An Exploration of Fedora's Online Open Source Development Community

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Abstract. *It is through the effort of a collaborative online community, almost entirely formed by volunteers, that the Fedora Project is able to develop their Linux Operating System. The intent of this ethnographic exploration was to gain a better understanding of what the needs, wants, and motivations of the development community were in order to help to maintain, sustain, and grow it. Research methods used included participant observation, interviews, and a survey. Almost all of this research was conducted entirely online. This paper will outline the results of this explorative study.*

Introduction

This paper is a review of a socio-cultural virtual ethnographic study that used both qualitative and quantitative methods to help the Fedora Project online development community better understand itself in terms of how to maintain, sustain, and grow the community. The research portion was conducted in three phases including participant observation in-person and virtual, virtual interviews, and a virtual survey. In total, this project took a year and a half to complete (2009-2010) from project design to the presentation of the results to the community.

Purpose of the Study

This research was conducted due to the seemingly ever-changing landscape of open source development projects. As many of the contributors to such projects contribute on a strictly volunteer basis, it is important to know how to maintain and sustain the current contributors while at the same time attracting new ones, not only to replace those who leave, but also to add to the talent pool as projects continue to grow. By understanding more about their development community, those in charge can better provide for it in terms of resources and opportunities to help fulfill the volunteers' wants and needs as contributors.

Though many of the results outlined below may have been expected based on previous studies of similar groups, it is the qualitative perspective of this particular research study that helps add depth and understanding to them. It should be noted that the Fedora Project is the group behind the Fedora Linux Distribution and that Red Hat is the sponsor of the project. This research was a solo effort by the author, but was acknowledged by Red Hat and those in charge of the Fedora Project both of which had members who participated in the research efforts.

Virtual Ethnography

Virtual ethnography was the primary research method used in this study. This section goes into detail on this methodology to help the reader better understand what virtual ethnography is, why it was used, and how it is performed.

In virtual ethnography, the quintessential methods of ethnography and their necessity of face-to-face interaction are reinterpreted in a virtual context (Hine 2000). It is more than lurking, or just being present online, as one must also interact within this virtual context to establish an ethnographic authority. This can be done through observing and participating in instant messaging (IM), Internet Relay Chat (IRC), Twittering, blogs and their comments, mailing lists, and email.

Additionally, the ethnographer herself, her use of technology in ethnography, and how she engages with the culture she is studying, can be a valuable source of insight. As Hine states, "virtual ethnography can usefully draw on the ethnographer as informant and embrace the reflexive dimension (Hine 2000:65)." Also, it is essential to understand virtual ethnography is, "an adaptive ethnography which sets out to suit itself to the conditions in which it finds itself (Hine 2000:65)."

Hine further explained, stating that, "it simply makes sense, in the contemporary media environment, to use the web as a tool for finding out about institutions, and in this sense there is no exoticized virtual sphere separate from the real (Hine 2007:625)." She continued, "remaining agnostic about the transformative capacities of new technologies suggests caution about any prospect of designing appropriate ethnographies in advance, and instead increases focus on adaptive ethnography which explores connections and boundaries experientially (Hine 2007:632)". She explained, "This form of ethnography is simultaneously old and new, being grounded in tradition of emergence and adaptation (Hine 2007:632)."

The research on which this report is based was all conducted through adaptive virtual ethnography. Each of the research tools (the semi-structured interviews and the survey) were created based on the author's experiences within the community. The recommendations at the end of each section are based on the reflexive aspect of this methodology as the author was as much a participant and contributor to the community as she was a researcher.

Participant Observation

There were two types of participant observation preformed during this research. These included in-person participant-observation that took place at FUDCon (Fedora User and Developer Conference) and virtual participant observation that took place in IRC (Internet Relay Chat), various email lists, and Planet Fedora the blogroll.

In Person

FUDCon is held twice a year, once after each release, and is the major face-to-face gathering of people from all across the world meant to both celebrate the latest release and to kick off the next one. The first form of participant observation for this research occurred at FUDCon 2009 in Toronto, Ontario. During this conference, there was much debate around the question 'What is Fedora?' which ended up being a theme throughout the data collection phase of this research. Field note data collection was gathered

through participant-observation in panels throughout the barcamp portion of the conference as well as contributing to projects during the hackfest.

Virtual

At the time of this study, IRC and email lists were the major forms of communication the Fedora Project used to facilitate work on each distribution. The blogroll, or Planet Fedora, is another form of communication within the community, but it is used more to give a public face to the Project rather than as a means of collaboration on it (though collaboration does occur it is not as prevalent). Participant observation occurred in various IRC chat rooms as well as email lists where the author both lurked (hung out in the room without speaking) and actively participated (actually joined in conversation where appropriate). The author also contributed to Planet Fedora and used blog posts to announce various calls for participation as well as provide the community the status of the study from beginning to end.

It was during this process that much was revealed about the culture of the community and a better understanding was formed on how the Fedora contributors came together in this shared space to both work and play. The time spent in these virtual spaces helped the author create the research tools used to gather the data as well as amass the knowledge used comprehend the results. It should be stated that the interactions within these virtual spaces were better informed both on the author's and the participants' part due to the fact the author met many of the participants in person through participation at FUDCon prior to any virtual interactions.

Interviews

Though the intention was to interview people at FUDCon, it was quickly realized while there this face-to-face time was very valuable to those in attendance, as it was one of only two times a year that many of them were able to get together in person. Due to this, the research goals of the conference shifted to simply be an introduction to the group, to become better integrated into the culture through participant observation, to identify key informants, and to be available for questions on this research project, of which there were many.

After the conference, a total of 15 virtual interviews were attempted. Only 13 of those interviewees responded to the interview questions in some form and only 11 of those completed the full interview process including the extended interview questions. Of those 11, only one person participated in the interview process via IRC and in comparison to the other 10 interviews, this was the most successful interview of them all.

Table 1. Interview Demographic Breakdown

Gender:	1 Woman / 12 Men
Location:	11 US / 2 Europeans
Age Range:	18 to 41
Ethnicity:	1 Asian American / 12 Caucasians

Red Hat to Fedora Project Contributors:	6 Red Hat / 7 Fedora

Surveys

After the interviews were completed, a survey was crafted based on the themes that surfaced after an inductive analysis of the interview data. The survey had 29 questions, however, it was branched so that certain questions only appeared if you answered the previous question in a specific way. This meant that there were very few occasions where someone answered all 29 questions.

The survey was developed and hosted using LimeSurvey, an online open source survey software provider. This tool was chosen based on community response when they were asked via blogroll if there were any open source survey tools available. Of note, this is the tool the Fedora Project uses to survey conference attendees about their experience after each conference so many of the respondents were already familiar with it. The survey was offered to the community via blog posts that appeared on the Fedora Planet blogroll, Twitter postings, and promotion in IRC rooms to all Fedora contributors during the weeks of May 10th through the 21st of 2010. There were 103 valid responses.

