

Management Techniques for Grassroots I.T. Projects

Grassroots (noun) *the basic level of society or of an organization especially as viewed from higher or more centralized positions of power.*

The Miriam-Webster Online Dictionary

Abstract

This paper is a study of successful management techniques for grassroots I.T. projects. Several case studies of grassroots I.T. projects are examined. From these case studies several management challenges are identified and highlighted. The challenges are analyzed further and possible solutions are offered based upon the study successful projects.

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Introduction

With the advent of the PC, information technology (I.T.) has been steadily making its way out of government, university and corporate data centers and into the hands of ordinary people. Today, well-equipped PC's are available below \$500(US). Couple that with the availability of relatively inexpensive broadband Internet connections and many home users now have access to computing power that rivals that of a medium-sized enterprise. With all of this powerful technology in the hands of ordinary people, the popularity of grassroots I.T. projects is on the rise.

Just like grassroots political movements, grassroots I.T. projects start with ordinary people looking for a change. Today most I.T. products and services come from commercial vendors. Software companies license the use of software and Internet providers lease bandwidth with the expectation that they will make a profit. Many supporters of grassroots I.T. projects feel that the current business model does not adequately serve their needs and have decided to strike out on their own. Their reasons for doing so are varied. Some feel that the cost of licensing is too high or that the license agreements are too restrictive. Others are looking for additional features that they cannot find in commercial products. Whatever the reasons, more and more people are deciding to break away and start their own project.

Probably one of the best known and most successful examples of a grassroots I.T. project is the GNU/Linux operating system. GNU/Linux was borne out of frustration with commercial operating system offerings and its supporters have created a Unix-like system that is on par with the commercial Unix offerings. But there are many other examples of successful grassroots I.T. projects. There are projects involved in creating software applications like Open Office which has created an office suite to rival the commercial Microsoft Office. There are also community networking projects like the Champaign-Urbana Community Wireless Network that is designed to give an alternative to leasing Internet service from local telecom providers. There are even projects like Creative Commons whose members create content in the form of books, music and film that is unencumbered by restrictive copyrights.

Just like commercial I.T. projects, for every successful project there are many others that are doomed to failure. With commercial I.T. projects, many times project failure is due to poor management rather than a lack of skilled people. The same can be said about grassroots projects as well. This paper examines several grassroots I.T. projects in order to determine the special challenges that these projects face and best practices for

overcoming these challenges.

The Current State of Grassroots Project Management

Open Source / Free software development has become quite fashionable in recent times. Major I.T. players like IBM, Novell and Sun Microsystems are beginning to see that supporting Open Source software is a way to give their companies an edge in the marketplace and it is not uncommon to see Linux mentioned in mainstream news stories or advertised on network television. Because of this exposure, Open Source / Free software development is probably the most studied and best documented of any grassroots I.T. phenomenon.

A notable study in Open Source development is the Free/Libre and Open Source Software (FLOSS) Survey and Study conducted by the International Institute of Infonomics. This study provides some interesting statistics on the current state of Open Source / Free software projects. Some notable statistics are noted below. [1]

- Developers are well educated with 33% having obtained bachelors degrees, 28% holding masters degrees and 9% possessing PhD's.
- Almost two-thirds, 63%, are employed as I.T. professionals and 16% are students in I.T. related fields of study.
- Developers come from all over the world, but most are concentrated in the United States and Western Europe.
- The majority of developers (70%) spend no more than ten hours per week on their project.
- Most people start new projects or join existing projects with the hopes of gaining new skills and knowledge as well as the desire to share their own skills and knowledge.

Although the FLOSS study is concerned mostly with projects that involve programming and software development it is not entirely unreasonable to assume that some of the findings can be extrapolated to other grassroots I.T. projects as well. In order to validate this assumption and to gain more insight into these non-programming related projects additional study needs to be undertaken.

Case Studies

Several examples of successful projects are examined as case studies to gain a better understanding of how grassroots projects operate. These projects are listed below.

- C-U Wireless
- LAN Linkup
- Digitally Imported Radio
- The Mozilla Project
- The Open Office Project
- The Linux Documentation Project
- Linux Chix
- The Pocket Linux Guide
- The GNU/Linux System Architect Toolkit

Because Open Source software development practices are already well documented by the FLOSS study only two of the case studies listed above are programming projects. The remaining projects have a variety of goals. Some projects focus on providing network services, some concentrate on delivering content and others provide on-line communities. This mix of projects was chosen in an attempt to find results that can be applied to any type of grassroots I.T. project, not just software development.

It should also be noted that the case studies consist mainly of projects that are successful. There is only one project that can be classified as having failed and one that is struggling. Unfortunately, it is very difficult to find a failed grassroots project. Since grassroots projects are generally small they receive little attention unless the project becomes very successful. Failed grassroots projects tend to stay under the radar.

C-U Wireless

C-U Wireless, or Champaign-Urbana Wireless is a good example of a successful grassroots project. C-U Wireless is a community wireless networking project in Illinois. The project's mission is to provide community-supported Internet connectivity for the Champaign-Urbana area and to encourage community-owned, not-for-profit wireless networks in other cities around the world. C-U Wireless sees itself as an alternative to the incumbent telecommunications providers. [2]

Even though the project started in Champaign-Urbana it is quickly expanding to a national and international scale. Limits of wireless technology constrain the service offering to the local area, but many other parts of the project are not tied to one geographic area. CU-Wireless is starting a project site on SourceForge¹ to allow collaboration on the technology surrounding community wireless networking. C-U Wireless hopes to be able to aid other similar projects through the sharing of the technology and ideas. The project has also recently received several generous grants that will allow it to grow at a rapid pace.

LAN Linkup

LAN Linkup started off as a large scale wireless community network project. The project's goal was to connect the two coasts of the United States via a wireless network. The network was to be made up of common off the shelf 802.11 wireless gear purchased and maintained by volunteers. [3]

The project received a great deal of exposure in periodicals and on the Slashdot² website, a favorite web destination of geeks and I.T. enthusiasts everywhere. The project's website even suffered briefly from “the slashdot effect” a term used to refer to any short-term traffic jam at a website caused by the fact that a link to it was posted on Slashdot. No doubt many people were busy visiting the site to find out about this ambitious project and to offer their assistance.

