Chapter 53
Software Development Process Standards for Very Small Companies

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ABSTRACT

For very small software development companies, the quality of their software products is a key to competitive advantage. However, the usage of software engineering standards is extremely low amongst such very small software companies. A primary reason cited by many such companies for this lack of quality standards adoption is the perception that they have been developed for large multi-national software companies and not with small and very small organizations in mind and are therefore not suitable for their specific needs. This chapter describes the design and development of the software process lifecycle standard for very small entities. This chapter presents a unique insight from the perspective of some of the standards authors on the development of the ISO/IEC 29110 standard, including the rationale behind its development and the innovative design of implementation guides to assist very small companies in adopting the standards, as well outlining a pilot project scheme for usage in early trials of this standard.

INTRODUCTION

In recent times quality orientated process approaches and standards have matured and gained acceptance in many software development organizations. Standards emphasize communication and shared understanding more than anything. There are many potential benefits of using standards. In particular for small and very small companies, the benefits that certification can provide include: increased competitiveness, greater customer confidence and satisfaction, greater software product quality, increased sponsorship for process improvement, decreased development risk, facilitation of marketing, and higher potential to export. While good internal software management might help meet the first five claims; the last two can only be the benefits of using a widely recognized standard.

It is commonly agreed that very small software companies, implementing management procedures, and controls to appropriately administer their software development activity is a significant challenge (Laporte et al, 2015). For example, a software company operating in India may have a completely different set of operational problems when compared to a software company in Canada, Mexico or Ireland. Even within a single geographical area such as Ireland, the range of operational issues faced by a small local Irish-owned firm can be radically different to those affecting a multinational subsidiary. The fact that all companies are not the same raises important questions for those who develop software process and process improvement models. To be widely adopted by the software industry, any process or process improvement model should be capable of handling the differences in the operational contexts of the companies making up that industry. But process improvement models, though highly publicized and marketed, are far from being extensively deployed and their influence in the software industry therefore remains more at a theoretical than practical level.

With this in mind, the standardization body ISO/IEC has recently published the ISO/IEC 29110 standard "Lifecycle profiles for Very Small Entities" with the overall objective being to assist and encourage very small software organization in assessing and improving their software. The purpose of this chapter is provide a primer on the ISO/IEC 29110 standard focusing on two main process areas of Project Management and Software Implementation. This chapter will start with an explanation of the rationale and justification for the development of this new standard, followed by an overview of its structure and explain how to deploy ISO/IEC 29110 in a typical very small software company.

BACKGROUND

This section will introduce the problem with standards and explain the specific case of very small entities, before presenting the ISO/IEC standard as a solution specifically designed to address these problems for very small companies.

Very Small Companies

The definition of "Small" and "Very Small" Entities is challengingly ambiguous, as there is no commonly accepted definition of the terms. The term "Very Small Entity" (VSE) had been defined by the ISO/IEC JTC1/SC7 Working Group 24 and subsequently adopted for use in the new ISO/IEC 29110 software process lifecycle standard as being "an entity (enterprise, organization, department or project) having up to 25 people" (Laporte et al, 2008).

A large majority of enterprises worldwide are VSEs. In Europe, for instance, as illustrated in Table 1, over 92% of enterprises are micro-enterprises. They have fewer than nine employees. Micro enterprises account for 70% to 90% of enterprises in OECD countries and about 57% in USA.

Typically VSEs are economically vulnerable as they are driven by cash flow and depend on project profits, so they need to perform the projects within budget. They tend to have low budgets which have many impacts, such as: lack of funds to perform corrective post delivery maintenance; few resources allocated for training; little or no budget to perform quality assurance activities; no budget for software reuse processes; low budget to respond to risks; and limited budget to perform Process Improvement

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