developers, 400 patch submitters, 10,000 bug reporters and around 500,000 end-users (Dotzler 2003). In this case, the number of end users overwhelmingly exceeded the number of developers in the community. Indeed, number of users (in addition to the developers) has been identified as one important indicator of OSS project success (Crowston et al 2003). In other words, the more successful a particular OSS project is, the more likely its non technical end user base will significantly expand. This change in community structure and composition may impose different requirements on the way OSS project is developed and supported. Jin et al (2007) suggested that even though OSS developers most likely also are users, the distinction between developers and non-technical users remains an important issue. In particular, the usability of the software tends to be overlooked by OSS developers because they are more motivated to improve its functionality (Nichols and Twidale, 2003, Benson et al, 2004). This issue poses serious challenges for OSS community leaders.

The purpose of this paper is to examine the development and marketing of the Firefox browser to understand the following research questions:

- While the existence of a large end user base may be an indication of a successful project, how to steer the focus of the OSS developers toward meeting the usability needs of the “silent majority”, namely, the non-technical end users?
- How to stimulate interests, and to create a sense of participation and belonging, among technically inexperienced users in order to create, expand and sustain a dynamic community?

We focus our analysis on how the Firefox community strategically shifted its development effort to address the needs of non-technical users, and how it creatively stimulated the involvement of end users to help market the project. The lessons learned from this case are summarized in the Discussion section of this paper.

CASE STUDY

Method of Investigation

The first author has actively engaged in OSS research since 2002. As a participant observer, she has been regularly attending monthly face-to-face meetings in five Linux User Groups (LUGs) around Silicon Valley and the San Francisco Bay area. Some of these meetings feature presentations by the founders of specific OSS projects. The Firefox browser project first caught her attention after she attended one presentation by one of its founders, she subsequently contacted him and scheduled an interview with him. Thus she started collecting data on this community. The information presented in this case is based on original sources including one-on-one interviews with principal members of the Firefox team and of public presentations made by these individuals over the course of approximately one year. The quotations in this paper are based on transcripts and are largely unedited.

Mozilla as the “Accidental Product”

Firefox browser is an OSS web browser descended from the Mozilla Application Suite. Today, Firefox community celebrates its 500 million downloads (spreadfirefox.com) and commands 15% of the web browser market worldwide. This makes the Firefox the second-most popular browser in current use, challenging the dominance of Microsoft’s Internet Explorer (http://en.wikipedia.org/wiki/Mozilla_Firefox). Its innovative features include pop-up blocking, tabbed browsing, built-in Google search, and live bookmarks with RSS (Really Simple Syndication) Web Feeds. While these features certainly contributed greatly to its rapid acceptance within the traditional Open Source community, its phenomenon growth among non technical users and Microsoft Windows users makes it a unique case for studying the roles of non technical users within OSS community.

It would be difficult to tell the story of Firefox without understanding the Netscape and Mozilla’s past. The Netscape Navigator was one of the first successful commercial web browsers available back in 1994. The first browser war between the Netscape Navigator and Internet Explorer began when Microsoft released Internet Explorer 1.0 as a free add-on to its Windows 95 operating system. Microsoft dedicated significant resources to improve its browser (Sink 2003) and Netscape’s market share began to slip. In 1998, Netscape Navigator’s market share plummeted below IE for the first time. Eventually, it was Microsoft who emerged as the winner of the browser war, Netscape has since never been able to reverse the straight downward decline of its market share (http://en.wikipedia.org/wiki/Netscape_Navigator). In late 1998, Netscape was acquired by America Online.

In March 1998, Netscape open sourced its browser code base under the project named Mozilla. The hope was that the open
source community would develop a viable code base for the Mozilla project which could lead to the development of viable alternatives to Internet Explorer. This act has gained a lot of support and many OSS developers contributed. Over the years, Mozilla not only evolved into a relatively stable and powerful internet suite but also built a strong OSS community around it. All the later versions of the Netscape browser were built on Mozilla code base.

