The application of International Software Engineering Standards in Very Small Enterprises

1.0 Introduction

In Europe, 85% 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% of companies that develop software have fewer than 25 employees, as illustrated in Table 1 [2]. Over 50% have fewer than 10 employees. There is a need to help these organizations, which are defined as very small enterprises (VSEs), to understand and use the concepts, processes and practices proposed by the ISO’s international software engineering standards.

<table>
<thead>
<tr>
<th>Size (employees)</th>
<th>Software Companies</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>1 to 25</td>
<td>540</td>
<td>78%</td>
</tr>
<tr>
<td>26 to 100</td>
<td>127</td>
<td>18%</td>
</tr>
<tr>
<td>over 100</td>
<td>26</td>
<td>4%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>693</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 1: Size of software development companies in the Montréal area [2]

2. Historical Perspectives

At the Brisbane meeting of ISO/IEC JTC 1/SC71 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 Very Small Enterprises
- 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 ISO/IEC JTC 1/SC7/3 working group. A consensus was reached to define our target VSE as IT services, organizations and projects with between 1 and 25 employees. The major output of this meeting was a draft of a New Work Item that would be discussed at the next ISO/IEC JTC 1/SC7 Plenary meeting. A list of actions that could be undertaken by a future ISO/IEC JTC 1/SC7 Working Group was also developed.

In May 2005, at the ISO/IEC JTC 1/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 text below describes the mandate [4]:

- 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.

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1ISO/IEC JTC 1/SC7 stands for the International Organization for Standardization/International Electrotechnical Commission Joint Technical Committee 1/Sub Committee 7. For more information about the international standardization in information technology, refer to [3].
The proposal was accepted, and twelve 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. We recall that participation in ISO/IEC JTC 1/SC7 working groups mostly occurs through national bodies or professional organizations, and no companies are represented.

3. VSE Survey and Profile Development Proposed

A new working group, WG 24, was established, made up of the following members, in addition to individuals sent by their national bodies:

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

The Thailand Industrial Standards Institute invited a Special Working Group, in September 2005, to prepare material to facilitate the start-up of the new working group. The main outputs of the meeting were:

- Proposed requirements for International Standard Profiles (ISPs) based on technical report ISO/IEC TR10000-1 [5].
- A proposed survey on VSE exposure and their need for software development life cycles
- Proposed approaches to profile development
- Proposed business models
- Proposed agenda for the first WG24 meeting
- Proposed draft strategic plan for WG24

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

- 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 New Work Item (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 9 languages. In addition, a Web site, hosted by the ÉTS, was developed to maximize the number of responses, which were collected between February 20 and May 12.

In May 2006, WG24 members met at the ISO/IEC JTC 1/SC7 Plenary meeting in Thailand. Two new countries, India and Mexico, sent delegates to WG24. The main outputs of the meeting were analysis of the survey responses and evaluation of documents tabled by national delegations; the Mexican Standard [6] was selected as an input document for the development of profiles and guides. Based on the survey analysis, WG24 decided to focus first on enterprises with fewer than 10 employees.

The next WG24 meetings will be held in Luxemburg in October 2006 and St. Petersburg in May 2007.

4. Additional Information

To complete the survey:

Username: isosurvey
Password: vse

Public site of WG24:
http://profs.logti.etsmtl.ca/claporte/English/VSE/index.html

5. References