Despite this incredible amount of exposure and surge of interest it appears that the project is no longer in existence. Recent visits to the project's website³ result in a “site not found” error message. The exact reasons for the project's demise cannot be determined, but it was certainly not due to a lack of interest.

Digitally Imported Radio

Digitally Imported (DI) Radio is an Internet radio station specializing in electronic dance music. DI Radio stands out from many of the other grassroots I.T. projects by the fact that DI is a for-profit company. However the company is currently in the pre-profitability stage and operates much like many of the not-for-profit projects.

1 <http://sourceforge.net/projects/wireless/>

2 <http://www.slashdot.org>

3 <http://www.lanlinkup.com>

The idea for DI started in late 1999 when Ari Shohat, the company's current CEO, offered the station's first trance music channel on the Internet. At that time the station was just a hobby using Ari's home computer and DSL line as a way to deliver music to the masses. Within six months of going "on air" di.fm started to attract a regular listening audience. People who like the music began volunteering to help out. A few people around the country offered to set up streaming servers to dedicate additional bandwidth to DI. Gifts of a faster CPU and more RAM are offered to boost the server capacity. DJ Dobby agreed to provide content for the station by offering his mixes for streaming on DI just because he "digs the idea of his mixes being played on radio." [4]

DI is currently trying to move away from reliance on donations to support the station and into a subscription-based model. DI still offers no-charge streams for its fifteen channels, but encourages users to subscribe to premium service as a way to show support for the station and its music. Premium subscribers get higher-bandwidth streams and priority access to dedicated servers. [5]

The Mozilla Project

The Mozilla Project has the unique distinction of being the first major corporate sponsored grassroots project. Mozilla started out as the Netscape web browser. In 1998 Netscape released the browser's source code to the public. [6] The idea was to turn over part of the development process to the end-users of the product. This radical move was in direct response to the rising pressure from Microsoft's competing Internet Explorer browser. Netscape hoped to create a better product with fewer company resources by relying on users to find bugs and suggest feature improvements. Given the fact that many Internet users are very techno-savvy this idea showed great promise. Netscape maintained administrative control over the development process and had final say in what features were included in the browser, but this was the first step to becoming a grassroots project.

The Netscape and AOL merger put Mozilla under control of AOL Time Warner up until July, 2003. On July 15th, 2003 AOL established the Mozilla Foundation as a separate legal entity. A grant from AOL of two-million dollars (US) started the Mozilla Foundation on its way as a not-for-profit company. The Foundation now relies on corporate and individual donations to stay solvent and continue development on the Mozilla browser and related projects. The Mozilla Foundation facilitates advancement of the project by maintaining developer forums. Individuals and groups can also use mozdev.org to start their own projects related to Mozilla.

OpenOffice

OpenOffice is similar to the Mozilla project in that it originally started as a corporate product and then changed hands. OpenOffice was originally called StarOffice and was a product of a German company called StarDivision. Since 1999 the StarOffice product has been owned by Sun Microsystems and OpenOffice is a spin-off of Sun's StarOffice product. The differences between the two products lie in the licensing, available features and support offerings. OpenOffice boasts an open source license, offers cutting edge features, but does not provide any formal support mechanism. [7]

The idea behind the division of the two products is to use OpenOffice as a testbed for new features and to leverage the talents and feedback of developers and early-adopters who are willing to forge ahead without the safety-net of a technical support phone number. Sun Microsystems is a primary sponsor of the OpenOffice project. Features and knowledge gained from the OpenOffice development are then incorporated into the StarOffice product. The StarOffice product offers a more stable release schedule and support services for end users. In return, users pay a licensing fee for StarOffice.

Linux Chix

Linux Chix is an organization dedicated to supporting and encouraging women in computing, specifically those who are interested in free and open-source computing. Deb Richardson started Linux Chix in 1999 as a community to discuss Linux and related topics. The goal was to create a forum in which users could feel comfortable asking questions and participating in discussions without being derided for asking “stupid” questions. In August, 2001 the project was handed off to Jenn Vesperman and has been under her management since that date. [8]

Linux Chix maintains a web site, several mailing lists, IRC chat rooms and also regional chapters where people can meet in person. Since members are from all over the world, a lot of interaction takes place over the Internet. In addition to facilitating discussions the Linux Chix Internet resources are used to offer structured courses in a number of topics related to computing. Courses have been offered in the areas of programming, networking and document markup. The project neither solicits nor receives funding so everything is run by Jenn, her husband or one of the Linux Chix volunteers who have offered to help out.

The Linux Documentation Project

The Linux Documentation Project (TLDP) recently celebrated an anniversary. September, 2003 marked ten years since the publication of the first Linux HOWTO document. Matt Welsh wrote the document entitled “Installation HOWTO” in 1993 as an attempt to fill the void of documentation surrounding the Linux operating system. Today The Linux Documentation Project is one of the largest Internet projects with hundreds of volunteers working together to produce good quality, free documentation for the Linux operating system. [9]

The Linux Documentation Project receives very little in the way of funding and relies almost entirely on donated Internet services and a volunteer staff. Most of the volunteers are authors who write the FAQ's, HowTo's and Guides. There is also a small core team consisting of reviewers, editors, language translators, infrastructure support and the like. Many of these people are authors who have volunteered to take on additional responsibilities. [10] Volunteers and potential new authors stay in contact primarily through discussions on the project's mailing lists.

The Pocket Linux Guide

The Pocket Linux Guide is an educational project designed to help people learn about the Linux operating system using a hands-on approach. The project started as one person's interest in the Linux operating system and discovering what goes on “under the hood.” The author decided to share his knowledge by creating web-based documentation and eventually offering the document to The Linux Documentation Project (TLDP). Once becoming part of TLDP the project rose from obscurity and reached audiences around the world.