According to its marketing director, the Mozilla project was initially intended to only serve as a technology platform that harvests the benefits of open source community. It was meant to be rebranded into a commercial product, namely, Netscape browser. But Mozilla, an open source community, and Netscape, a subdivision of AOL, had very different objectives and priorities in terms of how the product should evolve. For the Mozilla community, making a great browser was the goal, and money was not an issue. But for Netscape, making money and driving traffic to Netscape.com were more important than building browser itself. So Mozilla and Netscape clashed on what should be the right set of features to include in the browser. A major source of conflict between these two groups related to whether or not to include a pop-up blocker in the product release.

“So Netscape was based on Mozilla, and Mozilla had a pop-up blocker. And everybody wanted a pop-up blocker. That was the number one requested feature... And then Netscape releases Netscape [browser] 7.0 without a pop-up blocker. Everyone was like “why the heck did you guys remove the pop-up blocker that you already had?” And the reason was that Netscape had all of their own web properties that had pop-up ads on them, like Netscape.com and AOL.com. So they stripped out the pop-up blocker and they released the product, and everybody hated it.”

As a result, more and more ‘power’ users started to download and use Mozilla instead of Netscape (the official release). Mozilla evolved into the favored product “by accident.”

“[Mozilla] was meant to be a technology testing platform, and instead, millions of people started choosing it because it doesn’t have pop-ups, it doesn’t have all these links to Netscape.com. So it is an accidental product... because [people] trust these open source guys more than they trust these folks at Netscape.”

The Development of Firefox

While Mozilla was developed “by geeks, for geeks”, it was not well received by non-technical users. According to the founder of Firefox project, the problem was partially attributable to the fact that within the Mozilla community, because more technical users tend to be more active, their voice was much louder than non-technical users. Another problem was that different feature patches from different contributors were considered equally important, therefore, they were all welcomed into the Mozilla release. This all-embracing policy not only increased the size of Mozilla project unnecessarily but it created potential stability problems over time.

“The model with Mozilla was that if you had the idea for a feature and the skills to implement it, there was basically nobody saying ‘it doesn’t really fit into our vision.’ It was kind of just like, ‘well, in it goes, and that works for us’...and once a feature was in the product, they felt like they could never ever remove it.”

Built upon the Mozilla Browser code base, Firefox browser was created as a hobby project in late 2002 by three Netscape/AOL employees who had worked in Mozilla team for a long time. As explained by one of the founders, the vision of Firefox is to create a consumer oriented browser that is easy enough for ‘mom and pop’ (non technical users) to use. This end user focus marks the main difference between Mozilla and Firefox browser.

“I think Firefox is kind of figuring out this concept that I call open source for mom and dad. The idea that you can take the best elements of open source, and mainly this access to such a wide and talented body of people, and the best part of commercial software, which is this very professional focus on the consumer, the very individual focus on the end user, and merge those two together so you figure out how to redirect this free body of talent to make a good consumer product.”

In order to stay true to this vision, four basic “rules” guided the development of the project.

Firefox Rule 1 – “we wanted it to be small”

To the core developers of Firefox project, creating a browser that non technical users would really use means that it should only include features non technical users would want - no more, no less. It implied a smaller, more stable product. Since the project started with the Mozilla code base, the first challenge core developers faced was not how to add new features, but
rather, how to take out unwanted features and reduce the size.

“We thought that it is very important to remain stable. We wanted to shrink the size of Mozilla, So if there really is a feature that most of the users are not using, don’t leave it there. And if there’s something that is too hard to use, fix it.”

Firefox Rule 2 – “let’s not keep too many cooks”

Having been long time witnesses of “too many cooks” problem within Mozilla community, the Firefox leaders decided to keep the development team small but effective.

“So you take away 99 percent of the people that are arguing in the bug tracking database and saying that they know what’s best for users, and what you’re left with is the one percent of the people who understand how people like mom and dad really think about technology, and you bring them on to the team, and you give them full decision making power.”