Unfortunately, there is no census data on the actual population size of the community, so there is no clear understanding of how much of the population the responses represented. However, after spending time in the community and talking to those who help run it, it was estimated that at the time there were 750 to 1000 active core contributors.

Table 2. Survey Demographic Breakdown

Gender:	4 woman / 97 men / 2 unanswered
Location:	30 different countries
Age Range:	18 to 55+
Ethnicity:	1 American Indian or Alaskan Native
	5 Asian
	5 Asian Indian
	1 Black / African / African American
	5 Spanish / Hispanic / Latino
	78 White
	8 Other or No Answer
Red Hat to Fedora Project Contributors:	10 Red Hat / 93 Fedora Project

Data Analysis

Each interview response was taken from its original electronic format and put into simple text files identified only by the interviewee's pseudonym. These files were then imported into Atlas.ti (a qualitative software analysis tool) where they were inductively coded (codes were created during the analysis rather than using a set of predetermined

codes). After the initial round of coding was complete, a second round of coding was conducted in order to get a more in depth look into the idea of contributor motivations. A total of 75+ hours was spent analyzing and coding the interview data. The themes that emerged from this data were then used to develop the quantitative survey.

All of the survey responses were exported from LimeSurvey in SPSS/PASW format and were then imported into PASW (a quantitative software analysis tool) for analysis. Analysis was conducted on answers to all 29 questions and those results that were most relevant to the overall themes of the research were used in the following results section.

Results

Several key findings were uncovered in the data analysis. The findings listed here were presented to assist Fedora and Red Hat in attracting new talent to the project and to provide those in charge of the project ways to continue to maintain the already existent community. These findings are separated into five sections and are presented with both qualitative and quantitative data to support them.

Section One: Getting Started

This section had two important findings. The first was that almost three quarters of the respondents to the survey and almost all of the interviewees started out as users before they became contributors.

Question: How were you introduced to the Fedora Project?

74% said they were first users of Fedora and then became contributors

This is important in that there were a lot of discussions within the community on just who is the target user audience of the distribution. If Fedora is to continue to attract top new talent as contributors to the project and Red Hat is to continue to support the community at a high enough level to produce quality work, then those in charge need to take into consideration many future contributors will start out as users first.

There are two different perspectives on this. Should the distribution be made more user friendly, thus potentially attracting less technical people, but also a larger amount of users? Or, should the distribution continue to be targeted to developers, thus attracting more technical people as users to begin with and making the potential contributor pool more technical? Ultimately for the Fedora Project to continue to grow, the issue of how to attract users that have the potential to be contributors must be addressed.

As one of the interviewees stated:

> "I started having doubts that attracting new users should be the ultimate goal in FLOSS even if the cost is making existing users uncomfortable. I think attracting contributors is a more important goal, so is better to attract new users who have the potential to become contributors than just attracting more users." (Male, Romania, Age 35-44)

Question: How easy was it to get started as a contributor to the Fedora project?

Over 50% of survey respondents stated it was somewhat easy to somewhat difficult to become a contributor. Because no specific steps were mentioned, this question

addressed whatever method or steps the person answering it deemed necessary and thus focused on their own experiences as to the degree of difficulty.

Those surveyed stated the following:

- "A complete set of actions for a user to take in order to get from zero point to the point where he will be actually modifying code / docs / translations is unclear. The path along several different step-by-step manuals with no explanation of the purpose for each step in sight of the whole authorization process seemed daunting for me as for a beginner." (Male, Russia, Age 25-34)
- "At the time I first decided to get involved, there wasn't much information on any wiki or other web site about how things worked. I was too intimidated to post on the mailing lists (which one? Am I using proper netiquette?) and ask what Rawhide was. The wiki has been much improved, which is critical for those like myself who have less of a social connection to the internet." (Male, Canada, Age 25-34)
- "Legal hoops and no mentors. It is a complicated self starter program." (Male, US, Age 35-44)
- "Setting up a login, setting up an SSL key, and contributing was a little daunting at first. That process could be simplified." (Male, US, Age 25-34)
- "I think there is a certain amount of background knowledge that is required to get involved in many areas of the Fedora Project which is the only reason I did not rank this as "Extremely Easy" because beyond the background knowledge that is needed the processes, policies, and procedures are very well documented and the Fedora Community is very helpful in guiding new contributors." (Male, US, Age 18-24)
- "Existing contributors are helpful but there [are] huge technical things to learn." (Male, Belgium, Age 18-24)

Most of the issues mentioned above focus on technical hurdles or simply not knowing where to go or what to do in order to become a contributor. As is alluded to by the following quotes, ease of entry seems to be determined by whether or not you already know someone within the community, or know how to (or even that you can) find a person within it to help.

- "I was lucky to start in Fedora very early and met several people involved in Fedora who worked for Red Hat and who showed me how to get started." (Male, US, Age 35-44)
- "Since I was already into Free Software projects and development when I started working on Fedora and the fact that I personally knew some Fedora contributors made the learning curve quite easy for me." (Male, India, Age 25-34)
- "The more experienced members of the community were extremely willing to help out with any questions I had, no matter how ridiculous the questions may have seemed." (Male, Canada, Age 18-24)

A possible solution to any perceived barriers to becoming a contributor could be addressed by providing easy ways of finding and accessing people already within the community who can and want to help.

As an interviewee acknowledged:

"So I think we are pretty bad at having resources where novices can stumble across things on their own and "get into" the community all by themselves. But we're really good at - when an existing community member meets a new person, they can usually help them get started very well. And that's the thing - I think that our materials, perhaps, should be more geared towards "find a person to help you through this stuff." I think they try to be, but they aren't always clear enough. Because being part of the community is about working with the *people*." (Female, US, Age 18-24)

Beyond the process behind the idea of becoming a contributor, the idea of just exactly how to contribute seems to be another barrier to entering the community. Though users may be familiar with the idea of open source from a user's perspective, this does not mean they fully understand what it means to be a contributor to an open source project.

This is especially true for those who come from traditional leader based backgrounds where someone 'in charge' directs their actions.

Survey respondents explained:

- "The second barrier was figuring out that I had the authority to do stuff. I kept waiting on people to tell me what to do, which doesn't work well." (Male, US, Age 25-34)
- "It's difficult to find your entry point, no matter how welcoming people can be." (Male, Netherlands, Age 25-34)
- "I'm new here, want to contribute more, but don't know how." (Male, China, Age 25-34)
- "Very easy, the hardest part is getting started and helping out." (Male, US, Age 18-24)

As the interviewee below states, contributors to open source projects are largely autonomous in that they 'pick up' what needs to be done, do it, and then present it back to the community for approval.