Currently the Pocket Linux Guide⁴ is available English and Dutch language versions with translations being undertaken for the Italian and Japanese languages. Interestingly, none of these translations were commissioned by the original author; the translations were done by volunteers on their own accord. One reason that this is possible is because of the document's very liberal licensing clause. The Pocket Linux Guide is published under the GNU Free Documentation License. This license gives people the right to copy or modify the original document while the original author maintains the copyright and gets credit for his work. [11]

As the project has gained a larger following some changes have been implemented in the

4 <http://pocket-linux.sourceforge.net>

way the project is managed. The following changes have been implemented over the course of time:

- Introduced a mailing list to allow readers to help other readers work through the guide and troubleshoot problems. This has taken much of the workload off the author.
- Created a web site to be a central point of contact for the project. The web site houses news about the project as well as information about related projects.
- Currently in the process of consolidating the web site, mailing list and document releases using the SourceForge⁵ open source development site services.

The GNU/Linux System Architect Toolkit

The GNU/Linux System Architect Toolkit was originally designed a sequel to The Pocket Linux Guide, but has recently undergone a change in direction to become more of a tool and less about documentation. Part of the reason for the change is that the project was not very successful in the beginning and is still struggling to define itself. This happened in spite of the fact that the GNU/Linux System Architect Toolkit started out with all of the technical tools that helped the Pocket Linux Guide become successful.

The Keys To Successful Projects

Using the case studies it should be possible to identify some sort of “secret formula” that makes a grassroots project a success. What is it that the successful projects share and the failed or struggling projects lack?

Is It Money?

At first glance one might say that money is the answer. After all the biggest projects, Mozilla and OpenOffice seem to have plenty of money at their disposal. C-U Wireless is starting small, but has recently secured a large grant allowing it to grow rapidly. Could the secret formula simply be that money equals a successful project?

Money can be essential when it comes to paying the bills. For example, DI Radio plays music over the Internet. This music is usually copyrighted and as recent news stories have shown, the music industry definitely wants their slice of the pie when it comes to music and the Internet. So DI Radio is faced with the cost of paying royalties on the

⁵ <http://sourceforge.net/>

music it plays. [12] DI Radio offsets these costs by accepting donations and offering paid subscription services. Without money the music will stop. Paying royalties only applies to projects delivering copyrighted content, but other projects may incur similar costs. Very often, Internet service and web site hosting bills are among the primary reasons that grassroots projects need money.

Money can be useful, but is not always the secret formula. Consider The Linux Documentation Project (TLDP). This project is very successful and it operates without the need for cash coming in. TLDP provides copyrighted content just like DI Radio, but the difference is that the documentation provided by TLDP is written by volunteers and copyrighted in a manner that does not require the payment of royalties. By relying on the energies of motivated volunteers TLDP can get by without seeking out donations. TLDP operates so well without income that when people do offer to make a donation there is some difficulty deciding what to do with the money.

Beyond not needing money, it is possible that money can have a constraining effect on a project. In the Brian DePalma film Scarface, Al Pacino's character Tony Montana uttered the words, "First you get the money, then you get the power." Even though he was not referring to I.T. Project management his words still ring true in many respects. The person with the checkbook usually gets his way. With corporate sponsored projects, the parent corporation has final say in the direction the project will take. The same is true to some degree in Foundation sponsored projects. The Mozilla project is an example of a project that has had a variety of sources of income. It has run the gamut from corporate-owned to corporate-sponsored to a user-supported foundation. Many times the desires of the sponsor and the desires of the user run along the same path. Both AOL, Mozilla's one-time corporate sponsor, and the end-user of Mozilla were interested in producing a high-quality, feature rich browser. However if a conflict of interest should arise in such a project you can bet that the person with the checkbook will win.

While it can be seen that money is very helpful in some cases it is not the secret formula for the project success. So if money is not the ultimate answer, what is?

Identifying The Customer

One way to create a successful project is to attract good people to it. Grassroots I.T. projects often rely on the efforts of volunteers to make the project a success. DI Radio's listeners were the first ones to offer donations of bandwidth and hardware. TLDP's authors are Linux enthusiasts themselves who benefit from the documentation that they help produce. A project that has a clear idea of their customer and their customer's needs

will be the most successful in the long run.

The Linux Chix project provides an excellent example of good customer focus. On the surface Linux Chix does not provide anything that cannot be found elsewhere. The project homepage boasts on-line courses, written documentation, FAQ's, announcements about conferences and discussion groups. Numerous web sites offer the same types of services, so what makes Linux Chix any different? The answer is customer focus. According to the web site, Linux Chix exists "for supporting women in computing." This statement sums it all up in terms of identifying the customer and the focus of the project naturally follows this goal. The courses, documentation and discussion groups are all aimed at supporting women in computing, the Linux Chix customer.

When a project delivers for its customers, those customers tend to reciprocate by offering donations to defray project costs or volunteering their time and energy to help the project along. This in turn helps the project grow and attract more people to it both as consumers and as producers.

Good Management

When people are attracted to a grassroots I.T. project they will want to help. Some people will offer specific suggestions, often pointing out errors in content or spelling and grammar. Others will offer general ideas about how to expand the scope of the project. It is up to the project manager to guide these energies. A first time project manager may be surprised and perhaps overwhelmed at the volume of feedback concerning the project. But considering the fact that most grassroots I.T. projects make heavy use of the global Internet the potential audience for any one project is truly vast. The project manager is faced with a wealth of interesting challenges.

- Dealing with global teams
- Channeling the energies of volunteers
- Controlling the scope and growth of the project
- Making good use of limited time
- Finding ways to promote the project

Unfortunately, most people starting up a grassroots I.T. project are not experienced project managers and these tasks can seem daunting. But, the novice project manager is

not alone in these challenges and is able to learn from the others who have already been down this road.

Tips For Successful Project Management

“Learn all you can from the mistakes of others. You won't have time to make them all yourself.” ~Alfred Sheinwold, author

The case studies have given a glimpse of several successful projects and a couple of struggling projects. The insights offered by those projects and their project managers can be very useful in finding ways to face the challenges presented to those undertaking a project for the first time. Given that most people will have less than ten hours per week to devote to their project [1] it would seem wise to build upon the knowledge of others.