Keeping cooks outside the kitchen has proven not to be easy in practice. Firefox leaders had to go against unwritten rules about how open source projects were developed. For example, at one point, they closed the development process to self-recommended contributors.

“This is an excerpt from our original manifesto. The question was, ‘Where do I file bugs on this?’ the answer, ‘You don’t. we are not soliciting input at this time.’ And then question five was, ‘how do I get involved?’ and the answer is, ‘By invitation.’ So the Firefox philosophy was not so much to try to get as many people submitting code as possible, [but rather, to create a usable product]”

Firefox Rule 3 – “All Patches are not Created Equal”

Besides keeping the development circle small, Firefox developers chose not to assign the same priority for all patches submitted by community members. In their view, obscure features that majority of users were not going to use should not be considered in the final product.

“There’re about 100 images in MNG format on the web. So we had a group of people that really, really wanted us to implement MNG support in Firefox. The reason being that if we supported MNG, everyone would start using MNG. Their patch was actually a fairly large increase in code size, so obviously, we didn’t feel like that trade-off was really worth the advantage of supporting this really obscure image program. [So their patch was rejected].”

Firefox Rule 4 – “All Users are not Created Equal”

A major key to the success of Firefox project, was to recognize that developers are just very small portion of Firefox community. Community leaders tried to listen to the voices beyond small group of technically elite community members, to reach out to majority of non-technical users who were going to be using the product.

“When you are spending all day on our bug tracking database or reading comments on Slash-dot, it gets very easy to believe that when a majority of those people want something done in your product, that everybody wants the same thing done in your product. So you have to be careful not to immerse yourself too much in this technically elite audience. You have to remember that 99 percent of the people out there are not actually gonna be talking to you through your bug database. They are basically not gonna talk to you and use your product until you release it.”

This required re-thinking the way the decisions to include a potential feature were made. Because the silent majority don’t vote, care had to be taken in counting the votes.

“So this bug has 714 votes, a vote is our way of indicating relative levels of support for a given feature fix. So 714 is probably the most voted bug in the system, and it seems like quite a bit, unless you consider that Firefox has over 20 million users now, and that [714] is a very, very, very small fraction.”

Reaching out to non-technical users required evaluating feedback with a different set of filters. A conscious effort was made to listen for the voice of the naïve user. The founder gave examples of two communications received by the development team. The first example appeared to be from a technically elite member:

“So just going back to the idea of technically elite, this is a bug comment saying: “if I had my web
cam on, you’d see me on my knees begging while I type this: give us colored scroll bars, PLEASE.” Obviously, something like this is not relevant to most of the computer illiterate people out there, and it should not be our priority. So it’s important to take everything in context and understand where people are coming from, what their background is, and really weigh your feedback.”

The second example appeared to be from a less experienced Firefox user. This feedback actually attracted more attention from the developers.

“This is an email I got the other day from a 73 year-old teacher who said he’s not too technically advanced and he’s getting an error message about proxy servers that he has no idea what it means. Of course, that is something that we are going to be a lot more interested in investigating, figuring out not only why he’s getting that problem but how we can make that error message a lot more user friendly so people can understand how to fix it.”

**Community Marketing of Firefox 1.0**

In July 2003, AOL decided to abandon the “browser business”. The Mozilla division was cut off from AOL and recreated as a not-for-profit foundation. AOL provided $2 million in seed money for the foundation. After the seed money ran out, the foundation was expected to be self-funding. Of the several projects underway at the Mozilla foundation, the Firefox project seemed to be the most likely candidate for a consumer-oriented product. Therefore it was decided to dedicate additional resources to Firefox and develop it as the foundation’s flagship product. In order to launch a successful consumer product as an alternative to Internet Explorer, Firefox needed much more than $2 million dollars. The key to a successful product launch would be to galvanize the OSS community around marketing the product.

