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Teaching case

Lessons learned from the development and marketing of Mozilla Firefox 1.0

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Abstract

This case uses first-person sources to put the reader inside the teams that developed and marketed the Firefox browser. A brief overview of the Open Source Software (OSS) development process and the various roles played by members of a software development community, as well as a brief summary of the browser wars of the 1990s that saw Netscape Navigator fall from the dominant browser in the market to a distant second place behind Microsoft's Internet Explorer, help provide context for the case. In order to adapt the OSS development model to support a consumer-oriented product, Firefox developers adopted four rules: 'We want it to be small,' 'Let's not keep too many cooks,' 'All patches are not created equal,' and 'All users are not created equal.' The development team established a goal of 10 million downloads in the first 100 days and a 10% market share in the first year as measures of success for the new browser. In order to compete with Microsoft in the browser market, the Firefox team needed to leverage the development community to reach millions of potential end users. By providing a web-based structure for collaboration, and through a series of top-down initiatives (providing marketing tools to the community), and bottom-up initiatives (receiving and disseminating marketing ideas from the community at large), the team was able to achieve its marketing goals. In so doing, the SpreadFirefox initiative created a marketing community with roles analogous to a software development community.

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Introduction[1]

In January 2004, the development team behind the Netscape Browser had their backs to the wall. In 10 short years, Netscape Navigator had gone from the dominant browser on the market with 90% usage to a marginal player with less than 4% usage.

Microsoft, by bundling the Internet Explorer (IE) browser as a free component within the Windows operating system, was able to leverage its installed user base and seize the browser market from Netscape (Windrum, 2004). With a 96% market share for IE, Microsoft had won the 'browser war' and held a virtual monopoly in the browser market. With $32 billion in annual sales, and millions of dollars available for advertising, Microsoft was prepared to maintain its dominant position.

This was the situation facing the developers of the Firefox browser. Having been spun off from parent company America Online (AOL) as a not-for-profit entity in 2003, the Mozilla foundation was left with an open source development community, $2 million in funding, and a belief in the need for an efficient, secure, cross-platform browser. In order to survive, the team needed to develop a product that would appeal to the non-technical user.

> If an open source solution is going to become a viable alternative to proprietary software, we have to reach the 96% of the market who are already using Internet Explorer. That means going beyond the development community and creating a marketing approach that even 'grandma' can understand. (Marketing Director of Firefox)

If the Firefox browser was to succeed, the team needed to generate enough traction in the marketplace that developers would not be able to ignore the browser lest they lose out on a significant portion of the potential market. After much deliberation, it was decided the browser would be a success if 10 million end users downloaded the software in the first 100 days, and if the browser achieved a 10% market share in the first year.

Open source communities and the role of end users

Although open source software (OSS) was originally met with skepticism, the OSS movement has become a significant force in recent years (Norris, 2004). While Linux, Apache, MySQL, and PHP (known as the LAMP[2] stack) are among the commonly known open source projects (Lee and Ware, 2002), there are literally thousands of open source projects currently underway. Sourceforge .net listed 240,000 registered open source projects and 2.6 million registered users as of August 2010. Most importantly, as open source technologies (especially infrastructure technologies) become more mature and reliable, they have been increasingly embraced by commercial companies as well as by government institutions to take advantage of their potential business values – including cost savings, efficiency, innovativeness, and productivity (Smith *et al*., 2010). Some of the best known technology companies (including Google and Yahoo) run major enterprise applications on open source infrastructure (Weber, 2004).

While there are several business models and various licensing arrangements used in the open source movement, the common element is that the source code – the internal programming language instructions – is made available to people who use the product. Hence the term open source. Those open source projects that use a community managed approach to govern software development are often referred to as 'organic' or 'autonomous' OSS projects (O'Mahony and West, 2005; O'Mahony, 2007). A development community is an independent and self-organizing group of volunteer contributors who collaborate to solve a specific problem (O'Mahony, 2007; Scacchi, 2010). Originally, members of the community would donate their time and the result of the collaboration would be available for free. Specifically, GNU Public License (GPL), one of the most widely adopted open source licenses, entitles OSS users to access, modify, and distribute the source code freely, provided they do not redistribute the derived work under a more restrictive license (Lerner and Tirole, 2002).

As open source projects have attracted commercial interest, private companies have become involved with some OSS communities, and different hybrid/synthetic OSS governance models have emerged (O'Mahony and West, 2005; Shah, 2006). First, commercial companies who benefit from OSS may assign paid employees to work in those communities in order to influence the software development process (Dahlander and Magnusson, 2005). Second, public and private sponsors may choose to open the source code of proprietary software hoping to grow a synthetic community to improve the future code base – for example, IBM open sourced the Eclipse project (O'Mahony and West, 2005; O'Mahony, 2007). Third, private firms may seek ownership of existing open source projects in order to control or 'gate' the source code as well as the development processes (Shah, 2006) – for example, MYSQL is currently owned by Oracle. While the collaboration between firms and OSS communities helps to 'productize' OSS to better meet the needs of both corporate enterprises and individual consumers (Woods and Guliani, 2005; Feller *et al*., 2008), the intention to exploit the financial value of jointly developed software tends to run against the core values of the OSS movement. As a result, the relationships between private firms and OSS communities can be challenging to manage (Dahlander and Magnusson, 2005; Shah, 2006; O'Mahony, 2007; Dahlander and Magnusson, 2008).