Time Management

There is a saying among business people that “time is money.” There is a saying among the Rastafarian people that “time be time, mon.” Time management in grassroots projects is somewhere in the middle of these two truisms. Time cannot be equated to money when a project is being undertaken by a volunteer workforce. Time is not money, time is time. But considering the fact that most developers devote ten hours per week or less to a project [1], time is a valuable resource and needs to be managed effectively.

Understanding Geographically Dispersed Teams

Most grassroots I.T. projects have a strong Internet presence and as a result tend to attract people from all around the world. This has both advantages and disadvantages. On the up side, it is much easier to find people who are interested in helping the project when one draws from a large pool. On the down side, an international team presents many challenges that are not present when dealing with people in a local setting.

Language Barriers

One of the most obvious challenges to international communication is the language barrier. It is impossible to exchange ideas without using a common tongue. Many International I.T. projects reach a wide audience by primarily using the English language. This has absolutely nothing to do with the technical aspects of the language. Rather it is

due to the wide spread use of English in the world, particularly on the Internet.

In terms of the number of people in the world who speak a particular language English is second only to Mandarin. [13] In terms of languages used on the Internet English holds the number one position. British colonialism is largely responsible for the spread of the English language to various regions of the world. English language dominance on the Internet is due to the fact that Internet technology was invented in the United States and that a large majority of web traffic still originates from inside the borders of the US. [14] Whether English dominance on the Internet is seen as a beneficial common language or just another example of American Imperialism is a debate that may never be settled. The fact remains however that currently the English language can reach the largest number of people on the Internet. Even though English is widely spoken on the Internet many times it is as a second language. There can be barriers to understanding. For example, the use of slang and colloquial expressions does not translate well.

When a project becomes large enough it can be beneficial to have tools like web sites and mailing lists available in multiple languages. The Linux Documentation Project, for example, offers information in over forty languages. Generally these efforts are headed up by a volunteer or group of volunteers who are native speakers of the language and are able to translate from English or other languages. Even though these people are very skilled at translating it is not always an easy task. Project managers will sometimes need to assist in clarifying certain idiosyncratic words and phrases.

Cultural Challenges

Just because people use the same words does not mean that they are speaking the same language. Cultural differences can obscure the meaning of what is being communicated. A good example comes from The Linux Documentation Project mailing list. When someone once said, “we should not sell the skin of the bear before it is caught,” many people were left scratching their heads. It did not take long for someone else to translated this into the expression, “don't count your chickens before they hatch,” but the effect was interesting. What seems very plain to someone from one culture may not be obvious to those outside of that culture.

Culture is one of those things that everyone experiences, but no one notices. When people think or act in a certain way, but don't know why except that it has always been this way, that is culture. Many international corporations will have some sort of cultural sensitivity training. For example, American employees in a Japanese firm may need to learn about the importance of seating arrangement at meetings. The American tendency

to choose a seat more or less at random can be confusing to a culture that chooses seating based upon hierarchy within the company. While seating arrangements may not seem important to a grassroots I.T. project that will probably never meet face-to-face the effects of culture should not be ignored. A good project manager should always be aware of cultural differences and ask for clarification if something does not make sense.

In addition to traditional cultures based on geographic location there are also a number of subcultures. Miriam Webster's dictionary defines subculture as "an ethnic, regional, economic, or social group exhibiting characteristic patterns of behavior sufficient to distinguish it from others within an embracing culture or society." Examples of some of today's popular subcultures include Geek, HipHop, Goth and New Age. But there are also less publicized subcultures. According to the definition one could say that engineers and managers make up different subcultures. This subculture difference is frequently the subject of Dilbert comic strips. The existence of subcultures can create communication difficulties and may make the participants think that they are not speaking the same language. For example imagine an engineer trying to explain a new high-tech product to the company finance manager. Most likely the conversation will end with the engineer thinking, "for a guy with an MBA he sure is dense," and the finance manager thinking, "why do these propeller-heads always try to confuse people with their jargon." Even if they are both intelligent people, speak the same language and grew up in the same country they may still have trouble understanding each other. Good project managers should not be quick to dismiss someone as stupid or rude. Ask for clarification if it is needed.

Limits of Written Communication

Many times language and cultural barriers are compounded by the shortfalls of written communication. Most day-to-day communication is done face-to-face. This has many advantages when it comes to getting a point across. People can use words, inflections of voice, hand gestures to send a message. Receivers of the message can interpret these signals plus any unconscious body language that may be sent in order to piece together what the sender is trying to communicate. In stark contrast with face-to-face communication, written communication methods are largely one dimensional. Certain concepts like emotions, humor and sarcasm are sometimes difficult to convey using only written methods.

It is often easier to understand the nature of the written message when certain clues are given as to the author's state of mind. One popular way to do this is through the use of emoticons. The word emoticon comes from a melding of the words emotion and icon

and is a combination of characters used to represent an emotion or feeling. A well-known example is the smiley which can be expressed as :^) or :-) in an email or chat message. Tilting the head left reveals a crude representation of a smiling face. These combinations of characters can be used to convey happiness, sadness, silliness or various other states of mind when delivering a message. However as is the case with communication in general, differences in culture can lead to different emoticons. The smiley examples given above are typical in Western countries, whereas East Asian countries tend to use different character combinations. For example, a Japanese style smiling emoticon is represented as ^_^ or ^.^ and are viewed head-on rather than tilting the head to the left. [15]

Even with the help of emoticons and an appreciation for cultural differences there may still be times when it is difficult to convey a specific meaning via email or chat. When these situations arise it is best not to make assumptions. Ask the originator to clarify the message. Even though it may seem ignorant or too time-consuming to ask, “is this what you really mean?” it can save time in the long run. Time spent bantering back and forth over a misunderstood email is time taken away from moving the project forward.

