Chapter 61
Factors Influencing the Adoption of ISO/IEC 29110 in Thai Government Projects:
A Case Study

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ABSTRACT

This paper presents the views of four Thai government organizations who had been awarded ISO/IEC 29110 Basic Profile Certification. Team ideas as to the success factors and barriers involved in implementations are explored. In-depth interviews with closed- and open-ended questions were conducted. The data collected was analyzed using qualitative content analysis. The results show two reasons for choosing standard, first, to enhance software development process, and second, because the financial support from the SIPA. The success factors were supportive organizational policy, staff participation, availability of time and resources for the improvement of the software process, consultations with the SIPA and team commitment and recognition. The barrier factors were time constraints, lack of experience, documentation load, unsynchronized means of communication and improper project selection. The findings were based on four diverse organizations. Other countries may take into account the variations e.g. working culture or organizational structure when seeking to apply these results.

1. INTRODUCTION

ISO/IEC 29110 is a process lifecycle standard for very small entities (VSEs) targeted particularly at organizations developing systems having hardware and software elements and software, with up to 25 people (ISO, 2011) (O'Connor & Laporte, 2014). The objective of the standard is to control the qual-

ity of software and system and/or service processes, from the perspective of both administrative and technical support. The process used to develop ISO/IEC 29110 started with the ISO/IEC/IEEE 12207 and ISO/IEC/IEEE 15288 international standards. ISO/IEC/IEEE 12207 and 15288 process elements were selected to develop profile specifications (Laporte, Alexandre, & O'Connor, 2008; ISO, 2015a).

In ISO/IEC 29110-2-1 standard there is a definition of profile that states: "Profile is set of one or more base standards and/or profiles, and where applicable, the identification of chosen classes, conforming subsets, option, and parameters of those base standard, or standardized profiles necessary to accomplish a particular function" (ISO, 2015a). Four profiles which are Entry, Basic, Intermediate and Advanced are proposed on ISO/IEC 29110. Also, management and engineering guides, such as ISO/IEC TR 29110-5-1-1:2012, were developed to facilitate the implementation of the profile specifications (ISO, 2012). VSEs have to be assessed by an assessor for standard certification. This VSEs standard is suitable to be applied to any development life cycle, for example waterfall, iterative, incremental, evolutionary or agile (ISO, 2015b).

Because this standard is suitable for application in the context of Thai VSEs, the Thai Government has agreed to promote ISO/IEC 29110 to entrepreneurs, practitioners and both public and private organizations. The Basic Profile is the profile selected to be implemented in Thailand. The ISO/IEC 29110 Basic Profile consists of two processes, project management (PM) and software implementation (SI) (ISO, 2011). The objectives of PM are to determine the project's beginning point, to establish the tasks of software implementation and to manage the project in order to achieve the goal of the project (O'Connor & Laporte, 2012). The objectives of the SI process are to analyze, design, construct, integrate, verify, and validate activities for new or modified systems following the specified requirements (O'Connor, 2014).

In 2011, three Thai ICT-related public organizations, namely, the Ministry of Information and Communication Technology (MICT), the Software Industry Promotion Agency (SiPA) and The Innovation Foundation signed a memorandum of understanding and started a project that aimed to encourage both the Thai government and the private sector to improve their software development processes using the ISO/IEC 29110 standard. Since then, the Thai Government and SiPA, as the project leader, have been providing full support for participants who are willing to adopt ISO/IEC 29110 as their software process standard. The Thai government has been promoting "The use of standards in software procurement for government" projects and hopes that this standard will be widely adopted in order to achieve continuous quality in process improvement, and the ISO/IEC 29110 standard has been adopted as a part of the strategic plan to empower the Thai software industry to meet international standards (Ministry of Information and Communication Technology, 2015).

A project to encourage software entrepreneurs to participate and achieve ISO/IEC 29110 certification was established by SiPA in 2012. The objectives of this project were to support the community of Thai software companies and government agencies to increase their software process quality, to expand the capability of the Thai software industry in international competition, and to build credibility, confidence and a good image with customers (SiPA, Project, 2013). This valuable project has been assisting participants who are interested in adopting the ISO/IEC 29110 standard since 2012 (SiPA, Project, 2014; SiPA, Project, 2015).

A total of 152 organizations achieved ISO/IEC 29110 Basic Profile certification in the first year that the project was implemented, including four government agencies. The total numbers of private and public organizations certified between 2012 and 2015, are 274 and 13 respectively. The total number in each year is shown in Table 1.

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