Open source communities

It has become common to refer to all of the people associated with an open source project as its 'community'. While most community members will personally use or benefit from the software, their levels of involvement with the project may differ. As illustrated in Figure 1, these differing roles can be categorized into four (sometimes overlapping) groups: project owners/core developers, patch submitters, bug reporters, and passive users (Mockus *et al*., 2002; Nakakoji *et al*., 2002).

Project owners/core developers are a small group of people who contribute much of the code and control the software releases. The core group is usually a very small number of programmers who actively participate in the software coding and development process and determine when a new version is ready to be released. For example, according to Mockus and colleagues (2002), 15 core developers of the Apache project accounted for 80% of the contributions to its code base. In addition, an OSS project typically follows the 'release early, release often' approach – issuing frequent, incremental revisions to keep the software project current with the needs of the community (Raymond, 2001).

Patch submitters are a larger group of programmers who examine the source code in detail and write 'patches' (short programs) to add features or to fix problems with the software. These patches are tested independently and may be added to the software when the next version is released. By contributing in small and peripheral code development activities, patch submitters are able to learn and to acquire

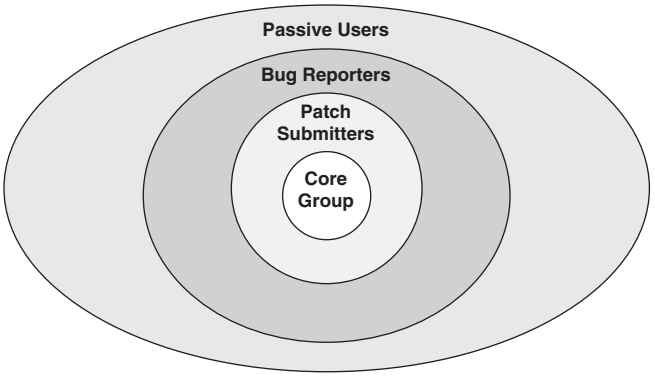

Figure 1 Members of an open source development community. (A graphic showing the various roles in an Open Source development Community.)

the skills and knowledge embodied in the community over time (Nakakoji *et al*., 2002).

Bug reporters are an even larger group who download and use the software as well as provide feedback about problems they encounter. They may need to have some technical background to be able to identify and report problems in a way that will be useful to the programmers in the community. In many OSS communities, potential developers become familiar with the program by reporting bugs, further demonstrate their programming skill through submitting patches, and finally become recognized and accepted as part of the project core group (Raymond, 2001).

Passive users (similar to end users for commercial software) are less interested in coding and more interested in using pre-compiled binary software (Nakakoji *et al*., 2002). Because they do not play an active role in developing code, their usability needs (ease of learning, efficiency of use, memorability, error frequency and severity, subjective satisfaction) may not be addressed by the core developers of the community who tend to focus on the utility of the software. Therefore, it could be difficult for OSS projects to attract passive users if the usability gap between developers and users is not appropriately addressed, especially with GUI (Graphic User Interface) intensive type of applications, such as web browsers (Nichols and Twidale, 2006).

For an OSS project to be sustainable, the project and the community must co-evolve. And it is crucial for an OSS project to be able to attract a large base of voluntarily contributing members to serve as the foundation for advancing and improving the software. This expanding base will transform the roles and influence of contributors in the community over time (Nakakoji *et al*., 2002).

The above community composition and governance mechanism mainly describe the structure of 'organic' OSS communities. Because the 'synthetic' OSS communities are subject to the control of sponsors with vested commercial interests, their governance structures could be very different. For example, in order to retain the legal rights to control the source code, most synthetic OSS projects adopt open source licenses other than GPL. Some projects even discourage contributions from outside community members who do not belong to the sponsor organization (O'Mahony and West, 2005). As a result, membership of some synthetic OSS communities primarily consists of need driven rather than of hobbyist participants, and the amount of voluntary contributions tends to decrease over time (Shah, 2006).

Since most OSS is written by engineers to solve a task they encounter in their work, it follows that the primary audience for most OSS is other engineers (Raymond, 2001). Because of this, OSS tends to be more successful in the operating system and network services space, rather than in the end-user application space (Behlendorf, 1999; Raymond, 2001; Nichols and Twidale, 2006). For example, the Linux operating system is generally considered to be a successful server platform (Raymond, 2001; Fink, 2002; Weber, 2004), but the Linux desktop application is only used by a relatively small number of consumers – with a market share of around 3% (Economides and Katsamakas, 2006).