Managing Volunteer Staff

Small projects that wish to grow beyond what a single person can accomplish need to enlist the help of volunteers. The Pocket Linux Guide case study provides a good example of successfully leveraging the energies of volunteers to help move the project along. Not only have volunteers done international language translations, but several individuals have suggested improvements to the content of the document via the project mailing list. Interestingly none of the volunteers was recruited. In the case of the language translations each individual undertook the task without any prompting from the author. The mailing list suggestions were also spontaneous usually in the form of “Hey, this is good, but I've got an idea that could make it better and I'd like to share.” Given this kind of participation the Pocket Linux Guide author takes on the additional role of volunteer coordinator. However, considering the alternative of doing all of the work himself, volunteer coordinator is not necessarily a bad responsibility to take on.

People volunteer for a variety of reasons. According to the FLOSS study, most Open Source developers volunteer with a desire to share knowledge and skills with others as well as to gain knowledge and skills for themselves. This is not an unusual motivation for volunteers. But, there are other reasons that people may want to volunteer and understanding these reasons can help project managers retain good talent.

Volunteering is nothing new. Many non-profit, charitable organizations rely heavily on

volunteers to help achieve the goals of the agency and much can be learned by studying these types of groups and their understanding of the volunteer workforce. Some of the reasons people volunteer for charities include the following: [16]

- to demonstrate commitment to a cause/belief
- satisfaction from accomplishment
- because there is no one else to do it
- to do something different from your job
- because of personal experience with the problem or cause
- to gain status

When a project has good exposure, volunteers will offer to help out. A grassroots project manager simply needs to guide those who choose to volunteer. Remembering why people volunteer can help a project leader offer encouragement and motivate those who offer their assistance. Even though many people are willing to help for reasons other than personal glory, it never hurts to give some recognition to people's contributions. Most projects feature an acknowledgment or thank-you section on their web sites that lets volunteers "see their name in lights." Project web sites can also be used as a way of letting potential volunteers know the goals of the project. Many project web sites include a section entitled "how you can help" or something similar. This is very important as it can help keep people focused on the same goal so that the project does not stray off course.

As projects become larger and more people offer their assistance one of the most important duties of the project manager is to know when to say "no." In other words, a project should not accept contributions just because they are offered. The case study of The Linux Documentation Project reveals that there are literally hundreds of volunteer authors contributing to the project. However, TLDP does not accept documentation from anyone with a word processor and some free time. There are some guidelines set up for authors that include the following processes:

- Peer review of topic and content
- Reviews for technical accuracy
- Grammar and language review

Only when the document passes this review procedure is the author's work accepted into the collection. TLDP's approach can be abstracted and used as a template for other projects as well. Peer review and checks for technical accuracy are a useful for any project. Processes like this can also be useful for creating hurdles that can take a large number of volunteers and find those who are really serious about contributing. If for example an individual has put some serious thought into his contribution he will probably not be put off by the idea of a peer review. However if that person's motivation is simply to say "look at me I'm part of the big project," he will quickly change his mind upon finding out that actual work is involved.

Taking an Incremental Approach

There is an old axiom that states "you must learn to crawl before you can walk." This is a very good thing to keep in mind when managing I.T. projects. Several studies have been done, including Barry Boehm's Spiral Development model, the Rapid Application Development (RAD) model and the more modern Agile Processes model, that illustrate this point. The ideas put forth in these models can be especially useful when dealing with grassroots I.T. projects.

Projects that try to accomplish everything in a linear fashion are almost always doomed to failure. The best approach is to break the project into small, manageable steps with each new step building on the previous one. This approach holds several advantages for grassroots projects.

- Quickly achieve tangible results
- Keep time commitment small and manageable
- Maintain project continuity as team members come and go

The benefits of using an incremental approach can be illustrated by comparing two grassroots wireless network projects. One project is the very ambitious LAN-Linkup⁶ with the goal of creating a coast-to-coast wireless network. [17] The other project is C-U Wireless⁷ that has an immediate goal of providing connectivity to a small area of Champaign-Urbana, IL and a long term goal of expanding community wireless networking to other areas across the country.

6 <http://www.lanlinkup.com>

7 <http://www.cuwireless.net>

Currently the C-U Wireless project has implemented eight hot-spots to provide wireless coverage to an area around Lincoln Square in downtown Urbana, IL. After implementing the first hot-spots C-U Wireless has designed a solid, custom wireless access point that can be leveraged for future expansion. [18] On the other hand, LAN-Linkup appears to be defunct. Information concerning the status of the LAN-Linkup project could not be obtained since the project's website is not responding after repeated attempts. Abandonment of the project is a likely explanation for the lack of web presence.

Marketing the Project

“If you build it they will come,” is what Kevin Costner's character was told in the 1989 film *Field of Dreams*. While this might apply to building baseball fields in Iowa it holds no truth in grassroots I.T. projects. In fact, it is far more likely that if you build it, it will get lost forever in clutter of the global Internet. Even the best project can be consigned to obscurity without some marketing efforts.

Getting the Word Out

Many grassroots I.T. projects can spread by word of mouth (or word of email) and only need a tiny nudge to get going. But with the increasing number of such projects it is often difficult to make one project stand out from the crowd. Some ways of getting a project into the spotlight are listed below.

- Use a project hosting site for development
- List the project in an Internet directory or search engine
- Submit the project to a portal site

Project Hosting Sites

Projects can attract both developers and users by using a project hosting site like SourceForge⁸, Savannah⁹ or GForge¹⁰. Project hosting sites like these are free of charge provided one agrees to the terms of use. Generally the terms are agreeable and simply exist to make sure the projects being hosted on the site exist to serve the community interest.

8 <http://sourceforge.net>

9 <http://savannah.gnu.org>

10 <http://gforge.org>

Hosting sites provide web space, mailing lists and version management systems to aid collaboration between project managers and volunteers. But they also provide a number of services for potential customers of projects. For example, most project sites offer some sort of download services. This allows software projects to give people easy access to the latest releases of software or other files related to the project. Project hosting sites also have a section for news and announcements on each project's home page as well as on the site's main page. But perhaps most importantly these sites offer keyword searching capability that lets visitors quickly find what they are interested in even if they have never heard of the project by name.