The Firefox 1.0 was set to be officially launched in November 2004. By that date, the foundation would have to brand and market the product in order to achieve a viable market share relative to Internet Explorer. The first step was to make the organization’s website more end-user friendly. The stated goal of the campaign was to achieve 10% market share in the browser market. This figure was arrived at as significant enough to command the attention of the marketplace and assure the long-term viability of Firefox as an alternative to Internet Explorer.

**The Face Lifting of Mozilla.org**

To be consistent with the vision of its flagship product, the Mozilla foundation started by creating a website that non-technical users could actually understand. Figure 1 shows the original Mozilla.org website, its developer-centric design is quite evident – lots of dense text and technical jargons. The revised website (Figure 2), on the other hand, is much more accessible to non-technical users. Colorful graphics and brand images directly guide end users to the Firefox download section. The website also clearly explained why users should choose Firefox, and how they got help. According to the marketing director of Mozilla foundation, this end-user friendly website is instrumental to the success of Firefox.

**Branding Firefox**

The browser now known as Firefox was first named Phoenix and was renamed to Firebird before it settled to the name Firefox. Mozilla foundation could not use the previous two names as the brand due to trademark conflicts. The name did generate a lot of debate within the Firefox community itself, but as with other features of the product, the core team exercised the ultimate authority over the name.

Once the name had been selected, a group of volunteer artists (members of the Mozilla community) were able to quickly design a logo (Figure 3). The quality of this contribution is evidenced by the widespread acceptance of the Firefox brand image.

*One of the great successes here was that this whole effort was strictly volunteer. What happened was this guy did a blog post that ended up on Slashdot one day, saying, “Now that Firefox is coming along, let’s fix up the branding of Mozilla.” He ended up heading a group of graphic designers, 10 or 15 people, they are really talented, they designed our logo and they also designed our website.*
With little money, Mozilla Foundation could not afford to launch an expensive marketing campaign that commercial software companies typically do. How to effectively market Firefox within their means, at the same time, to achieve an aggressive goal of 10% market share became very challenging. As explained by the marketing director, the answer was in the OSS community and led to a website named spreadFirefox.com.
“I was showing my market plan to the VP of marketing at Netscape, literally 17 different sets of activities, and he was like, “All this other stuff, Microsoft can do ten times better than you. The only thing that you have that Microsoft doesn’t is that you have a community, and see if you can engage your community in spreading the word about you.”

Figure 3: Firefox Logo

SpreadFirefox.com was modeled on the internet-enabled community structure associated with OSS development. Just as websites such as SourceForge help coordinate the efforts of volunteer developers, the spreadFirefox website played a central role in coordinating volunteer marketing efforts by community members. This enabled community members to initiate thousands of individual marketing activities while cooperating with each other on large-scale marketing initiatives. When members signed up, they automatically became an affiliate of spreadFirefox, and could build their reputation by encouraging others to adopt the product. Individuals/organizations were recognized for a number of activities. One of them is to publish a button or a banner (on their own websites) that links back to the spreadFirefox website. The spreadFirefox then monitored the number of people referred to the website through these buttons/banners and recognized community members based on the number of end-users they brought into the community.

“We decided that, in the end, the most motivating way to get someone to spread the word is really just to give them our current number of downloads, give them a really, really ambitious goal, and give them a way to track their own progress to see how many people they referred. And once we do that, it turns out that people just basically go nuts to see how they can get us to that number.”

“So we give people points for every referral that they give us, and then the top five sites for that given week appear on the front page of spreadFirefox.com. since it gets so much attention, so the first thing that happened after we launched spread Firefox was that techTV and this other site basically got in this war where they were fighting with each other to get the most spreadfirefox points and get the most visibility for their website. And of course, we only won in that war because techTV would mention us every day, and that would actually help us a lot.”

Besides quantifying member contributions through referral points, the Firefox team also go through great length to insure community members to be “put under spotlight” for their marketing contributions. Showing appreciation and rewarding active members through name recognition are considered very important by Firefox core team.