The striking disparity in adoption rates between the Linux server platform and Linux desktop (end-user) application suggests that technical engineers who have the expertise to implement and maintain software may be more prepared to adopt OSS products than general consumers who are used to commercial software products that do not require a technical background.

There are several challenges an end-user-oriented OSS project must overcome in order to reach a mass market. First, the software has to be easy for anyone to use. However, because functionality development is perceived as more intellectually stimulating and interesting, OSS developers tend to be more motivated to increase functionality than to address usability issues (Nichols and Twidale, 2006).

Second, an organic OSS community typically lacks resources to advertise and market its product through commercial media – an effective way to achieve exposure to a mass audience (Feller and Fitzgerald, 2002). Because much OSS is distributed for free, there is little revenue to pay for mass-market communications. In addition, because reputations in the organic OSS community are established through technical contributions (Raymond, 2001), the majority of developers in an organic OSS community may not be interested in marketing-related activities (Bonaccorsi and Rossi, 2003; Fitzgerald, 2006).

Third, because consumers have limited attention (Kardes, 1999), they prefer simple solutions. The simplest solution is not to do anything. The vast majority of end users simply go with the software that comes packaged with the consumer electronic device they have purchased (Mckelvey, 2001). Adopting an OSS product requires effort. Anyone who intends to use an OSS product would first need to make a conscious choice to install, configure, and learn how to use the software; sometimes without the help of the extensive support associated with commercial products (Lerner and Tirole, 2002). In addition, the end user may be reluctant to deal with the frequent version upgrades which are a norm in the OSS movement (Raymond, 2001).

To overcome this inertia, there has to be a compelling reason for a user to make a switch from IE to Firefox. Because browsers are highly substitutable, free to the user, and perform many similar functions, a consumer's decision to switch from one product to another is a function of the breadth of use and user satisfaction with the incumbent product, and the relative advantage and perceived ease of use of the challenger product (Ye *et al*., 2008). In this case, perceived security had been identified as a source of dissatisfaction with IE (McHugh, 2005).

Browser wars

It would be difficult to understand the Firefox story without understanding Netscape's and Mozilla's rise and fall in the 'Browser Wars' of the 1990s. Netscape Navigator, descended from the Mosaic browser, was the first commercially successful browser when it was introduced in 1994. It quickly became the *de facto* standard for web browsers on all platforms (including Microsoft Windows) with more than 80% of the browser market. In August 1995 Netscape went public and the success of its initial public offering signaled the beginning of the dot-com boom (Vossen and Hagemann, 2007).

Recognizing the importance of browser software, Microsoft licensed the Mosaic code and dedicated significant resources to improve its IE. In 1995, Microsoft released Internet Explorer 1.0 as a free add-on to its dominant Windows 95 software. With internet usage exploding, millions of non-technical users were learning to use the internet. Immediately Netscape's market share began to slip (Sink, 2003). In 1998, Netscape Navigator's market share plummeted below IE for the first time and by 2003, Netscape retained less than 5% of the browser market.

Netscape was never able to reverse the decline of its market share. In March 1998, Netscape open sourced its browser code base under the project named Mozilla. The hope was that by building an open source community, Mozilla would develop a code base to support a viable alternative to IE.

In late 1998, Netscape was acquired by AOL, the largest internet service provider (ISP) with 24% of the market, for $4.2 billion. The hope was to strengthen AOL's position in the enterprise market in the face of increasing competition, including the growing popularity of the Microsoft products (Mckelvey, 2001). However, the hoped-for synergies failed to materialize and by 2003, AOL had given up on Netscape. In July 2003, AOL decided to abandon the 'browser business'. The Mozilla division was cut off from AOL and was 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, and massive layoffs were expected.

In the meantime, the Mozilla open source development community had grown significantly. When Mozilla 1.0 was released in June 2002, the community consisted of about 30 core developers, 400 patch submitters, 10,000 bug reporters, and around 500,000 end users. As the community expanded, Mozilla evolved into a powerful pre-release platform, and all later versions of Netscape were built on the Mozilla code base.

The Mozilla community and Netscape management had very different priorities in developing the Netscape browser. The Mozilla community was interested in creating a great browser with state-of-the-art functionality. Netscape management, on the other hand, was also concerned with making money and driving traffic to Netscape.com and AOL.com. This difference is best illustrated by the approach to pop-up blockers. The ability to block pop-up ads was the number one security feature requested by the browser community and the community had developed and implemented such a feature in the Mozilla release. However, the pop-up blocker was not included in the Netscape release because Netscape.com and AOL.com relied on pop-up ads to generate income. As a result, more and more users started to download and use Mozilla instead of the Netscape browser.

Because Mozilla was meant to be a testing platform, any patches that increased the browser's functionality were welcomed. This all-embracing policy not only increased the size of the Mozilla project but also created potential stability problems that were not well received by non-technical users. Nevertheless, the Mozilla project not only provided the code base for Firefox, but also helped to build and to nurture a robust open source community that supported Firefox from day one.