> "Tasks float by as tickets, as 'this might be cool' e-mails to mailing lists... sometimes they're detailed tasks, sometimes they're vague ideas. I pick 'em up by working on them (when I want to) and showing what I'm doing publicly - usually in IRC in realtime, and then on the mailing list as a summary once I'm done with the first frantic sprint." (Female, US, Age 18-24)

The key here, and the large difference between FLOSS development processes and traditional ones, is that it is not the act of doing something that needs approval; instead it is the result of the action and quality of the work that must be approved. Again, this is where not only having a mentor program for a new contributor is useful, but also making such a program highly visible, transparent, and accessible is important. As a point of observation, the quicker a contributor can jump in and start feeling productive, the more positive their experience and the more valuable their contribution to the effort as can be seen in the interview excerpts below.

> "It's hard to pinpoint a start date of contribution, but I did my first semi-formal introduction to the community as a contributor on May 29, 2009 so at the very least, 8 months. I've worn several hats so far (yep, in just 8 months).
>
> I'm the current Marketing team lead, which means I'm responsible for getting everything Marketing-related to happen, the most clear-cut of which is production of release deliverables like a screenshot gallery and talking points. My role here is much more enabling other people to get things done than it is to make all the deliverables myself (though I do chip in a fair amount).
>
> I've done FUDCon planning, which is a large community gathering to (among other things) celebrate a successful release - so you could call that "periodic event organizing" (and again, making it possible for other people to do that job more easily next time so I won't have to).
>
> As a member of the Community Architecture team at Red Hat, I keep an eye on things in general to see if there are any cool reactions we can catalyze, or potential bottlenecks we can clear before they become a problem.
>
> The open source world moves fast, and it's a do-ocracy - meaning that the people who do the work are the ones who decide what happens and how that work gets done. I just showed up and started doing the stuff I thought needed to be done, while thinking out loud so everyone could see what I was doing, why I thought it was the right thing to do, that I wanted feedback and comments to make it better, and how they could help. Momentum begets momentum." (Female, US, Age 18-24)

Furthermore, based on the author's experiences and observations as well as the responses of those interviewed, there seems to be a small window of opportunity that occurs at certain phases of the development cycle that would give someone a better opportunity to jump in and contribute.

> "Right after a release, I think we do a great job. The closer we get to a release, the worse we do. Most of the active participants put a lot of energy into the release and the closer it is to the release the less we have towards outsiders. [...]Basically we need to make it a priority for some group to deal with the initiations and cultural rules so that outsiders and insiders can feel more comfortable where they stand." (Male, US, Age 35-44)

This opportunity right at the beginning of a new development cycle should be made known to and capitalized upon as much as possible by new contributors who wish to gain entrance and acceptance quickly, though the latter can sometimes still be a little difficult to achieve. The technical and timing problems are not the only potential issues for new contributors to the project. One of the most essential parts of the process is to be accepted by already established contributors. As one interviewee stated, this is a current problem that needs to be addressed:

> "We have the bureaucracy down right, and with a good mentor, it's never a problem to get people setup with working accounts and group memberships. I think the hard part is the acceptance of skilled people into various groups. Confidentially speaking, I think the newcomers can be put off by the prevailing attitudes of established people who aren't willing to accept them and integrate them. Newcomers really have to give a shit and really produce a lot before they are accepted." (Male, Netherlands, Age 25-34)

Other recommendations for new contributors by established ones:

> "You have to observe the community for a bit (often this is called "lurking on the mailing list") and learn about it: the rules, the procedures, the people, the atmosphere. When you talk for the first time is useful to mention you are new so people will take you easy and also don't be arrogant." (Male, Romania, Age 35-44)

> "[I] am constantly reminding [new] people, show success first, then start making opinions, because otherwise it's hard to get them accepted by the core set-in-their-ways community members." (Male, US, Age 25-34)

Some view the initial level of effort as a way to weed out people who do not deserve to be or have the technical knowledge required to be a contributor in the first place. Others realize that there are contributors that are necessary to the success of the project who would not have this technical expertise such as designers, technical writers, or project managers. As a result of this study, steps were already being made within the community to make the level of effort easier. Based on the author's observations those who worry this will bring down the quality of work should take into consideration that those who cannot contribute at a high enough level will either be ousted from the community, leave on their own accord, or figure out a way to rise to the occasion through motivation by the work of those around them.

Recommendations Made

To recap, while 28% of those surveyed stated it was extremely easy to become a Fedora contributor, over 50% stated it was somewhat easy to somewhat difficult. Potential barriers include: technical difficulties, lack of understanding of how open source projects work, timing, and acceptance by established contributors. Recommendations here include the following:

- State what exactly is the minimum required for people to be able to contribute
- Provide easily accessible step-by-step information on how to go through the technical steps required
    - Include these even if they are optional

- Provide easily accessible information on how to contact people who are willing and able to mentor new contributors.

- Provide a timeline stating the best times to join the project.

- Reaffirm to the established contributors the benefit of new talent to the project and setting up ways established contributors can easily make new comers feel welcome

Section Two: Turnover

One of the many benefits of participating in FLOSS development projects that should be highly promoted is not only the ability for contributors to choose the type of projects they want to work on, but also the ability to change from one type of contributor role to another if they choose. These roles vary depending on the project or work to be done, but the initial list used in the survey (based on the interview responses and my participant observation within the community) is as follows:

- **Design:** those who work on the actual art of the project including interface designs, desktops, or websites.
- **Development:** those who work on the code of the project including OS code or website programming.
- **Documentation:** those who document process and/or write the help text and manuals for the different projects.
- **Infrastructure:** those who setup, monitor, and control the backend operations required to host the community, community interactions, and development processes.
- **Marketing, Promotions, Ambassadors:** those who put together the face of the community and represent the community at conferences, in user groups, and on college campuses to name a few places.
- **Packaging:** those who 'package' an update or application so that it can be downloaded by the end user and used by the OS.
- **Project Management:** those that organize the work to be done for each release.
- **Quality Assurance:** those who test the software.
- **System Administration:** those who setup, maintain, control, and monitor the systems on top of the infrastructure used to support the community.
- **Translation:** those who translate the distribution into other languages (added as a result of the survey)

Red Hat had initially suggested turnover was an issue within the community and they were worried that contributors were vacating their roles too frequently. Throughout this research it was observed that turnover within FLOSS projects is actually a good thing and is desired by those in the community. The thought behind this is that having experience in several different contributor roles provides for a more well rounded contributing experience and provides contributors a better understanding of all that is involved in the process allowing them the ability to contribute at a higher level.

> "I didn't realize that what I was doing was community work - I thought I was an incompetent engineer that didn't produce much in the way of code, but kept on doing all this other stuff instead. Right now, I'm focused largely on the Marketing team, and getting people with a

marketing background into the team – 'have Marketing run by Marketers', as opposed to... well, engineers like me, who know that Marketing's important but not really how to do it or what it is.

