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Note	This document is the final report submitted by the study group. A high level report in the form of a presentation had already been tabled (N1760).

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Process Measurement Study Group Final Report

Introduction

In June of 1995 ISO/IEC JTC1/SC7 Resolution 400 established a joint study group to assess the need for ISO/IEC process measurement standards and related technical reports. At the 1996 International Plenary the study group period was extended, and ISO/IEC JTC1/SC7 document N1531 was forwarded to the study group members for review. Comments to N1531 and related process measurement recommendations were consolidated into the proposal outlined in this report. The results of the study group effort were submitted for consideration by the ISO/IEC JTC1/SC7 member bodies at the 1997 plenary meeting. At this meeting, a proposed new work item was coordinated and submitted by the study group. The study group period was extended again by Resolution 479 in order to develop the project requirements and a draft architecture for the proposed Software Measurement Process Framework international standard.

The Process Measurement Study Group included participants from multiple national bodies. The convenors of WG6, WG7, WG10, and WG12 also participated in the study group effort, and provided valuable technical insight and understanding into the process measurement issues.

Objectives

The Process Measurement Study Group objectives were to:

- Determine the requirements and approach for software process measurement to support the management and evaluation of software life cycle processes and organizational process improvement.

- Assess the need for a common software measurement framework which would define a normative approach for defining software process measurement requirements and for applying software process measurement results.

- Determine how software process measurement should relate to software product evaluation and measurement.

Results

ISO/IEC JTC1/SC7 document N1531 provided a starting point for the group to address the stated objectives. An initial review of the material by the study group participants indicated that the normative measurement framework requirements extended beyond software process measures. The results indicated that the proposed measurement framework should be extended to encompass the measurement requirements related to software product evaluation and quantitative process assessment. A subsequent review of WG6 and WG10 work products reinforced these findings. Although there were differences in the existing guidance related to the application of software measurement, there was a clear indication that a common measurement framework could be defined. Such a framework would be normative in nature, but tailorable to meet the specific needs of software process, product, and process assessment measurement requirements.

A more detailed review of the SC7 work products and additional comments to N1531 helped to define a candidate set of measurement areas to be addressed in the projected Software Measurement Framework standard or related technical guidance documents. These included but were not limited to the following:

- Identification of normative software measurement framework processes, tasks, and activities
- Clarification and definition of normative software engineering measurement terminology
- Definition of the relationship between software information needs and applicable measures/metrics
- Categorization of different types of software measures/metrics
- Validation of software measures/metrics
- Use of both objective and subjective software measures/metrics
- Definition of software measurement impact of on process capability
- Tailoring of the measurement framework
- Establishment of an organizational measurement capability
- Identification of distinct software measurement perspectives such as project and organizational views
- Definition of the relationship between software measurement and ISO 9000 quality requirements

An interim report of the study group results was presented to the ISO/IEC JTC1/SC7 member bodies at the 1997 plenary meeting in Walnut Creek. At the

plenary the technical scope and approach was refined, and a New Work Item proposing a Software Measurement Process Framework international standard was prepared and submitted (ISO/IEC JTC1/SC7 N1791). In addition, work was begun on the project requirements document and architecture of the proposed standard. The revised recommendation, which was approved by the SC7 member bodies, was to submit the New Work Item for the proposed standard to JTC1 for ballot. The standard would address the software measurement process in terms of measurement identification, definition, selection, application, and validation for both the project and organization.

Recommendations

The Process Measurement Study Group recommended that ISO/IEC JTC1/SC7 implement the following:

1. Establish a new SC7 working group to further define and implement the proposed Software Measurement Framework Standard and related work products. This group should be independent of existing SC7 working groups and include members from WG6, WG7, WG10, WG12, and interested national bodies. A convenor and product editors should be assigned.

2. The new working group should define the requirements for and draft a common software measurement framework standard. The requirements should be applicable to all software engineering measurement requirements and should integrate and build on the existing SC7 measurement guidance. The group should also define and implement the related technical guidance document(s) that are required to support the standard.

3. The new working group should be established and meet at the ISO/IEC JTC1/SC7 1998 plenary meeting.

4. The new working group should establish technical interfaces with WG6, WG7, WG10, and WG12 to ensure that all SC7 products provide consistent software measurement guidance.

Summary

Measurement is becoming an increasingly important software engineering discipline. An international standard that defines a common measurement framework and terminology applicable to software process, process control, and product requirements will be a significant SC7 contribution. This standard should be consistent with the existing SC7 measurement related work products.

The final meeting of the Process Measurement Study Group was held in Stockholm, Sweden in November, 1997. At this meeting the project requirements and technical architecture of the proposed standard were refined. Drafts of these documents will be available for the 1998 plenary meeting.

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- John Phippen, Australia (WG8 Convenor)
- Professor Motoei Azuma, Japan (WG6 Convenor)
- Alec Dorling, United Kingdom (WG10 Convenor)
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