The development of Firefox browser

In order to achieve the goal of 10 million downloads in the first 100 days and a 10% market share in the first year, the Firefox development team needed to re-think the community approach to OSS development. They needed to shift the community emphasis from showcasing the technical excellence of contributors to an emphasis on identifying and meeting the needs of the vast number of potential end users who were not technically savvy. In addition, they needed to aggressively market the new browser to get millions of people to choose Firefox. To achieve their goal, they would have to take that market share away from Microsoft. That meant convincing people using IE to make the switch.

Re-thinking the development community

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

This vision was quickly embraced by the Mozilla community at large. In order to stay true to this vision of developing a product for the consumer, four basic 'rules' were agreed upon by the two founders of Firefox to guide the community.

Firefox rule 1 – 'We want it to be small'

To the core developers of the Firefox project, creating a browser that non-technical users would really use meant 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 of the program.

> 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. (Founder of Firefox)

Firefox rule 2 – 'Let's not keep too many cooks'

Because OSS development communities are self-organizing with a norm of inclusion there is a tendency to accommodate many different perspectives in a given project in order to grow the community. The downside of this is that the project can become bloated. As the old saying goes, 'Too many cooks spoil the broth.' Having been long time witnesses of the 'too many cooks' problem within the 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. (Founder of Firefox)

Keeping cooks outside the kitchen did not prove to be easy in practice. The 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.

> 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,' which didn't make too many people very happy. Especially because the model before that 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.' 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]. (Founder of Firefox)

Firefox rule 3 – 'All patches are not created equal'

Besides keeping the development circle small, the Firefox developers chose not to assign the same priority for all patches submitted by community members. In their view, obscure features that the 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]. (Founder of Firefox)

Firefox rule 4 – 'All users are not created equal'

A major key to the success of the Firefox project was to recognize that developers are a very small portion of the Firefox community but have a disproportionately large voice within the community. The core team made a conscious effort to reach beyond the more technical users in order to listen to the 'silent 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. (Founder of Firefox)

This required rethinking 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. (Founder of Firefox)

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 savvy member:

> 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. (Firefox community member)

The second example appeared to be from a less experienced Firefox user.

> 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. (Founder of Firefox)

Although the first comment was much clearer in the action requested, it was by taking the time to understand the concerns of the second user that the Firefox team was able to develop a mass-market product.

After quickly gaining initial recognition among browser users, Firefox was identified as one of the two major applications that the Mozilla foundation would focus its limited resources on supporting. The next step was to communicate the advantages of the Firefox browser to a mass audience.

From project to product

As the browser that eventually became Firefox took shape, the development team recognized they would need to re-work the Mozilla environment from a developer-friendly approach to a consumer-friendly approach. This meant developing a recognizable brand for the product and re-designing the Mozilla website.

Branding Firefox

The name of the browser was intended to symbolize a new product rising from the ashes of the old. The first two choices, Phoenix and Firebird, were unavailable because of trademark issues. In the end, the core team – key members of engineering, marketing, and management of Mozilla foundation – selected the name Firefox from the alternatives among consideration.

> We decided to do something that's almost Firebird. Then in 15 minutes we came up with Firefly, Firefox and Firecat. The lead engineer was the one that was really pushing for Firefox. He felt that Firefox had kind of like a bit of rebel twist and kind of a naughtiness and an energy to it that was kind of like spunky and had a great spirit about it. And he was right. (Marketing Director of Firefox)

Not all community members were happy with the decision at first as the following e-mails suggest:

> Firefox, what does it mean? What does it relate to? I cannot find many positive connections with fox – especially burning …
>
> I'm planning a promotion in my country [Poland] of Mozilla Firefox around 1.0. I strongly feel now it won't be easy. Firebird was 'strong', 'fast', 'powerful', 'brave'. Firefox is … cute and furry? (Firefox community members)

Once the name had been selected, a group of volunteer artists, mainly members of the Mozilla community who recognized the branding needs of Firefox, voluntarily initialized the design of its logo. The ease with which this artistic brand image was accepted by the community provided evidence that contributions other than coding could be recognized as significant in an OSS project targeted toward end users.

> 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. (Marketing Director of Firefox)

Redesigning the Mozilla website

It was clear that if non-technical users were to be able to find and download Firefox, the Mozilla.org website needed a major face lift. The original Mozilla.org website (Figure 2) was developer-centric – lots of dense text and technical jargon. The revised website (Figure 3) is much more accessible to non-technical users. Colorful graphics and brand images guide potential users to the Firefox download

