Applying International Software Engineering Standards in Very Small Enterprises

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At a time when software quality is increasingly becoming a subject of concern, and process approaches are maturing and gaining acceptance in companies, the use of International Organization for Standardization (ISO) systems and software engineering standards remains limited to a few of the most popular ones. However, these standards were not written for enterprises with fewer than 25 employees in mind. As they are difficult to apply in such settings, a new international standardization project has been mandated to address some of those difficulties by developing profiles and by providing guidance for compliance with ISO software engineering standards in very small enterprises (VSEs). A survey was conducted to ask very small enterprises about their utilization of ISO/IEC JTC 1/SC7[1] information technology (IT) standards and to collect data to identify problems and potential solutions to help them apply standards.

In Europe, 85 percent of IT sector companies have between 1 and 10 employees [1]. A survey of the Montréal area in Canada has revealed that close to 80 percent of companies that develop software have fewer than 25 employees [2]. More than 50 percent have fewer than 10 employees. There is a need to help these organizations, which are defined as VSEs, to understand and use the concepts, processes, and practices proposed by the ISO's international software engineering standards.

At the Brisbane meeting of ISO/IEC JTC 1/SC7 in 2004, Canada raised the issue of small enterprises requiring standards adapted to their size and maturity level. A meeting of interested parties was held with delegates from five national bodies, at which a consensus was reached on the general objectives:

- Make the current software engineering standards more accessible to VSEs.
- Provide documentation requiring minimal tailoring and adaptation effort.
- Provide harmonized documentation integrating available standards.
- Align profiles with the notions of maturity levels presented in ISO/IEC 15504.

It was also decided that a special interest group be created to validate these objectives, as well as to assign priorities and develop a project plan.

In March 2005, the Thailand Industrial Standards Institute (TISI) invited a number of software experts to advance the work items defined at the Brisbane meeting. A key topic of discussion was to clearly define the size of VSE that would be targeted by a future SC7 Working Group (WG). A consensus was reached to define our target VSE as IT services, organizations, and projects with between one and 25 employees. The major output of this meeting was a draft of a New Work Item (NWI) that would be discussed at the next SC7 Plenary meeting. A list of actions that could be undertaken by a future

SC7 WG was also developed.

In May 2005, at the SC7 Plenary Meeting in Finland, a resolution was approved to ballot a proposal for the development of software life-cycle profiles and guidelines for use in very small enterprises. The following describes the mandate [3]:

- Provide VSEs with a way to be recognized as producing quality software systems, which would lessen the effort required to implement and maintain the entire suite of ISO systems and software engineering standards.
- Produce guides which will be easy to understand, short, simple, and readily usable by VSEs.
- Produce a set of profiles and provide guidance to VSEs in establishing selected processes.
- Address the market needs of VSEs by allowing for domain-specific profiles and levels.
- Provide examples of use.
- Provide a baseline for how multiple VSEs can work together or be assessed as a project team on projects that may be more complex than can be performed by any one VSE.
- Develop scalable profiles and guides so that compliance with ISO/IEC 12207 and/or ISO 9001:2000 and ISO/IEC 15504 process assessment becomes possible with a minimum impact on VSE processes.

The proposal was accepted, and 12 countries committed to participating in the new working group: Belgium, Canada, the Czech Republic, Ireland, Italy, Japan, Korea, Luxemburg, South Africa, Thailand, the United Kingdom, and the United States.

A new WG24 was established, made up of the following members, in addition to individuals sent by their national bodies:

- Tanin Uthayanaka (Thailand), who was appointed Convener.
- Claude Y. Laporte (IEEE Computer Society), who was appointed Project Editor.
- Jean Bérubé (Canada), who was appointed Secretary.

The TISI invited a Special Working Group, in September 2005, to prepare material to facilitate the start-up of the new working group. The main proposals of the meeting were the following:

- Requirements for International Standard Profiles (ISPs) based on technical report ISO/IEC TR10000-1 [4].
- A survey on VSE exposure and their need for software development life cycles.
- Approaches to profile development.
- Business models.
- Agenda for the first WG24 meeting.
- Draft strategic plan for WG24.

In October 2005, WG24 held its first working sessions in Italy to accomplish the following:

- Present the project to the official members of WG24.
- Finalize project requirements to constitute the project baseline.
- Gain consensus among WG members and obtain their commitment regarding the project.
- Process the comments received during the balloting of the NWI.
- Define the profile creation strategy.
- Identify lists of situational factors and business models.
- Build survey material to validate project requirements and to collect missing information from VSEs.

After the meeting, the survey questionnaire was translated into nine languages. In addition, a Web site, hosted by the École de Technologie Superieure, was developed to maximize the number of responses, which were collected between Feb. 20 and May 12.

In May 2006, WG24 members met at the SC7 Plenary meeting in Thailand. Two new countries, India and Mexico, sent delegates to

WG24. The main outputs of the meeting were the following:

- Four hundred thirty-seven responses were collected from 32 countries.
  - o Two hundred nineteen responses were received from enterprises with 25 employees or less.
- More than 67 percent indicated that it was important to be either recognized or certified (e.g. ISO, market).
- WG24 decided to prioritize the development of profiles and guides for organizations with 25 employees or less (total staff). These profiles and guides should also be usable for projects and departments of less than 25 employees.
- WG24 decided to propose separate profiles for the following:
  - o Enterprises with fewer than 10 employees.
  - o Enterprises with 10 to 25 employees.
- Evaluation of documents tabled by national delegations.
- Selection of the Mexican Standard [5] as an input document for the development of profiles and guides.

The next WG24 meeting will be held in Russia in May 2007. To complete the survey, go to: <http://iso-iec-sc7wg24.gelog.etsmtl.ca/Webpage/iso-iec-sc7wg24_english.html>. Username: isosurvey; Password: vse.

References

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Note

1. ISO/IEC JTC 1/SC7 stands for the International Organization for Standardization/International Electrotechnical Commission/Joint Technical Committee 1/ Sub Committee 7.

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