“You want to encourage people to get involved, to help out. And when they help out, you want to show their projects to the world, but you also put up a blog post to say “Hey, thanks to so-and-so person for doing this great job.” so that person will feel proud and happy and rewarded and other people will want to be just like that person. I think it’s very important, recognizing people is a very important part of any volunteer engagement.”

New York Times Advertisement

The most striking example of community marketing came on December 16, 2004 when 10,000 community members donated $250,000 total to run two full pages advertisement in the New York Times (Figure 4). All the donors’ names were printed in the ad to show their support for Firefox browser. This particular fundraising campaign was also initiated by a volunteer, Rob Davis, who happened to be a PR professional working at a marketing firm at the time. According to him, the goal of this campaign is to “demonstrate grassroots human personal support for Firefox.” According to the Firefox marketing director:

“The impact of the campaign is two fold: one, it provided a vehicle for people to get involved, right? It is like it opened a venue for people to say, hey, I’ll just give 20 bucks and put my name in there, and be part of the community. That way, the community let people to be part of the thing in a new way. The other impact is that it drove tremendous amount of press attention and so it generated a whole new waves of press interest.”
Building Localized Communities through Internationalization

When Firefox realized that 85 percent of its community members are not speaking English, they decided to work closely with localization community, and managed to simultaneously launch Firefox 1.0 in 14 different languages across the world.

When you see those numbers, you’re like, “holy crap, only 15 percent of my users even speak English as a native language.” So one of the last big activities before the 1.0 launch was working with the localization community and coming up with a process whereby we would be able to deliver a quality product in variety of different markets. So when Firefox 1.0 was launched, it was the first time that Mozilla did a simultaneous release in 14 different languages.

Internationalization proves to be an excellent strategy to enroll more end-users. As the result of this effort, it was reported that Firefox fans threw launch parties in 392 cities around the world in the weeks following the release of version 1.0 (McHugh 2005).

DISCUSSION AND CONCLUSION

Rising from the ashes of the Netscape browser, the Firefox browser was a unique OSS product that was built from day one to target mainstream users. With 25 million downloads in less than hundred days following its 1.0 launch and a 10.28% market share as of April 2005 (http://www.clickz.com/stats/sectors/traffic_patterns/article.php/3500691), one could argue that it was a successful launch and its short term goal has been achieved.

The Firefox project recognized that in order to compete as a consumer product, a large base of non-technical end users would be critical. This means that their usability needs should be incorporated into the product design by the OSS developers. To prevent themselves being oblivious to the needs of the “silent majority”, Firefox core developers followed four simple guidelines to ensure that patches and user feedbacks are not treated with equal priorities. Instead, the product development was driven by the needs of end users rather than of technically elite members of the community.

The Firefox case is also a good example of exploring and redefining the role of end-users in OSS communities. Traditionally, end-users play a very limited role in the community, due to their lack of technical skills. This case demonstrated that the end users could be a huge asset to a viable community. While they may not be able to contribute quality code, they have other contributions to offer to the community, such as artistic skills, marketing skills, PR skills, fund raising skills, spreading the word skills, etc. The OSS community leaders need to recognize that they are making equally important contributions to the success of the project. The community also needs to create an appropriate environment for end
users to get involved and for those talents to flourish and be discovered.

Interestingly, in order to stimulate interests and create a sense of participation among non-technical users, the Firefox leaders adopted the very same OSS norm – rewarding contributors with reputation. The reward could be in the form of referral points, individual names in printed ads, or simply an appreciative blog post to say thank you.

Last but not least, the Firefox case also demonstrated the value of working with internalization and localization communities. This strategy could dramatically expand user base and ensure a viable and sustainable OSS community. While the lessons learned from Firefox may not be applicable to every OSS projects, they certainly provide some interesting answers to the questions we raised earlier concerning how to tend to the usability needs of non technical users, and how to encourage their creativity and participation in non-coding oriented activities.

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