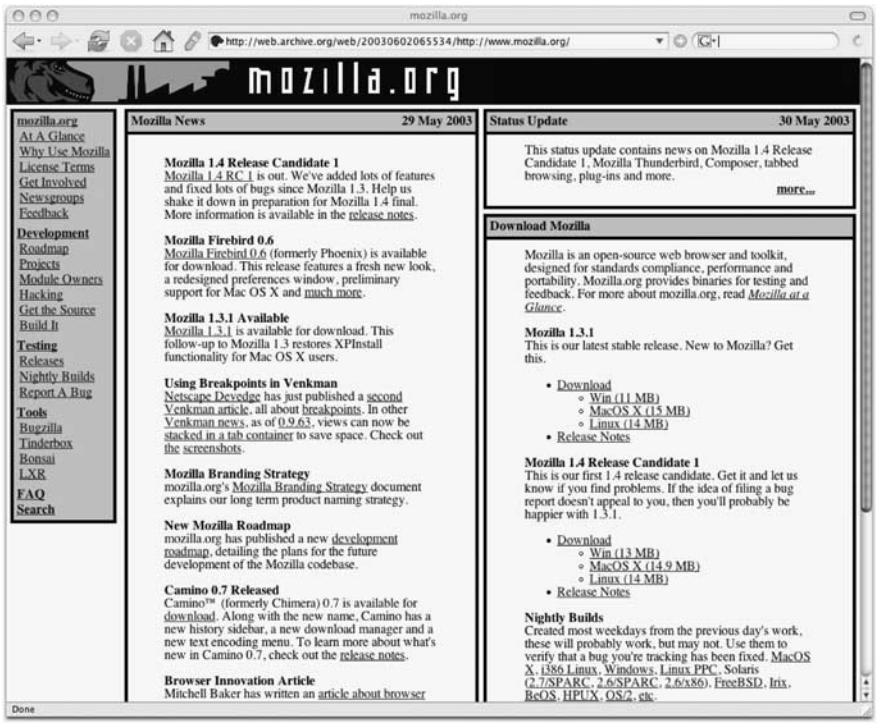

Figure 2 Mozilla.org homepage June 2003. (A screen shot of the Mozilla homepage before the makeover.)

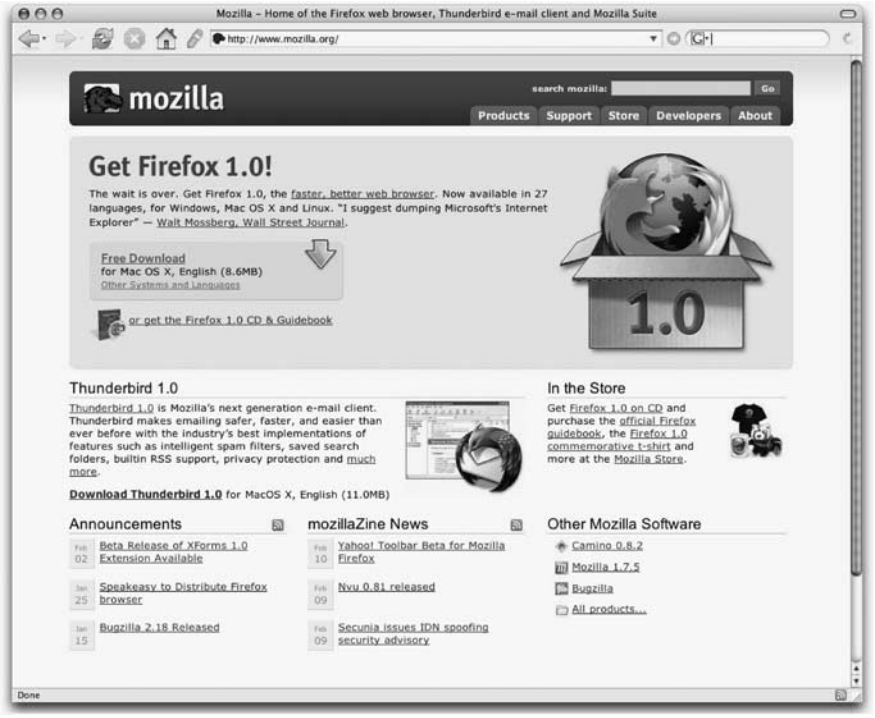

Figure 3 Mozilla.org after makeover. (A screen shot of the Mozilla homepage after the makeover.)

section. The website also explains why visitors should choose Firefox and how they can get help. As pointed out by the Marketing Director:

> Obviously this is a much better website for the end user than what we had before … And when grandma landed at the site, she was like, 'Okay, this makes sense. This is something that normal people can deal with,' which would have been a lot harder a year ago. (Marketing Director of Firefox)

Marketing Firefox 1.0

To have any chance of succeeding, the Firefox team needed to reach large numbers of people outside the immediate development community with the Firefox message. This required an aggressive marketing campaign. However, the size and resources of Microsoft made going head to head against IE an intimidating task. Their only hope was to mobilize the development community to support the marketing effort.

> 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.' (Marketing Director of Firefox)

To compete against IE, Firefox was positioned as an elegant and safe alternative to IE with two key messages: rediscover the web and the browser you can trust.