That opened my eyes to many of the other kinds of contributions people can bring to open source; it's not about being the best coder in the world, it's about figuring out how to turn the stuff you're good at and interested in into something that helps you *and* can be shared with as many people as possible." (Female, US, Age 18-24)

Secondly, though people may vacate a role, they rarely if ever leave the community completely and thus are always able and almost always willing to help those that step up into the recently vacated role.

"Oftentimes the old person will stick around. For instance, when Paul became the FPL [Fedora Project Leader], part of what Max has done since is to stick around to advise him. Similarly, when Eric became Docs lead, Karsten stuck around to answer questions and help out." (Female, US, Age 18-24)

This also means that new contributors have more opportunities to step up as more seasoned ones move on to more challenging roles.

"When [the next person] takes over Marketing […], she can always still come back to me with questions (and I'll still be a member of the team and helping out)." (Female, US, Age 18-24)

Question: Have you ever changed roles?

Only 20% of those surveyed stated they had ever changed contributor roles and over 78% of survey respondents stated they had been a part of the project 2 years or longer. This revealed that contributors have longer tenures and the project has a higher retention rate than previously suspected.

Transfer of Knowledge

Other considerations when dealing with turnover are whether or not there is an established way to transfer the knowledge from those leaving a position to those coming into it. Though someone may leave a position, due to the fact that there is a large amount of retention within the community (78% of those surveyed have been a part of the community for 2 years or longer), in most cases they are still accessible and happy to share their knowledge with those who need it.

Additionally, during the time this research took place, new procedures were put in place to document community-wide processes. This was most commonly accomplished by adding an article to the Fedora Project's Wiki, which allows anyone to see it, find it, and edit it as the processes change over time. While both of these options provide opportunity for recording, saving, and sharing information, which are all very much important, none are viewed as strictly necessary due to the fluidity of FLOSS development and the autonomy people are given.

"That way, we pass the bus/raptor test - that is, if any one person gets eaten by a bus or hit by a raptor, the project can continue. That having been said, it's *also* acceptable to improvise from nothing, especially if you did a quick search for instructions and didn't find them.

We try sometimes to leave waypoints for the next people (and we don't know who they might be someday) to pick up on, and we also figure that people will make their own way anyway, so they'll figure stuff out regardless of what we leave them (it's just that maybe if we leave them stuff that happens to be useful they may be able to figure it out a little faster)

Generally, once you pick up a task, it's yours; once you put it down, it's someone else's. That helps avoid bottlenecks quite a bit. It's not perfect, but that's the cultural expectation we aim for, I think." (Female, US, Age 18-24)

Survey Bias

Something that was not considered in the development of the survey was a contributor with multiple roles. This would not be the same as changing roles; rather it is more about contributors dividing time amongst several roles. It is estimated that the larger issue is with contributors to multiple roles becoming overwhelmed by the amount of work they take on all at once. Having multiple roles creates a possible issue with the contributor not being able to devote as much time and effort as necessary to key roles because of time devoted to others. This could have more of an adverse effect on the project than changing from one role to another.

Recommendations Made

- Efforts should continue to be made to pass the bus/raptor test with both documentation and retaining access to veterans who recently vacated roles.

- Those coming into newly vacated roles should be made aware that though there are documented processes and procedures, they have the freedom to make change to these as necessary.

- Contributors should limit the amount of roles they attempt to take on at one time.

Section Three: Collaboration

In most cases, contributing to FLOSS projects is a highly collaborative process. This is another feature that can set apart FLOSS development projects from closed development ones.

> "While coding remains an essentially solitary activity, the really great hacks come from harnessing the attention and brainpower of entire communities. The developer who uses only his or her own brain in a closed project is going to fall behind the developer who knows how to create an open, evolutionary context in which feedback exploring the design space, code contributions, bug spotting, and other improvements come from hundreds (perhaps thousands) of people." [Raymond 2001:51]

Throughout this research, collaboration was referred to as a very important part of the process of developing FLOSS.

> "Being able to share ideas (both good and bad, many half-baked, some that get no response - you try a lot of things and a few of them work) with other people riffing on them feels like the difference between solo piano and a jazz jam." (Female, US, Age 18-24)

Question: How often do you collaborate with others on the Fedora Project?

Over half of the survey respondents stated they collaborate with others 50% of the time or more.

Question: Do you collaborate as often as you like?

Almost 60% of respondents stated they wish they could collaborate more often, whereas 40% stated they collaborate often enough.

In both the interviews and on the survey, respondents were asked to describe the people with whom they worked. Most people within the project responded with a very positive view of their fellow contributors. One of the reasons for this is, as with the other aspects of FLOSS projects, contributors get to pick and choose those people with whom they want to collaborate.

Interviewee responses on collaboration:

> "Kick ass. I don't really know how else to say it, we just have this amazing community full of intelligent developers and I'm lucky enough to work along with them and I'm able to work with a group that I feel share similar goals that I have. These guys are just simply "kick ass" in every aspect, they are great developers, experienced RPM packagers, and great at communicating which helps us as a group move the work flow forward." (Male, US, Age 18-24)

> "Fedora contributors are some of the most amazing people I know, quite frankly. Coming from a [different] environment, I'm mostly exposed to the low end of the "I'm motivated to do cool things" spectrum, in the "I'm here because I have to, and I'm going to make sure you know that" area. Compare that to the "I'm in Fedora and I love it, and I want to_do_something_awesome_!!" feeling that you get from nearly _anyone_ working in Fedora :-)" (Male, US, Age 18-24)

> "The Fedora Community has among it the smartest, brightest and most thoughtful people I have ever met. I'm always happy to work with someone from the Fedora Project because I know they will consider me intelligent and thoughtful, much like I will consider them." (Male, US, Age 35-44)

> "That's the bonus in a free community, you can choose to work with people you like, so I like the people I work with. For a few of them I even have respect, I acknowledge they are more skilled than me in certain areas. Those I know are usually smart and enthusiastic. […] Why I would want to work with people I don't like? If only for money, then you get tired and burned fast. Working with people you like does not feel like work, is like having fun with your friends AND producing something useful. Also, when you like and know the people you work with, you have better productivity" (Male, Romania, Age 35-44)

As is the case with FLOSS development, most development and collaboration efforts occur online through methods such as IRC and e-mail lists.

Question: Which collaboration method do you prefer?

IRC came in first with over 50% and e-mail/ lists came in second with over 35%. Phone and video collaboration methods were ranked least preferred. These methods can be further broken down among the preferences by different roles within the project.

