Chapter 5
Exploratory Analysis of Free and Open Source Software Ecology

ABSTRACT

Shared repositories provide a host of services to start and sustain a FOSS project. They also share the details of projects with researchers. Sourceforge.net is a popular and populous forge with total number of projects exceeding 400,000 and developers counting more than 3 million as of Jan 2015. The evolution of this forge is studied and it was found that there is a small slide in the number of developers since September 2011. The existence of power law in Sourceforge.net is confirmed. The visualisation of developer relations reveal that there is a separate core and periphery groups of developers in Sourceforge.net and this trend was found to repeat in other forges like Freecode and Rubyforge.

INTRODUCTION

Free and Open Source Software (FOSS) is characterised mainly by its licensing terms. The Free Software licences and Open Source licences, though different in their relationship with commercial software, together provides an alternate model of software distribution. But FOSS is also important for the development model it follows. The success of FOSS lies in demonstrating the feasibility of developing a complex artefact like software by involving

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global set of volunteers and using Internet as a communication medium. Ranging from a lone developer to literally tens of thousands of people and organisation, FOSS ecology today is probably world's largest virtual software development entity. But it is not necessary that any person or organisations who want to develop FOSS must follow this process. They can develop the software in-house without involving public but still release the software under FOSS licences.

Given the advantages of public participation model as demonstrated by success of GNU-Linux, many FOSS projects are developed in similar way. In the early days of GNU project and even during the initial stages of GNU-Linux development, the project leader would normally release the source code to public. Interested people would download, use, test, find bugs and then either reported or send fixes to the leader. The leader would have final say regarding the inclusion of bug fixes and new features. This model of development is still followed today but in place of a single leader there is a team which is normally formalised in all mature FOSS projects.

One of the major contributions of FOSS which is normally understudied is how much it has contributed towards the system and software development tools. Given the fact that most developers are mainly involved in FOSS to write software for their own use, this is quite natural. The growth of Internet coupled with the spread of computers during late 1990's enabled much larger participation in FOSS projects. This necessitated a mechanism which can automate the build and release processes. Separately there was a need for a communication platform beyond usenet and irc which could connect developers and end users. Bug reporting, feature request and general support also needed to be supported. Therefore, FOSS projects slowly started moving away from niche environments to public platform like Internet.

Mature and popular projects mostly host their projects in dedicated websites which support a range of features for efficient project management. Almost all technical and pubic communication details of the projects hosted in these sites are available for researchers. But given the fact that many FOSS projects start with single developer, it is not practical for every project to have its own website with all features. Also, the visibility of a project decreases if it works independently. Therefore, there exists multiple repositories which provide common facilities required to start and sustain a software project. They also provide a platform for developers to interact with projects they are interested. This multiplicity effect attracts many developers and organisations to host their projects in such repositories which are also called as forges.