> 1. Rediscover the web – Firefox brings back innovation to the web. We are the innovators, get rid of the nuisances of the web, help people find resources they didn't know existed (through live bookmarks, integrated search and extensions, for instance) and
>
> 2. The browser you can trust – Trust is a broad term that includes privacy protection, security, protection against online nuisances, the transparency of the open source development process, and the social contract between us and our users. (Marketing Director of Firefox)

The Firefox marketing core team identified three major strategies as necessary for its success: A publicity campaign, some very limited conventional marketing efforts, and community marketing or word of mouth.

Public relations and press

Because members of the core team had been involved with the issues around marketing Netscape and AOL, the marketing team had a keen awareness of the importance of marketing through traditional channels such as mass media. Unable to pay for a national advertising campaign, the team opted to use public relations (PR) as a more cost-effective alternative mass communications strategy. The key to the PR campaign was the belief that the Firefox project was newsworthy in and of itself, and that media outlets might be receptive to the 'David *vs* Goliath' angle. As explained by the marketing director:

> We set aside a little bit of money and we hired a PR firm, we did analyst briefings, which may have been the first time in open source … and it was very, very helpful

> because as Firefox became more interesting to people, there was a place where reporters could interact with in a normal standard fashion … I also did press tours in Europe and Japan … so we had a fair amount of energy around the PR, and it certainly paid off. (Marketing Director of Firefox)

In addition, Firefox asked its community for help with its PR effort:

> We had a community media response team, where we got 200 volunteers on a mailing list scouring the news, and when they would find a story that was unfair and didn't accurately portray Firefox, for example, they would then respond and write letters to set the record straight. And that worked out pretty well. (Marketing Director of Firefox)

Conventional marketing

Although resources were very limited, the marketing team recognized some traditional marketing activities, that is, user manuals, product guides, merchandise incentives (t-shirts, buttons, etc.), and trademark management were unavoidable. In addition the team identified high-leverage areas such as strategic partnerships, outreach to ISPs and OEMs (original equipment manufacturers), and providing resources for enterprises, where the investment of marketing dollars would be cost-effective.

> We have very limited marketing resources but need to have minimal elements of traditional marketing in place so that we don't miss out on huge marketing opportunities (Marketing Director of Firefox)

However, the success of the marketing effort would depend on their ability to engage the development community.

> Community marketing is our unfair advantage. (Marketing Director of Firefox)

Community marketing – Spreadfirefox.com

The community marketing approach developed by the Firefox team had three basic elements: a structure to support collaboration, providing tools for the marketing community (top-down initiatives), and sharing initiatives generated by the community (bottom-up initiatives).

> Combine highly visible top-down initiatives with lots of opportunities for ideas to bubble up from the community (Marketing Director of Firefox)

Structure

The community marketing structure evolved from the open source development community model. In addition to the marketing director the Mozilla foundation identified a community coordinator to help manage the community campaign. This might be analogous to the core team in a development community. In a marketing community, the core team would be responsible for developing the overall strategy and for coordinating the contributions of the other community members (Figure 4). Next would be 'idea submitters' – creative people from within the larger development community who would volunteer ideas for marketing initiatives and who would identify international opportunities. Beyond this would be a much larger group of 'promoters' who would use the tools made available by the core team to spread the word through a grass roots or 'viral' approach. Finally, end users would be the people who downloaded the software.

In order to coordinate the activities of community volunteers the core team developed a website – SpreadFirefox.com – modeled after the internet-enabled community structure associated with OSS development. Just as websites such as SourceForge.com help coordinate the efforts of volunteer developers, SpreadFirefox provided community members with communication tools such as discussion forums, mailing lists and blogs for sharing ideas about promoting Firefox. This enabled non-technical users to initiate thousands of local marketing activities while cooperating with each other on large-scale marketing initiatives.

To complete the analogy, just as members of an OSS community are rewarded by having their names attached to their technical contributions, members of the marketing community would be rewarded by having their names attached to their marketing contributions.

> 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. (Marketing Director of Firefox)

Top-down initiatives

As the goal of the campaign was to get people to download the software, the core team would recognize individuals and organizations who promoted Firefox and who encouraged people to download the software. To accomplish this, the

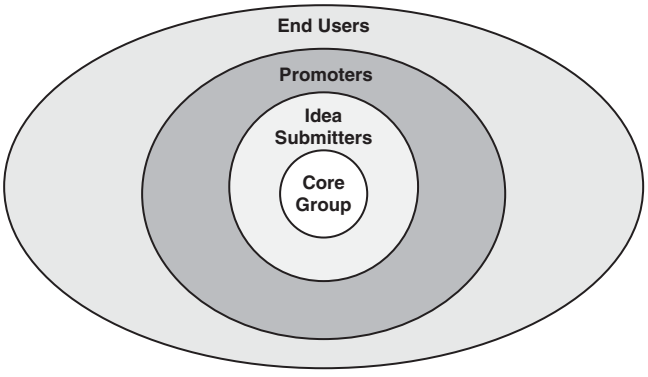

Figure 4 Members of a marketing community. (A graphic showing the various roles in a marketing community.)

core team implemented several marketing tools and ideas through the SpreadFirefox website to help users advocate for Firefox. The marketing director of Firefox identified such marketing tools and ideas originated from the core team as top-down initiatives.