Internet Directories and Search Engines

There is a vast amount of information available on the Internet today, much more than one person could ever hope to keep track of. Because of this, most people rely on search engines to find what they want. Getting listed in a search engine or directory can help spread the word about a project. Even though there are many search engines to choose from it is not uncommon that these sites will share listings. Whether this sharing is through voluntary cooperation for the good of the Internet community or through corporate espionage in an attempt to maintain an advantage over competing search engines is unknown. The fact remains however that listing in one search engine often results in listings in other search engines. The trick is to find the directory that does not charge a fee to expedite the listing. The dmoz¹¹ open directory project is one such site.

Web Portals

Web portals are very common on the Internet. Examples of portals include sites like Yahoo! and MSN. These sites offer news, stock quotes, Internet searching and a variety of other services all through one front-end site. There are also specialized portals like WebMD. WebMD does not offer general services like Yahoo! and MSN, but rather it limits its scope to medical information. Specialty portals like this have a distinct advantage over general purpose portals when it comes to searching because of their limited scope.

Grassroots I.T. projects can gain exposure by becoming part of a portal site dedicated to similar projects. The Linux Documentation Project is a good example of a portal site. Its web site¹², provides a front-end to documentation surrounding the Linux operating

¹¹ <http://www.dmoz.org/>

¹² <http://www.tldp.org>

system. Other examples of portals include MozDev¹³, for projects related to the Mozilla browser, and FreshMeat¹⁴ for general open-source software projects. Many times a portal site will be the first destination for people who have a general idea of what they are looking, but are not familiar with the existence of a particular project.

Go Forth and Become Successful

Starting a grassroots I.T. project can be a great way to learn, share, have fun and help others. Going forth armed with a few simple management techniques can increase the chances of having a successful project and also make the whole experience much more enjoyable.

Find a Clear Direction

A project cannot be successful without knowing where it is going. The first step to success is to establish a clear direction for the project. Think about who can benefit from the project and focus on how to provide them with a great product. It is not necessary to have all of the details worked out in advance, but the general idea should be established. Be prepared to communicate this vision to others.

Build Your Team

Realize that time constraints do not permit one person to take on all responsibilities of the project. Successful projects will need to leverage the efforts of others in order to grow. Many times a project's customers make the best developers. Encourage participation of volunteers while at the same time staying focused on the project goals. As the team grows, keep in mind that Internet collaboration has limitations and be aware of potential barriers it presents to effective communication.

Grow In Stages

Do not fall into the trap of trying to do everything from the outset. Chances of success are much greater when a project is broken into several small steps with each step building upon the previous one. Make sure the steps are aligned with the overall goal of the project and do not be hesitant to make changes and corrections as the project progresses.

¹³ <http://www.mozdev.org>

¹⁴ <http://freshmeat.net/>

Promote The Project

Leaving things to chance and waiting for people to discover a project can result in perpetual obscurity. Take some time to promote the project. Use the resources offered by project hosting sites, Internet search engines and web portals.

Enjoy The Experience

Being a grassroots I.T. project manager can be a very rewarding. Remember to enjoy the experience. Watching a project grow and become successful can be very satisfying. And the experience of sharing knowledge and working with people from around the world to accomplish a common goal is something to be cherished.

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Appendix A: Interview Transcripts

Several project managers were interviewed as part of case studies. The goal of the interviews was to gain further insight into the management techniques used for the various projects. The following questions were sent to the project managers in an unsolicited email:

General Questions

What is the name of the your project?

What is the primary focus of your project?

Does the project receive any funding? If so, from what source.

Do you consider your project to be successful?

About the Team

About how many people work together on the project?

If not more than one, skip the next three questions.

Have any of the team members met face-to-face?

Are team members primarily from one geographic area?

What are the primary tools that the project uses to help team members collaborate? (for example: project web page, mailing lists, CVS repository, bug tracker, etc.)

Advice

What is your motivation for working on the project?

What are the major obstacles your project has encountered?

How did you overcome these obstacles?

If you could give advice to a someone starting a new project, what would it be?

Note

A few of the interview answers were filled in by the author prior to contacting the project managers. This was done to speed up the interview process and to take some burden off of the interviewees. Pre-filled answers were obtained from the project's web site, mailing

list archives or other publicly available source. The source of the information noted in square brackets after the pre-filled answer. The interviewees were informed of this practice and asked to verify the answers for correctness and add comments as needed.

Below are the raw contents of email communications between the author and the various project managers.

The Linux Documentation Project – Tabatha Marshall

On Mon, 2004-02-16 at 18:30, David Horton wrote:

```
> Tabatha,
>
> I am doing some research for a paper covering what I refer to as
> "grassroots I.T. project management" a.k.a. "how do you make an I.T.
> project work without the traditional motivation of money." Since TLDP
> is pretty successful and you seem like a person who has "got it
> together" I was hoping to ask you a few questions about TLDP and your
> own personal project management style.
>
> I have attached a short list of questions with some of the answers
> already filled in from what I could gather from the web site. If you
> have time I would appreciate it if you could verify what I filled in and
> also add your own comments to the other questions.
```

Hi David,

Thanks, I'd be glad to! See below for my responses, and give me a holler if you need further clarification on anything. I don't mind a bit. :D

```
> General Questions
> -----
>
> What is the name of the your project?
> The Linux Documentation Project
>
> What is the primary focus of your project?
> Developing free, high quality documentation for the GNU/Linux operating
> system. ['manifesto' section of website]
>
> Does the project receive any funding? If so, from what source.
```

The only funds that I know of are those proceeds coming from the LDP merchandise (we're all still begging for coffee mugs!). We've had many folks offer donations, but there doesn't seem to be any final person to decide how anything should be spent.

```
> Do you consider your project to be successful?
```

I think it's more successful than people give it credit for, due to the variety in the collection (even obsolete documents have historical value). However in order to be 100% successful some new processes and ideas would have to be adopted, and change can be difficult.

>
> About the Team
> -----
>
> About how many people work together on the project?
> Hundreds [from 'volunteers & contacts' section of website.]

Including the authors, that sounds about right.

> Have any of the team members met face-to-face?