Table 3. Methods of Collaboration

Role (% of respondents who identified with that role)	Method
Packaging (45%):	56% IRC
Marketing/Promotions/Ambassadors (40%):	34% IRC & 34% E-mail / Lists
Development (23%):	71% IRC
Quality Assurance (22%):	53% IRC
Documentation (15%):	70% IRC
Infrastructure (09%):	44% IRC
Design (08%):	60% E-mail / Lists

Project Management (08%):	56% IRC
No Specific Role (08%):	60% E-mail / Lists
System Administration (07%):	43% E-mail / Lists
Other: Translation (07%):	67% E-mail / Lists
Other: Bug Tracking (05%):	60% E-mail / Lists

Though there are several different methods of collaboration it is easy to see the two main staples are IRC and e-mail/lists. These methods became the established way of doing things due to both ease of use and the historical context of the early 1990's when these text-based methods were the only methods available. Those in development and text based roles (such as project management and documentation) tend to favor IRC over mailing lists in order to get in the moment responses which leads to higher productivity. Email / lists are preferred for sharing vital information (system administration), sharing large amounts of text (translation), and sharing images (design).

While they didn't rank very high, face-to-face methods such as Fedora Activity Days (FADs) / Hackfests & FUDCon as well as other face-to-face opportunities were all spoken very highly of by those who had had a chance to attend them.

> "It is said that after seeing someone face to face, you are less likely to have a flamewar online, because he is now a person, not just a stranger on the other end of the internet. But there are also people you work with day to day, know how them look from photos and maybe a video, you will be able to recognize their faces in a crowd, but you don't really know how they are before meeting in person. And, honestly, most of us are geeks, not very good on personal skills, so meeting other geek fellows is good for our social lives." (Male, Romania, Age 35-44)

> "I have some of the most fun in my life interfacing with contributors in Real Life, for example. At the FAD we had more fun than I have had since I went to Camp KDE in January and spent my birthday with some of the most fun and smart people I know on the beach in California. And even now, I'm finding ways to just hang out with contributors on a daily basis." (Male, US, Age 18-24)

> "It's extremely important for building the initial relationship and occasionally refreshing that with people. There are of course people who we never meet and we work well with them. However something about the in person relationship building rapidly accelerates the process. People who I have only met once or twice, and often only for a day, have become very beneficial. My first fudcon was a dramatic change in my pattern of participation, it really broke me out of the cycle of staying in my own niche." (Male, US, Age 25-34)

Ideally the ability to experience both the electronic and face-to-face methods would be very beneficial to contributors.

Contributor Suggested Improvements

Though most surveyed said they liked the tools just as they were, others offered their opinion on ways some of these tools could be improved.

- Mailman list archives could be more usable/searchable
- Meeting bots in IRC could automatically send their minutes to mailing lists (and post them on the wiki), and remind contributors of meeting start times
- Wikis could have collaborative wysiwyg - imagine the front end of etherpad as an edit interface to mediawiki. (That having been said, this would be an immense engineering undertaking.)"

- We could better document/teach our tools/culture to others - IRC seems natural to me, but was extremely foreign when I started. Honestly, a lot of what I'd change is usage habits ("log all conversations to the mailing list!", not the tool itself.
(Female, US, Age 18-24)

Other improvements mentioned include capitalizing on more current methods of communicating online that would not only allow more people to participate, but also give Fedora the ability to have a more public / searchable face that is not possible today due to the use of IRC and e-mail / lists.

> "Fedora's biggest weakness is its failure to exploit social web effects, such as forums. See the strong community ubuntu has built with their forums and brainstorm and launchpad. When I Google Linux problems, the search results are filled with ubuntu links. When is Fedora going to respond? Mailing lists are harmful. If I want to blog about a useful tip I learned in the mailing list, I can't include a link to the mailing list post until I search for it in the mailing list archive. Ugh! Forums are much better. If a thread is off topic, it can be moved to a appropriate forum and renamed. Can't do that with mailing lists. The recent "hall monitor" debacle left a bad taste in my mouth. Moving a thread instead of declaring it closed is much more palatable from a freedom perspective. I have a FAS account, so why do I need to create a new account to subscribe to a mailing list. Keep Fedora-devel as a mailing list. But create forums for user support. Google doesn't require separate accounts for GMail, Calendar, etc. Let's get on the ball before it is too late. Ubuntu's expanding mindshare is dwarfing us. I want Fedora to win." (Male, US, Age 45-54)

Recommendations Made

- Make information as accessible, searchable, and reusable as possible

- Provide more modern methods to collaborate in conjunction with currently used ones allowing the project higher visibility and accessibility to outsiders or new contributors.

Section Four: Motivation

One of the most interesting questions concerning open source development is why do people volunteer their time to something for which they receive no monetary gain? Throughout my research I have found that the culture of FLOSS contributors is one in which self-motivation is a key component to becoming a contributor in the first place.

- "It goes back to an age old idiom that programmers develop software to "scratch an itch" and it breaks out to "a group of developers with a similar itch" so they write code to "scratch" or satisfy that itch." (Male, US, Age 18-24)
- "Mainly I contribute just to make it work for me." (Male, Canada, Age 25-34)
- "Taking care of my own needs in Fedora (if something gets broken, there might be nobody to fix it unless I report it because it may work for everyone else)." (Male, Russia, 25-34)

Scratching an itch is just how they get into it. The real question is, what keeps them motivated?

Question: What motivates you to contribute your time and skills to the Fedora Project?

An in depth analysis was performed on all of the interviews to narrow down possible motivations of project contributors. These motivations were then provided in the survey, each with a 5 point Likert scale of 'Very Important' to 'Very Unimportant'. Below is the break down of the overall stats for 'Very Important' and 'Important' followed by the motivations that ranked highest by role.

Table 4. Motivations By Importance

Motivations	Very Important / Important
Learning for the joy of learning	42% / 43%
Giving back to the community	41% / 34%
Collaborating with interesting and smart people	39% / 36%
Making the world a better place	39% / 20%
Personal passion and happiness	39% / 44%
Helping others	37% / 41%
Sense of pride or achievement	31% / 38%
Being respected and valued for your contributions	26% / 30%
Career benefits such as gaining skills and experience	16% / 39%
Personal and professional networking	15% / 29%

Although none of the motivations mentioned above ranked above 50% on 'very important', it is also noteworthy that only one of them ranked below 29% on 'important'.

Table 5. Motivations By Role

Role	Motivation
Design	Collaborating with interesting and smart people
Development	Collaborating with interesting and smart people
Documentation	Collaborating with interesting and smart people
Infrastructure	Learning for the joy of learning
Marking/Promo/Amb	Personal passion and happiness
Packaging	Personal passion and happiness
Project Management	Giving back to the community
Quality Assurance	Learning for the joy of learning
System Administration	Collaborating with interesting and smart people Learning for the joy of learning
No Specific Role	Helping others Making the world a better place

Interviewee elaborations:

"Free software is enabling because it encourages you to participate, to make it your own, by adding your own contributions to it. Free software is empowering because it rewards

participation. Others use your contribution, which gives you a sense of satisfaction, even better when someone comes along and builds on your contribution. You have tremendous feeling of accomplishment, occasionally even self-actualization when you move past using free software and into participating." (Male, US, Age 25-34)

"I enjoy doing something challenging, and doing it hopefully, well. I feel very much a part of the community. I don't want to let my fellow community members down. I also get a bit of a rush when I show off Fedora and think, "I helped build that" even though it's an inconsequential piece." (Male, US, Age 25-34)