One initiative gave affiliates a button or a banner to publish on their own websites. The button linked back to the SpreadFirefox website and monitored the number of people referred to the website by each affiliate. Community members were given increasing recognition 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, the first thing that happened after we launched SpreadFirefox was that TechTV[3] 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. (Marketing Director of Firefox)

In addition to the referral program, the Firefox team developed other fun promotional opportunities for affiliates.

> Around the holidays, we had volunteers create Firefox holiday electronic greeting cards, and then we told everybody, 'Hey, send these cards to all your friends,' so thousands of people sent these cards around.
>
> We also said 'if you like Firefox, send us postcards.' So people from all over the world would send postcards saying 'I love Firefox,' and we made a big wall at Mozilla with all the postcards.
>
> We told people, 'go to download.com and write a review on how much you like it.' So all of a sudden, we became the most popular application on download.com because all the Firefox users would go over there and say 'I love it!' (Marketing Director of Firefox)

Bottom-up initiatives

The collaborative structure allowed Firefox idea submitters to initiate creative marketing campaigns with the support of the marketing community. Rather than having a marketing team create and manage a single campaign, the community could initiate and execute literally hundreds of ideas simultaneously. The marketing director of Firefox categorized these contributions as bottom-up initiatives. Some examples include:

> A guy [posted on SpreadFirefox] said, 'I want to sponsor a car in a motor racing,' like in NASCAR, 'and it will be the Firefox car, put a big Firefox logo on it, and let's all do that.'
>
> There is a guy that started a campaign that says, 'Let's all write letters to our local newspapers saying we love Firefox.'
>
> Somebody [posted on SpreadFirefox] said 'Let's create a contest to ask people to create a PowerPoint Presentation that explains in five minutes why my company should switch to Firefox.' So everybody started coming up with five-minute presentations about why you should change to Firefox. (Marketing Director of Firefox)

Perhaps the most striking example of an idea submission being embraced by the community came in October 2004 when a volunteer (who happened to be a PR professional) came up with the idea to take out an ad in the *New York Times*.

> A volunteer called me one day and said 'I think we should take out an ad in the New York Times'. I said, 'Well, that costs too much money, and we don't want to do that.' He said, 'Well, maybe people can pay to have their name in the ad.' And so we worked together and created this project. (Marketing Director of Firefox)

In what was claimed to be the world's largest community marketing effort for OSS, 8000 community members donated $250,000 within 10 days to run two full-page advertisements in the *New York Times* (Figure 5). All the donors' names were featured in the ad to show their support for Firefox, the browser.

One benefit of the bottom-up approach was to provide members of the Firefox community with an opportunity to be recognized for contributions other than writing code. This greatly increased the number of people who felt ownership of the Firefox project.

> 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 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 wave of press interest. (Marketing Director of Firefox)

Recognizing that 85% of the potential users of Firefox do not speak English as their primary language, the Firefox team worked closely with community volunteers from other countries to develop local-language versions of Firefox.

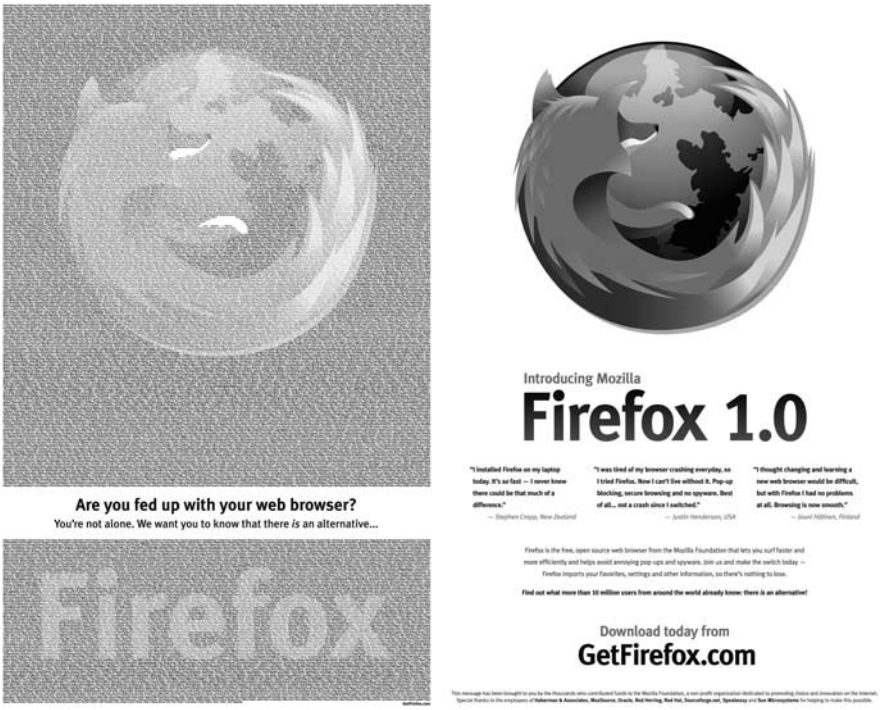

Figure 5 Firefox *New York Times* advertisement. (A reproduction of the Firefox *New York Times* advertisement.)

