Chapter 8
A Multi-Step Process Towards Integrating Free and Open Source Software in Engineering Education

ABSTRACT

Free and Open Source Software (FOSS) is a phenomenon which has overgrown its software origins. From being viewed as a cheaper software alternative, it has become a fountain head of ideas which are adopted cheerfully by people across many domains. From a collaborative effort to build world's biggest encyclopaedia to artists sharing their works under liberal licences, FOSS has become a reference for global, peer-reviewed, volunteer based production model of creating knowledge commons. With everyone from governments to big corporates displaying keen interest in FOSS, it is high time educationalists too take FOSS into classrooms. The ecology of FOSS is filled with more than just a set of software from which a teacher can choose from. He can bring the rich set of coding practices, licensing options, production model and importantly a different world-view by adopting FOSS in teaching. The benefits for students too are many ranging from using modern tools to participating in real world software development. There are many scholarly papers reporting the innovative use of FOSS in teaching graduate courses. By combining these studies with our experience of delivering courses in FOSS, we present a three-stage process which can be adopted by teachers and institutes to utilise the benefits of FOSS to the fullest.

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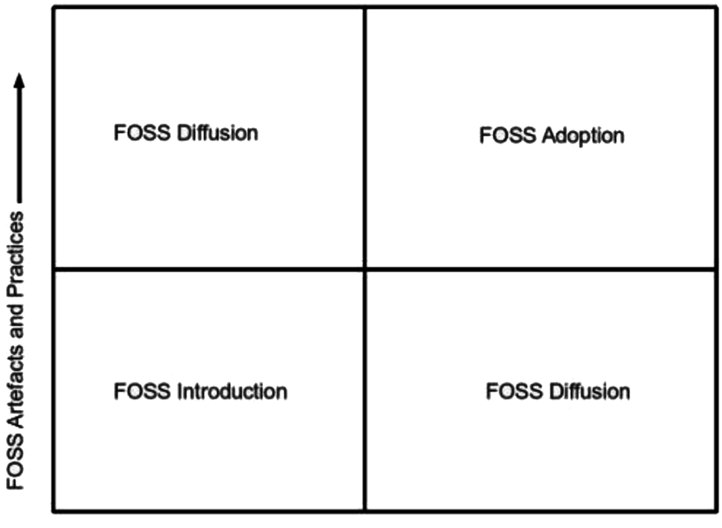
INTRODUCTION

The freedoms provided to users by Free Software have their roots in academic culture (Foltin et al., 2011). Education system has a long history of practices like distributed development, peer review and revision based on feedback which are also found in FOSS and therefore education sector is but the natural home for FOSS (Carmichael & Honour, 2002). FOSS is attractive to educators because as scientists they are used to share and allow others to modify their ideas (O'Hara & Kay, 2003). Just like scientists are interested in various phenomenons for the case of curiosity, FOSS developers too get involved in projects that interest them. While scientists share their results publicly, FOSS developers too share the source code (Bezroukov, 1999). So, FOSS should be the natural choice of educators.

The utilitarian idea of teaching is often reflected upon and a writer comments it is strange to convince educators that it is good to share information. Educators should use FOSS because software industry discriminates access to software on economic grounds.

As software forms important part of knowledge in modern age, it should not be allowed to be dominated by commercial players. Hence using FOSS becomes not merely an economic but moral obligation for teachers (Hart, 2003).

Figure 1. The process of integration FOSS in education



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