"I feel that my participation has been helpful for many people I'll never meet. I look at FOSS partially as a way to collaborate with and learn from very smart people (i.e. a lifetime learning experience), partially as a way to build marketable skills for the future, and partially as a humanitarian pursuit." (Male, US, Age 35-44)

"Happiness. It feels like what I should be doing, if that makes sense. I also get to work with a lot of great people on something that genuinely changes the world, somewhere I can rapidly innovate and try interesting experiments; I get to build my technical skill and constantly have this sense of playing around, having fun, adventuring - in a way that Gets Stuff Done." (Female, US, Age 18-24)

"I feel great. Knowing that my work makes it to schools in Haiti, India, and elsewhere are using computers powered by Fedora makes me happy. […]Even before I was working Red Hat, my drive on Fedora was the feeling of being part of something bigger than myself that makes people live better lives." (Female, US Age 18-24)

As you can see above, people get just as much out of contributing to Fedora as they put into it. Not only do they enjoy doing the work they do, but the results of their work also provide a sense of happiness.

The two highest rated motivations (average of very important and important) were 'learning for the joy of learning' and 'personal passion and happiness' whereas the two least rated motivations were 'career benefits such as gaining skills and experience' and 'personal and professional networking'. The interesting dichotomy here is that the first two, while 'personal' in nature, involve no personal gain and suggest they do it because they love doing it, whereas the last two suggest some sort of ego driven personal gain and thus were rated lowest.

Motivation and Ego

Eric Raymond talks about this in his book, The Cathedral and the Bazaar:

"The cultural matrix of most hackers teaches them that desiring ego satisfaction is a bad (or at least immature) motivation; that ego is at best an eccentricity tolerable only in prima donnas and often an actual sign of mental pathology. Only sublimated and disguised forms like ``peer repute'', ``self-esteem'', ``professionalism'' or ``pride of accomplishment'' are generally acceptable." [2001:88]

Weinberg also discussed ego-less programming where he foreshadows cultures such as the Fedora Project stating, "The problem of the ego must be overcome by a restructuring of the social environment and, through this means, a restructuring of the value system of the programmers in that environment (Weinberg 1998:56)." So, if developers must suppress ego to participate in open source projects, what else motivates them?

Motivation and Symbolic Capital

Brafman and Beckstrom (2006) suggested that when it comes to gift economies, everyone wants to contribute:

> "Not only do people throughout a starfish have knowledge, but they also have a fundamental desire to share and to contribute. People come to Burning Man because its based on a gift economy. Contributors spend hours editing Wikipedia articles because they want to make the site better, and accountants want to share their expertise on Intuits TaxAlmanac.org. User jpgm contributes free reviews to Amazon, while software engineers stay up all night to improve Apache code. Its all in the spirit of sharing and contributing." [Brafman and Beckstrom 2006:204-205]

This, however, does not answer why people want to contribute. Raymond suggested, "it is quite clear that the society of open-source hackers is in fact a gift culture" (Raymond 2001:81). He explained stating, this "creates a situation in which the only available measure of competitive success is reputation among ones peers (Raymond 2001:81)."

> Stewart suggested one gains reputation through the work one does as well as how one is perceived not only by his peers, but also by those who have already achieved a high social status within the community. Stewart explained, "status can be conceived as a product of others' subjective evaluations of an actor (Stewart 2005:824)." Pierre Bourdieu called this reputation earned, symbolic capital. He defined symbolic capital as, "the strategy of accumulating the capital of honour and prestige which produces clientèle as much as it is produced by it (Bourdieu 1990:118)."

> Rheingold's 1993 work, The Virtual Community, described how symbolic capital and gift economy help drive the virtual community.

> "Reciprocity is a key element of any market-based culture, but the arrangement I'm describing feels to me more like a kind of gift economy in which people do things for one another out of a spirit of building something between them, rather than a spreadsheet-calculated quid pro quo. I give useful information freely, and I believe my requests for information are met more swiftly, in greater detail, than they would have been otherwise. A sociologist might say that my perceived helpfulness increased my pool of [symbolic] capital. I can increase your knowledge capital and my [symbolic] capital at the same time by telling you something that you need to know, and I could diminish the amount of my capital in the estimation of others by transgressing the group's social norms." [Rheingold 1993:Chapter 2]

Motivation and Happiness

In her 2008 keynote speech at the South by Southwest Conference, Jane McGonigal talked about happiness being the new capital to be sought out in life. She conducted in-depth peer reviewed research on happiness and came up with four key principles:

1. Satisfying work to do
2. The experience of being good at something
3. Time spent with people we like
4. The chance to be a part of something bigger [McGonigal 2008]

While McGonigal links these principles to gaming and suggests that all four can only be met via a massively multiplayer online video gaming experience, the author suggests that these also apply to those who participate in FLOSS projects.

In both cases, the groups devote a large amount of time to contributing their skills and collaborating with others toward a common goal for which they do not get paid. It can be surmised that if they did not actually enjoy doing what they do they would cease to do it as they gain no other benefits from their actions. The principles as outlined above explain what makes these acts enjoyable and why people continue to be motivated to do them.

Recommendations Made

In order to attract and motivate contributors, a project needs to provide the ability to scratch a developer's itch while at the same time providing the developer the ability to achieve symbolic capital through their efforts.

- Encourage self-motivation among new and tenured contributors by providing ways for them to see how their contributions are making a positive impact in the world.

- Providing real life examples of how their work makes a difference that they can actually see would be a huge motivating factor.

- Provide more ways for and encourage more contributors to not only collaborate but also socialize with people they like within the community.

  ◦ These include Fedora Activity Days, Hackfests, and promoting more things like the IRC social channel for people to continue their offline socializing in an online context.

- Provide ways to help new and tenured contributors find their niche within the project where they are able to contribute the most.

  ◦ Being good at something is a great motivator and being publicly recognized for it by those in high positions will capitalize upon that motivation

- Setup workshops within the community where thought/technical leaders are able to freely share their skills with others outside of project directives. This provides a motivational point for both sides of the equation – those who want to and can share as well as those who want to learn more.

Change

While there are many positive responses to why people are motivated, the flipside to these are those things that contributors would change if they could.

Question: Have you ever considered ways to change the Fedora Project?

57% of survey respondents said yes, they had considered ways to change the Fedora Project.