There have been some meetings, such as the one in Metz (I can forward you a link from Gylhem Aznar for pics), but unfortunately many of us have not had the pleasure of meeting.

> Are team members primarily from one geographic area?
> No. [judging from mailing list]

We seem to be incredibly diverse, which is a good quality for such a project to have. :D

> What are the primary tools that the project uses to help team members collaborate? (for example: project web page, mailing lists, CVS repository, bug tracker, etc.)

Currently web pages, CVS repository, mailing lists, and scripts to process the source into the various formats. We are hoping to have a better system in the future, but have no firm ETA on that.

>
> Advice
> -----
>
> What motivates you to work on the project?

1. A desire to give back in some small way to Linux for giving me a free OS.
2. To keep my editing skills sharp, because as a writer, I don't want to be afraid to hack up my own work!
3. To make friends with people all over the world where we are guaranteed to at least have our geekness in common!

> What are the major obstacles your project has encountered?

Lack of a backend system to automate all of the processes, which are currently handled manually.

> How did you overcome these obstacles?

We haven't yet. We currently have a core group of volunteers that are dedicated enough to make sure the documents are put through all the necessary stages.

> If you could give advice to a someone starting a new, similar project, what would it be?

Someone starting out should consider making sure the right type of system is in place from the beginning, to automate everything possible. At the beginning of the LDP project, such tools weren't easy to provide online, but they certainly are now. We need databases for documents, authors and staff, flags for review and other various stages of a document, and simple online tools for authors who don't know how to create markup so they can still develop their work.

I'll leave you at that for now. I'm off tomorrow to pick up my kids from visiting their dad and will be gone all day, but if you need any other details, leave me email and I'll respond after I'm back!

Thanks for thinking of me!
Tab

--
Tabatha Marshall
Web: www.merlinmonroe.com
Linux Documentation Project Review Coordinator <http://www.tldp.org>
Linux Counter Area Manager US:wa <http://counter.li.org>

Linux Chix – Jenn Vesperman

On Tue, 2004-02-17 at 13:06, David Horton wrote:

```
> Hi Jenn,  
>  
> I first heard about Linux Chix through The Linux Documentation Project  
> mailing list. You seem to head up a very together group of people!  
>  
> I was wondering if I might ask you a few questions about Linux Chix and  
> the dynamics of your team. I am doing some research for a paper on what  
> I call "Grassroots I.T. Project Management". In other words I am trying  
> to find out how successful projects make things work without the  
> traditional motivation of getting paid to do it.  
>  
> I've attached a short list of questions along with some of the answers  
> that I found from the web site. If you have time I'd appreciate it if  
> you could verify the answers I found and also fill in the missing parts.  
>  
> Thanks,  
> Dave  
>  
> P.S. More info about the paper is at:  
> http://my.core.com/~dhorton/school/infs-495/proposal.pdf  
>  
>  
> -----  
> General Questions  
> -----  
>  
> What is the name of the your project?  
> Linux Chix [website]  
>  
> What is the primary focus of your project?  
> A group for supporting women in computing, specifically in Open Source/Free  
> Software/Software Libre computing. ['about' section of website]  
>  
> Does the project receive any funding? If so, from what source.
```

No, it's wholly paid for by my husband and I.

```
> Do you consider your project to be successful?
```

Yes.

```
>
> About the Team
> -----
>
> About how many people work together on the project?
> 40 ['meet the chix' section of website]
```

'Meet the chix' is updated when the members choose to update it. It's not at all a list of volunteers, it's a list of members.

The website is inaccessible to me right at this moment, but there's a page in 'About Linuxchix' which covers who does what. That's accurate for the list of people actively working to make it happen.

There are about 400 chix on the largest mailing list (techtalk). That's fairly accurate for membership.

```
> Have any of the team members met face-to-face?
```

Yes, occasionally at conferences. There are also linuxchix chapters.

```
> Are team members primarily from one geographic area?
```

Yes. Earth.

Beyond that? We have very few members from Antarctica.

```
> What are the primary tools that the project uses to help team members
> collaborate? (for example: project web page, mailing lists, CVS
> repository, bug tracker, etc.)
```

Mailing lists.
IRC.

```
> Advice
> -----
>
> What are the major obstacles your project has encountered?
```

Surprisingly, the largest obstacle has been men. Well-intentioned men, in fact.

Men who come in 'to show the girls what to do'
Men who come in 'to answer technical questions'
Men who come in and interrupt serious discussions with questions like 'does that really happen?'

> How did you overcome these obstacles?

Primarily, we wrote FAQs. 'does that really happen?' and similar questions are now answered in the Issues FAQ, and men who ask get pointed to the FAQ and told 'if that doesn't answer you, please start a new subject heading and ask a clarification question'.

The technical expertise demonstrated on the mailing lists and in other FAQs has minimised the 'being told what to do/answering technical questions' problem. And yes, this is a problem. Part of our mandate is to demonstrate to novice women that women can be highly technical - if most of their questions get answered by Toms and Dicks and Harrys, how does that help them believe that Tammys and Dianes and Helens can do it?

> If you could give advice to a someone starting a new,
> similar project, what would it be?

Just do it.
Don't try to do everything yourself. Find good people, let them do the tasks they offer to do, and stand back.

Jenn V.
--
LinuxChix Coordinator <jenn@linuxchix.org>
LinuxChix

Digitally Imported – Ari Shohat

Hi David, my replies:

General Questions

What is the name of the your project?
Digitally Imported Radio (www.di.fm - Digitally Imported, Inc)

What is the primary focus of your project?
Internet radio service specializing in Electronic Dance Music

Does the project receive any funding? If so, from what source.
In the past donations for the most part financially. We still receive donations of bandwidth for our free streams - but late last year we switched over to Premium subscriptions which don't rely on donations.

Do you consider your project to be successful?
Yes, depends on how you measure success, but at this point either way it's a yes.

About the Team

About how many people work together on the project?

Just a few employees and a dozen volunteers telecommuting from all over the world.

Have any of the team members met face-to-face?
Yes, eventually the major team players met each other a few times at least.

