Evaluating Management Sentiment Towards ISO/IEC 29110 in Very Small Software Development Companies

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Abstract. This paper presents the results of a set of interviews with senior management in a series of very small software development companies, which were conducted to gauge their opinion, attitude and sentiment towards the of new standard, ISO/IEC 29110 Life Cycle Profiles for Very Small Entities (VSEs). This paper serves as a roadmap for both researchers wishing to understand the issues of process standards adoption by very small companies and also for the software process standards community.

Keywords: SPI, VSE, process standards, ISO/IEC 29110.

1 Introduction

Very Small Entities (VSEs) - *an enterprise, organization, department or project having up to 25 people* - [1] have unique characteristics, which make their business styles different to SMEs. Their constraints in financial and resource terms impact on process infrastructures such as limited training allocation, limited allocation in performing process improvement and may other constraints. Moreover due to the small number of people employed most of the management processes are performed through an informal way and less documented manner [2].

A new process lifecycle standard has been developed by ISO/IEC JTC1/SC7 known as ISO/IEC 29110 "Lifecycle profiles for Very Small Entities" [3]. This is aimed at addressing the specific needs of VSEs [4]. The overall objective of this new standard is to assist and encourage small software organization in assessing and improving their software process and it is predicted that this new standard could encourage and assist small software companies in assessing their software development process. The approach [5] used to develop ISO/IEC 29110 started with the pre-existing international standards ISO/IEC 12207 and ISO/IEC 15504.

This paper is concerned with understanding VSEs issues regarding the adoption of process lifecycle standards, their needs from process lifecycle standards and their willingness to engage with the new published ISO/IEC 29110 standards' in particular. To this end we are interested in eliciting from senior management of VSEs their opinion, attitude and sentiment towards the potential introduction ISO/IEC 29110 in their organization.

2 The Research Process

The context for this research has limited in scope to software product companies whose primary business is software development and for practical purposes was also confined the to the Irish geographical region. A total of ten VSEs participated in this study, with individuals holding job titles such as CEO, COO, Managing Director, and Managing Partner, where nine the participants was also the owner or co-owner of the company.

A semi-structured interview approach consisting of both open-ended and specific questions was used in this study in order to discuss the topics in depth and to get respondents' candid discussion on the topic. The qualitative contents analysis method of Grounded Theory [6] data coding process was employed to analyse all collected data in a manner. The main code categories are show in figure 1 and the findings discussed in section 3.
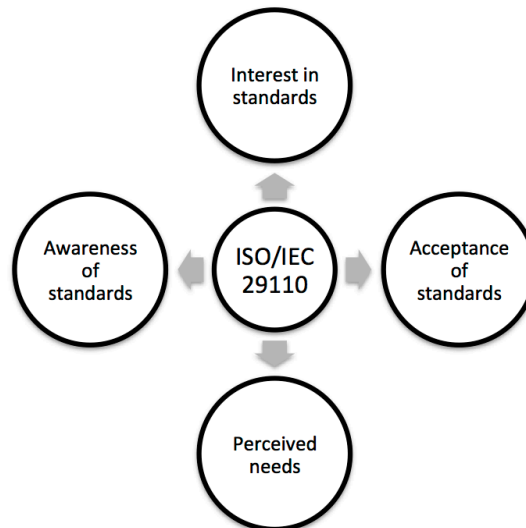

Fig. 1. Study Core Categories

3 Study Findings

In terms of *acceptance of standards* among VSEs, none of the VSEs are or have plans to adopt any particular standard in their software development process. Interview data analysis identified several reasons, which have been divided to 2 subcategories *Low Acceptance* and *Low Priority*. Low acceptance issues were predominately due the perception that process standards are overly complicated, lacking in detailed implementation guidance and would require additional [unavailable] resources. Participants also believed that the processes as generally described in software standards are not easy to actually tailor and implement in their organizations. In addition, the analysis also indicates that the lack of requirement from the market in

general and their customer in particular has contributed to low acceptance of such standards. Examples of interviewee opinion illustrating these would be: "*In a company of our size they [standards] would not necessarily add value… we would only need more sophisticated process if we were a larger company*" and "*Our developers are busy with coding, we don't have resources to do that [standards compliance]*".

The interview analysis indicated that a software lifecycle standard is *a low priority* issue for multiple reasons including: low to no demand for standards compliance from clients; the view of standards as a 'sales tool' only; and the perception that the software lifecycle standards are designed for the big companies rather than for VSEs. Examples of interviewee opinion exemplifying this includes: "*We had never had a problem selling our stuff or not selling our stuff because we don't follow an ISO standard*" and "*I think a lot of process in quality standard are nonsense. Some standards tell you to do XYZ steps but they are not beneficial to our business*".

Two related major categories are the level of *interest in standards* and *awareness of standards*. These explain VSEs level of interest and awareness regarding software lifecycle standards and ISO/IEC 29110 in particular. Even though VSEs have shown low acceptance and priority level regarding standards, our analysis has also shown that there is an indicator that VSEs are interested and are aware about software process and quality standards and the potential benefits from having a quality standard, and in particular ISO accreditation. Leading to a quality product, creating consistency, improving company image, creating consistency in development work, improving work process and 'good for business' are the main points that the interviewees gave about the potential benefits of standards compliance. Supporting interview extracts from one company is: "*It would be great to have them [standards accreditation] in order to have a consistent process up and running that can always be relied on*"; and another quote from a VSE about to enter into a period of planned growth "*We need to put those processes in place so when grow, we have a good platform upon which to sustain the growth and train people in what we do*".

Finally, in order to understand more about VSEs *perceived needs* from lifecycle standards, we asked the interviewees the criteria they considered important in a software lifecycle standard. The main criteria were:

- Align with current development process style
- Provide detailed guidelines and assistances
- Provide clear templates
- Provide workshop and/or training on how to actually apply it

In lightweight process subcategory, interviewees have proposed several criteria as:

- Minimum documentation requirement
- Easy to administer
- Less change from current development process
- Minimum overhead in terms of cost and resources

In business and technical process subcategory, interviewees have proposed several criteria below:

- Align with company existing business and development process.
- Align with others specific software technical standard and process.

5 Conclusions

As we discussed above, the standards issues in VSEs can be divided into 3 categories: *interest*, *awareness* and *acceptance* of process lifecycle standards. Our detailed interview analysis revealed that the acceptance level of any type or model of software quality or lifecycle standard in VSEs is a very low priority item, but the level of awareness of standards and potential benefits was high.

The study showed the main reason for not adopting standards was a lack customer requirement, a lack of resources and the perceived difficulties in defining an organizational process. Furthermore, our analysis reveals a pattern that indicates that the acceptance level of quality standard such as ISO among VSEs are still low even though the staff and management are knowledgeable and aware the benefit of adopting such standards. The main reasons are more related to the lack of the customer requirement and the limited resources in the company. In addition the perception a heavyweight process especially in terms of documentation, cost and non-alignment with current development process are among the reasons why the companies did not plan to adopt a lifecycle standard in the short to medium term. However from the analysis, VSEs may still be interested in lifecycle standards if certain important criteria are met and such standards are closely related to their needs.

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