The survey respondents stated the following:
- "Better communication methods. What we have sucks." (Female, US, Age 25-34)
- "Fedora can increment its user base if it can introduce a commercial option of its releases (boxed

version with manual)." (Male, Columbia, Age 25-34)
- "Fedora changes constantly. I find it important for Fedora to lower barriers to contribute which necessarily involves peer increase of visibility e.g. by the means of peer reviews, which in turn imply increased collaboration. Simply put, more people personally responsible for maintenance of a simple package would help tremendously." (Czech Republic, Age 18-24)
- "Fedora Community is great but still there are people who I find really hard to talk to because they don't understand that there are also non English native people out there and that communication for us is a bit harder and then they get offended too easy! Also we need to make women feel more welcome!" (Male, Croatia, Age 25-34)
- "Fedora needs to decide what it is. This nebulous branding means that people all think they Fedora is a democracy, a movement, a monarchy, an anarchy, or just a set of packages." (Male, US, Age 35-44)
- "Finding ways to reduce the risks to our community posed by people who are constantly negative or otherwise toxic. We should always allow dissent but it should not become the focus of our work." (Male, US, Age 35-44)
- "Automating any manual task would help enormously." (Male, Greece, Age 35-44)
- "I would abolish the high number of mailing lists. I find them counter productive. On a similar note, I think that while it's a nice goal to bring in as many people as possible, we need more controlled entry points and to be more selective on who really has a voice. The idea of what is a contributor is too vague and broad and serves no one. I would also pay to have an outside marketing firm do a proper marketing analysis and determine who the real target audiences are. They would determine where we want to focus our energy on, and have them train people to use proper statistics and numbers to define if the community really is a success. Finally, I would remove a lot of the bureaucracy, and have the Board be entirely elected by the community." (Male, Netherlands, Age 25-34)

Recommendations Made

A big part of participating in FLOSS projects is the ability to make the changes you see fit to make, however, people tend to be unaware they have this ability or authority to do this. While there are of course social implications to coming into a project and wanting to make changes, the fact that anyone can and is able to at least attempt to do so should be made more obvious.

- Provide ways for people to offer suggestions and feedback on community wide changes publicly to the community

  - Consider providing an anonymous option to garner more participation and feedback

  - If this already exists, make it more publicly accessible / noticeable

- Make it more obvious that people have the power to suggest or make changes themselves

Section Five: Community

Though from an anthropological perspective one can surmise there is indeed a community behind the Fedora Project, it was important to the research goals to reveal how the contributors saw themselves and why this is important to their success.

Question: Would you call those who collectively participate in the Fedora Project a community?

Over 75% of survey respondents said yes, the Fedora Project is a community.

Several respondents had very positive comments on community:

- "Absolutely Fedora's participants are a community working together to produce something great. I couldn't imagine thinking otherwise." (Male, US, Age 35-44)
- "Everyone's involved in decision-making, helping others, etc." (Male, India, Age 25-34)
- "Helping each other, working together, being (mostly) friendly to others, not adding a price tag - the combination of such things makes it pretty much a community." (Male, Switzerland, Age 25-34)
- "It is definitely a community, since it's a group of people with common interests and a common goal" (Male, Chile, Age 18-24)
- "My understanding of difference between arbitrary group of people and "community" is the relationships between the members that enables the individuals to achieve together more than they would achieve each alone (by the means of collaboration). That definitely happens." (Czech Republic, Age 18-24)
- "We're a common group with a common set of values, ideals, and goals. There are sub groups within that have more specific goals that they hold near and dear which spawns the Special Interest Groups but the community at large is still very unified and I think that defines us." (Male, US, Age 18-24)

On the importance of community to Fedora:

- "Community is the place to hold people together. There are so many FOSS projects to be contributed. Why here? Because the community here is more appealing to me. I think I am not the only one who joined Fedora Project for this." (Male, UK, Age 25-34)
- "Community provides the base to thinking in a collaborative manner with discussing things altogether, its definitely important for success of a project" (Male, India, Age 25-34)
- "I think so - I think that the cost of RHT or any other group going it alone for something the size of the Fedora Project would be cost prohibitive. Additionally as a volunteer effort the people are passionate about Fedora, and want to do a good job. That passion is rarely found in a company once it gets past the startup phase." (Male, US, Age 25-34)
- "The community is the driving force behind Fedora. Since a lot of contributors see contributing as more of a hobby than a chore, they are more passionate about what they do. Also, most contributors are also end-users, so they themselves benefit from their contributions." (Male, Canada, Age 18-34)
- "Without the community we are lost, without the community of common goals and ideals we would find ourselves in a "herding cats" situation where there would be no common interest or direction. The collaboration that is shared within members of the community the Fedora Project would not be possible." (Male, US, Age 18-24)

All of those interviewed agreed that Fedora was a community and a few had a comment or two on the matter:

"Absolutely. The community *is* the project. The community drives the project, makes the project - without the community, we've just got a bunch of (rapidly rotting) bits." (Female, US, Age 18-24)

"Without the community I can't see a project of this scale succeeding. This is a community that spends a lot of time with one another on the internet, without cooperation and a general feeling of community then there would be too many disagreements and fighting to ever get anything done. Without these common goals and general ideals that we as the community at large share we would never more forward as we would always be pulling in different directions." (Male, US, Age 18-24)

"The community is the reason so many are passionate about working on Fedora. Generally speaking the people within the community are so thrilled to work on Fedora it's infectious. I have

found that I am generally far more excited to work on Fedora and F/LOSS in general after I have been around Fedora contributors, particularly in person. You come away with a feeling that what you are doing is important, and that failing to deliver your part is letting down your friends in the community." (Male, US, Age 25-34)

"Some parts of Red Hat don't realize this yet, but the real value in the project is the community. Without the community, Fedora will fail - - not that RHT couldn't toss enough money to continue producing the distribution, but the project would fail to meet it's mission/goals or stand up for it's philosophy." (Male, US, Age 25-34)

While 75% of respondents stated Fedora is a community, it is interesting to note that 25% did not consider it to be one. Unfortunately, of those who answered 'no', not many actually added their reasons for doing so.

The quotes below are from those who responded 'No' that it is not a community:

- "I used to believe that it was a community, but it seems more like a grouping of various anarchists and monarchists who think everyone else is like them." (Male, US, Age 35-44)
- "a gaggle, a cluster-fuck that somehow works kind of in a way" (Male, US, Age 35-44)
- "I don't feel that they would like to be called :(" (Male, Croatia, Age 25-34)
- "More of a super-clique" (Male, US, Age 45-54)

Cliques

Of those who did respond and those who were interviewed that voiced concerns about the community, one theme did emerge – cliques. For a community concerned about open standards, open access, and open source, it seems rather contradictory that one of the things that holds it back from being a truly open community are its closed cliques.