Are team members primarily from one geographic area?
No they are from different states and even countries.

What are the primary tools that the project uses to help team members collaborate?
Email and especially instant messenger programs, and sometimes also forum boards optionally.
Phone use is rare.

Advice

What motivates you to work on the project?
Seeing something come alive, grow, and enabling people to enjoy it as a result.

What are the major obstacles your project has encountered?
Not relying on any investors has been a great obstacle. It means you aren't growing as fast as you possibly could, and depending on your industry timing could make or break you.

How did you overcome these obstacles?
Put in a lot of personal hours (years) while working another job, along with other volunteers. Also when you don't have investors, you can choose not to squeeze every little penny out of your venture. This makes your project (at least on the internet) more friendly, which has a higher chance of people donating back as a thank you. And that has been crucial for our initial growth.

If you could give advice to a someone starting a new, similar project, what would it be?
First of all - love what you do. If you are in it just to make money, chances are it will not work out in the long run.
Second of all, don't get discouraged by not being able to figure out how to pay for growing pains (such as bandwidth) way in advance. In other words, don't worry about being able to support a skyscraper if all you are getting for now is an apartment.
Many people are discouraged only because they know the level they want to reach, and they cannot figure out how to exist at that level.

Thank You,

Ari Shohat
CEO / Founder
Digitally Imported, Inc
<http://www.di.fm>

> -----Original Message-----
> From: David Horton [<mailto:dhorton@speakeasy.net>]
> Sent: Monday, March 01, 2004 5:57 PM

> To: ari@digitallyimported.com
> Subject: A few questions about managing di.fm
>
> Hi Ari,
>
> I am doing some research for a paper covering what I refer to as
> "grassroots I.T. project management" a.k.a. "how do you make an I.T.
> project work without the traditional motivation of money." I realize
> that di.fm is technically a for-profit company, but it seems
> to be very
> successful in it's current, pre-profit, state. Given this success, I
> was hoping to ask you a few questions about DI and your own personal
> project management style.
>
> I have attached a short list of questions with some of the answers
> already filled in from what I could gather from the di.fm web
> site. If
> you have the time I would appreciate it if you could verify what I
> filled in and also add your own comments to the other
> questions. Also
> feel free to add any other comments you think would fit.
>
> And thanks for all the great music!
>
> Dave
>
> P.S. For more details on the paper see:
> <http://my.core.com/~dhorton/school/infs-495/proposal.pdf>
>
>
>

C-U Wireless – Sascha Meinrath

Hi Dave,

Below are answers to your questions.

On Mon, 1 Mar 2004, David Horton wrote:

> Hi Sascha,
>
> I came across C-U Wireless about a year ago while looking for wireless
> community networks in my area (Chicago Suburbs). Unfortunately we have
> nothing as cool in our area as what you guys have. However, I am still
> facinated by the idea of community networks.
>
> I am doing some research for a paper that covers what I call "grassroots
> I.T. projects" which is another way of saying "project teams that are
> motivated by something other than money." I would consider C-U Wireless
> to be a good example of a successful grassroots I.T. project and I was
> hoping that you would have time for a few questions to help my research.
>
> I have attached a text document with a short list of questions. Some of
> them I have already answered from information on your website. I would
> appreciate it if you could take the time to look over what I have filled
> in and to add your own thoughts to the other questions.
>
> Thanks,
> Dave
>

> P.S. For more details on the paper see:
> <http://my.core.com/~dhorton/school/infs-495/proposal.pdf>

General Questions

What is the name of the your project?
Champaign-Urbana Community Wireless Network
[website: <http://wireless.cu.groogroo.com/>]

What is the primary focus of your project?

To connect more local citizens to the Internet; develop open-source hardware and software for use by wireless projects around the world; and, build and support community- owned, not-for-profit broadband networks in cities and towns throughout the world. [website]

Does the project receive any funding? If so, from what source.

Donations from participants. In-kind donations from local organizations, the University of Illinois, Acorn Active Media Foundation, OJC Technologies, etc. Two grants (thus far): \$4,500 from Threshold Foundation (Summer 2003); \$200,000 from Open Society Institute (Spring 2004).

Do you consider your project to be successful?

It has been highly successful -- we've been able to build on early successes and the project continues to have technological breakthroughs. By the Summer of 2005 we will have built the most advanced community wireless network on the planet.

About the Team

About how many people work together on the project?
Assuming dozens judging from size of network map. [website]

There are about a dozen core members who are working daily on the project. The extended list of people working on the project is now over 130.

Have any of the team members met face-to-face?

Probably yes, since there appear to be regular meetings at the Independent Media Center (IMC). [mailing list archive]

We now have a weekly meeting for core developers; a monthly meeting for the larger development team; and a monthly meeting for new folks who want to get involved.

Are team members primarily from one geographic area?
Yes, Urbana-Champaign metro area. [website]

Actually, no, the core development team is currently from the area; but we now have people giving input from across the United States and internationally.

What are the primary tools that the project uses to help team members collaborate? (for example: project web page, mailing lists, CVS repository, bug tracker, etc.)

Mailing lists and ad-hoc (and now formally scheduled) meetings are the main organizing tools we've used to date. We've just implemented a subversion (similar to CVS) repository, are working to get our SourceForge page up and running, PR tracking, etc. By Summer 2005 we'll be in full swing.

Advice

What are the major obstacles your project has encountered?

Lack of time.

How did you overcome these obstacles?

The OSI grant (\$200,000) will allow us to pull developers onto the project full-time.

If you could give advice to a someone starting a new, similar project, what would it be?

Start small, but leverage each step into something larger. For two years, we worked continually on the project and paid for things out-of-pocket. We were able to get the Threshold Grant, which we then leveraged into the OSI grant. Now we're looking to bring on the City of Urbana and build a permanent, sustainable community resource. After that we'll be looking to get other communities to build these sorts of networks around the globe.

--Sascha

--

Sascha Meinrath		
Project Manager & President	*	Project Manager
Acorn Active Media Foundation	***	Eggplant Active Media
www.acornactivemedia.com		