Chapter VI

Evidence-Based Assurance to Support Process Quality in the F/OSS Community

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Abstract

This chapter investigates the quality issues of the free and open source software (F/OSS) development processes. It argues that software developed within the F/OSS paradigm has witnessed substantial growth rates within the software developers’ community. However, end users from outside the community are still sceptical about adopting F/OSS because of the perceived lack of quality assurance mechanisms within the F/OSS development process. The authors aim to promote higher adoption of F/OSS artefacts outside the developers’ community by exploring possibilities to provide appropriate evidence based assurances that F/OSS artefacts will meet the quality levels expected by users.
Introduction

The F/OSS paradigm introduces methodologies and development models different from those usually utilised within the proprietary software industry, based on cooperation and collaboration among developers from all over the world. It spans geographical and cultural boundaries more than any other human community or business enterprise. A particular project may therefore involve contributions from a large community of developers. However, the potential benefits associated with this diversity come at a price, as the donated code can be of varying quality (Stamilos et al., 2002). Whilst the F/OSS community has developed novel mechanisms to effectively tackle some of the difficulties encountered during its endeavours (particularly those associated with code interoperability), quality concerns remain a largely unexplored area (Glass, 2001).

End users usually argue that the F/OSS community is very technically oriented (Lerner & Tirole, 2002). Although it is claimed to be widely open for participation, it has a distinct vocabulary and a high level of requisite knowledge for access, which renders the low entry boundaries effectively useless. Because of these perceptions, users from outside the community are highly sceptical about adopting and considering F/OSS as a viable alternative to proprietary software (Feller & Fitzgerald, 2000). User scepticism about the community has resulted in adoption levels much lower than those that could be expected. However, this could be rectified if there were clear comparison criteria based on the merits of the benefits realised by the user in adopting the F/OSS option compared to the use of proprietary software.

Concerns about quality, and subsequent trust in the software developed through the F/OSS process remain a significant limitation to adoption. This could be attributed to the relative failure of the F/OSS community in promoting the quality of its artefacts. Although members of the community may argue that the quality levels attainable within the F/OSS community are much higher than those of proprietary software, these claims will not have any significant value unless supported by evidence-based assurances and communicated effectively to users from outside the community (Michlmayr, Hunt, & Probert, 2005). The community could overcome this issue by developing appropriate mechanisms to signal quality to end users in simple, easy to understand terms. These need to assure users that the produced artefacts will satisfy their needs and requirements in order to encourage users to embrace a more open attitude towards the adoption and reliance on F/OSS artefacts. Therefore, we argue that it is necessary to provide metrics for validating the quality of the F/OSS artefacts, which themselves must follow the open source concept, and be verifiable using tests that are accessible (and potentially repeatable) by end users.

This chapter aims to investigate the possibility of solving this problem by developing appropriate mechanisms to assure end users that artefacts developed within the F/OSS community will fulfil their needs and satisfy their expectations in order
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