"Open community is critical to forward progress and innovation vs the community is a ghetto that must be managed in small, tightly-controlled elite pockets. This cultural conflict is the one that peeves me most. I've seen it coming from the GNOME upstream community. E.g. they literally have a secret #gnome-cabal channel on gimpnet IRC where only the elite old-timers are allowed to join where many decisions are made and discussions had that the majority of the community is not privy to. It's been in existence for years." (Female, US, Age 25-34)

"There seem to be various cliques that form as people find areas they excel at and areas where they don't. I don't think it reaches High School levels, but there are probably times where it does (oh no you can't let bobby join... he's a developer...)" (Male, US, Age 35-44)

"To my mind the cliques are made up of people who share mutual interests with possibly some sub-division towards language/locality. […] Somewhat is privilege. People who have the fanciest computers hang together because they can compare how many pixels their new toy has and people who are on the other end hang around talking about how much they can get out of an old Pentium 100. In other ways its mutual likes and language. […] And of course they can be detrimental when someone feels outside of the group but wants acceptance and for whatever reasons the group does not want to accept the outsider. Or when groups clash" (Male, US, Age 35-44)

The developers and their influence within the community is another not so obvious clique:

"Because Fedora places a very high value on code and the whole notion of "providing a patch" if you don't like the way it is. The sharpest and most outspoken technical people tend to be elected to the leadership positions, not because they would be the *best* leaders, but because they are the most well known and outspoken, and often most opinionated and willing to debate issues to the death by having the last word over e-mail. I have little time or interest for engaging in these unending debates where most people are more interested in giving their own opinion vs. listening to or considering the merits of someone else's." (Male, US, Age 35-44)

The issue with cliques is the exclusivity and lack of transparency with the rest of the community. In the book, Producing Open Source Software, Karl Fogel states FLOSS projects should avoid private discussion.

> "Making important decisions in private is like spraying contributor repellent on your project. No serious volunteer would stick around for long in an environment where a secret council makes all the big decisions. Furthermore, public discussion has beneficial side effects that will last beyond whatever ephemeral technical question was at issue:
> - The discussion will help train and educate new developers. You never know how many eyes are watching the conversation; even if most people don't participate, many may be tracking silently, gleaning information about the software.
> - The discussion will train *you* in the art of explaining technical issues to people who are not as familiar with the software as you are. This is a skill that requires practice, and you can't get that practice by talking to people who already know what you know.
> - The discussion and its conclusions will be available in public archives forever after enabling future discussion to avoid retracing the same steps." [Fogel 2006:10]

As is demonstrated above, these cliques take on many forms and are formed for many reasons. The most common are location / language based and philosophically / technologically based. One solution to the emergence of cliques could be better promotion of what the Fedora Project calls, 'Special Interest Groups' or SIGs.

The difference between the SIGs and cliques are that the SIGs are public, transparent, and open to anyone who wants to be a part of it, whereas the cliques are closed, secretive, and exclusive. If SIGs had the ability to accomplish the same things as the cliques attempt to (that is the promotion of ideals that may not have community consensus) in a more open and positive manner, then they may actually gain more ground and be more successful than their closed, exclusive, secretive, and potentially community damaging counter parts. This is another potential area for further research. Finding out what makes up a SIG, how to make one successful, and how to use SIGs to counter cliques could be a study all its own.

Recommendations Made

- Promote SIGs or Special Interest Groups over cliques.

- Make all discussions public. This serves many interests as stated above.

- Give people the ability to have a voice without being chastised for their opinions thus allowing them the ability to speak in public without feeling they have to go behind closed doors to have their opinion heard.

- Be supportive of opinions that may be very different from your own. It is diversity that helps communities thrive and grow.

Another way to avoid cliques is to help provide unity to the community by having not only a clear mission statement, but also a clear view of what the community is about. One of the first points of contention the author heard upon entering the community was discussion on what exactly is Fedora.

Question: What is Fedora?

This was an open-ended question asked of both interviewees and survey respondents. There was no other prompting to this question so as to not influence the answer in any way.

Here are a few survey responses:
- "*The* Linux distribution for developers." (Male, Greece, Age 35-44)

- "A fantastic community of diverse people who work together to spread the word of freedom and open source via its primary product, the Fedora distribution." (Female, US, Age 25-34)
- "A group of people and a project striving to build a Linux distribution serving various purposes." (Male, Germany, Age 25-34)
- "A Linux distribution which applies the FOSS philosophy to innovated technology. A FOSS community which focus on doing the real work (not the fancy eye candies) to improve Linux usability and functionality." (Male, UK, Age 18-24)
- "A linux project and distribution that always leads and never follows which not only means in technical terms but also in terms of user experience and how the community is organized and works. Always trying something new, being first even if once in a while it's a bit much of a bleeding edge. Focuses on being friends with others like fellow contributors, upstream, downstream but also competitors. Of course all in the name of freedom!" (Male, Switzerland, Age 25-34)
- "An average Linux distribution that could be great if we were more focused" (Male, US, Age 35-44)
- "Fedora is .. a project that explores and pushes the boundaries of Linux and open source, staying true to its origins while looking ahead at the "what if". It is reminiscent of the old Linux but in a package that streamlines old-school annoyances so you can get to the "next level"." (Male, US, Age 35-44)
- "The distro that used to be focused on server side deployment. Now the distro is unfortunately more focusing on the desktop experience than on the bottom layers and special apps." (Male, Czech Republic, Age 25-34)
- "There are a lot of Fedora's, but when I hear Fedora, I think of the Fedora Project. The Fedora distro is great, but it isn't as unique as the Project, when compared to other distros. The Project, tho, is this amazing group of very smart people, committed to each other and to the success of the Project. They not only believe, but they live the four F's, which makes it quite a magical environment to contribute." (Male, US, Age 55+)
- "Two years ago, I said Fedora is a workbench where any tinkerer can come along, pick up a project and start playing with it. Two years wiser, I would say it's a community of people all looking to achieve their own goals with no idea of what the community is anymore." (Male, Netherlands, Age 25-34)
- "We are Fedora, you are Fedora, and I am Fedora. Fedora is, and always will be, an open source collaborative effort to enhance the open source software movement by empowering a community that empowers itself. It is the living, breathing, moving ideal of the open source software movement. Fedora as a community collaborates outside the bounds of geographic constraint, outside of language barriers, and outside of the shackles of closed source development. Fedora is the future of computing." (Male, US, Age 18-24)

As stated above, the actual definition and focus of the Fedora Project was the first point of contention encountered upon entering the community (beyond the getting started issues themselves). The issue revealed here, both in the interviews and in the survey, is that there is no consensus as to what is Fedora. While it is important everyone who participates in the project does so for their own reasons and sees it as they wish to see it, it is also important to the community and the project itself to have some sort of unified direction or at least cohesive understanding amongst its community members. Otherwise the lack of direction and understanding could lead to group fragmentation (cliques) and even possibly eventual collapse.

The diversity among these responses isn't necessarily an issue as most community members have a personal view on Fedora, which is to be expected in a community of volunteers who all participate for their own reasons. However, the fact that they are all different is also a clue as to how focused the Fedora Project appears not only to insiders, but likely to outsiders, potential users and contributors as well. Though these are important things to review and consider as a community, there is also the danger of becoming too inwardly focused.

As one interviewee said:

"Fedora's greatest weakness these days is its navel gazing. The biggest topic within the Fedora community *is* the Fedora community." (Male, US, Age 25-34)

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