> 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. (Marketing Director of Firefox)

To facilitate the localization process, Firefox provided freedom as well as tools to allow contributors to effectively customize the browser experience to meet the needs of their native community.

> So if you're using the Polish edition of Firefox, [besides language differences], maybe it would come pre-installed with some plug-ins. The start page might be set to something different, search engines might be different, bookmarks might be different. And maybe they changed some preferences; maybe they included some extensions in there … And those guys get very personally committed to these things, right? It's like it puts your own stamp on the thing and makes it yours. (Marketing Director of Firefox)

Internationalization proved to be a powerful way to enroll more end users. As the result of this effort, Firefox 1.0 was launched in 14 different languages across the world. In the weeks following the release of version 1.0, there were 392 launch parties held in cities around the world (McHugh, 2005).

Epilogue

The Firefox browser was well-received by the general public. Following the November 2004 launch, Firefox generated 25 million downloads in the first 100 days – well above the goal of 10 million. The browser achieved a 10% market share within the first year and has continued to gain popularity. By 2009, the browser had been downloaded by more than 1 billion users and maintains a 25% market share, making it the second most popular browser and a viable alternative to IE (Beswick, 2009).

The popularity of the Firefox browser has generated financial rewards as well. In 2004, Google agreed to share the ad revenue generated by Google search from the browser's search box in exchange for the Firefox team making Google its default search engine. This decision has generated millions of dollars to support the community.

This continued growth has been made possible by remaining focused on the two core principles: developing a product for the non-technical end user and a community-based approach to marketing.

According to the community coordinator for Firefox, 'Without community, we'd go away tomorrow.'

> I think that one of my jobs here is to help make sure that [the community] grows in ways that it can sustain, that are healthy for everyone involved. It's trying to ensure that it doesn't grow too fast in some direction and people get lost or don't feel really a part of it, that we're inviting to new people, that we have the tools and the infrastructure to support it … we also reinvest in our community by supporting volunteers with things like equipment, or training, or attending conferences or

things of that nature (Community Coordinator of Firefox)

While keeping the core product simple and efficient, the development community has been instrumental in growing an 'ecosystem' of optional extensions and plug-ins to allow end users to make the browsing experience both flexible and personal.

> We have the central browser, and we have 2000 extensions so that you can make it work for you. We believe in this personalization and localization so that the messaging we use is very local, the product is local, the features are even different if you go from here to there because this country or this group of people or this school wants a toolbar that does this thing. And we hope that by bringing awareness to that flexibility … people will want it and will feel a connection to it … we'll win. And I believe that we're in a good position to make dramatic improvements as to how many people are having their experience of the web improved, are having their experience of community and friends and family improved. (Community Coordinator of Firefox)

SpreadFirefox.com continues to be an important vehicle for Firefox community volunteers to initiate and coordinate marketing projects. One example of a post-launch, top-down initiative involved a marketing campaign named Firefox Flicks:

> We said 'Let's reach out to creative people who aren't engineers … let's get people who are students and amateur filmmakers, and people who are shooting videos, and have them put together something for Firefox.' We had 300 people [submit] 30-second videos for Firefox. Some of them were really entertaining. We put them up on the web, and they were viewed by millions of people. And they led to an increase in awareness and visibility of Firefox. And so we worked with our community to pick which ones we would put on TV. And then we had our community help fund that, so when we put it on TV, at the end it says, 'sponsored by' – and lists the names of the people who helped pay to put it on the air. (Community Coordinator of Firefox)

At the same time, the Firefox localization effort continues to expand Firefox accessibility in countries outside the United States.

> One of the ministries in France came to us and talked about they wanted to distribute Firefox to all the students in all the schools in Paris. So they gave away 250,000 USB memory keys with Firefox on it, for 250,000 students around the area of Paris.

> [A group in Japan] went and cleaned up a beach, and they had Firefox flags, and as they were walking on the beach cleaning it up, they were advertising Firefox. And they got covered in the newspaper and things like that. (Community Coordinator of Firefox)

Notes

1 The information presented in this case is based on original sources collected over an 11-month period beginning with public presentations by principal members of the Firefox team. The authors followed these presentations with a series of one-on-one focus interviews. The quotations in this paper are based on transcripts of these interviews and are largely unedited.
2 LAMP is an acronym for a popular solution stack of open source software, originally coined from the first letters of Linux (operating system), Apache HTTP Server, MySQL (database software) and PHP/Perl/Python, principal components to build a viable general purpose web server.
3 TechTV was a 24-h cable and satellite channel featuring computer technology and the Internet news. At its height, TechTV reached 43 million households and claimed nearly 2 million unique visitors monthly to its website. It merged with the G4 gaming channel in 2004.

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