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Part 4: Process for acquirers

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Partie 4: Procédé pour les acquéreurs

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC 14598 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 14598-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software engineering*.

ISO/IEC 14598 consists of the following parts under the general title *Software engineering — Product evaluation*:

— *Part 1: General overview*

— *Part 2: Planning and management*

— *Part 3: Process for developers*

— *Part 4: Process for acquirers*

— *Part 5: Process for evaluators*

— *Part 6: Documentation of evaluation modules*

Annexes A to E of this part of ISO/IEC 14598 are for information only.

Introduction

Software has become increasingly pervasive. The demand for added software functionality and faultless software products has grown as more processes are automated to take advantage of the power of the computer. Today's modern systems are so complex, that they are unable to perform their functions without software. The use of commercially available “off-the-shelf” software products is accelerating as the variety of available products grows and the rapid evolution of software engineering technology reduces reliance on custom-coded software. The object-oriented development approach, which is based on the development of an application system through the extension of existing libraries of self-contained units, has also reduced requirements for custom-coded software. This has led to intense focus on concomitant software product quality or self-contained software unit quality.

Development of custom software is prone to rework as a result of failure to meet user requirements. The use of custom software may also require a larger than anticipated effort with respect to deployment, implementation, training, and maintenance support activities. Acquisition of commercial “off-the-shelf” software products, or, reuse of in-house existing software products, is also not without risk. Problems can be encountered because the “off-the-shelf” software products may require customizing; testing and analysis requirements may be large; product maintenance and support is doubtful when the product becomes obsolete or revised, it may be difficult to integrate software products into larger systems; and the quality of the product may not be consistent with the required quality of the target system.

Commercial “off-the-shelf” software products are extremely varied. They can be:

— a) used as stand-alone products (i.e., payroll, accounting software, consumer software or 'shrink-wrapped software' [i.e., word-processing software, spreadsheets]);

— b) integrated as components into a larger system which consists of other software and hardware components (i.e., operating system, relational data base management system, graphical users interface [GUI]);

— c) embedded in hardware (i.e., communication data link, programmable array logic [PAL]);

— d) embedded as part of a configurable software/hardware system that can be used for the development of a specific application (i.e., distributed control system);

— e) CASE tools used to support the software development and maintenance process (i.e., compilers, configuration management tools).

Errors in stand-alone software products can impact productivity, cause financial loss, or cause unnecessary rework. Software components can be difficult to integrate, affect the reliability of the overall system, or be incompatible with system objectives. CASE tools may introduce an error into a product under development or be difficult to use.

It is therefore essential to be able to evaluate the quality of software products during acquisition, or when making a decision on reusing an existing software product or component. Evaluation may be used to accept or reject a single product, or to select one product, from among alternative products, that meets the quality requirements established for the target application. The level of rigor of the evaluation process is necessarily commensurate with the integrity requirements for the product. The highest level of rigor is required when performing evaluation of software products that are mission critical.

Software engineering — Product evaluation — Part 4: Process for acquirers

1 Scope

This part of ISO/IEC 14598 contains requirements, recommendations and guidelines for the systematic measurement, assessment and evaluation of software product quality during acquisition of “off-the-shelf” software products, custom software products, or modifications to existing software products. It uses the software quality model described in ISO/IEC 9126-1; expands on the general process for evaluating software quality that is defined in ISO/IEC 14598-1; and uses the process for acquisition that is defined in ISO/IEC 12207. It can be used in conjunction with ISO/IEC 12119, ISO/IEC 14598-2 (new), ISO/IEC 14598-3 (new) and ISO/IEC 14598-6. The steps of the evaluation process are similar between this part of ISO/IEC 14598 and ISO/IEC 14598-5, but the context of use is quite different. In the case that acquirers entrust second or third parties with evaluations, ISO/IEC 14598-5 is required to be applied. In the case that acquirers require third party testing of software packages against the quality requirements for the package, ISO/IEC 12119 may be applied.

The evaluation process described in this part of ISO/IEC 14598 also helps to meet the objectives of deciding on the acceptance of a single product, or for selecting a product from among alternate products. The evaluation process may be tailored to the nature and integrity level of the application. It is also sufficiently flexible to accommodate the wide range of forms and uses of software products in a cost-effective manner.

This part of ISO/IEC 14598 is intended for, but not limited to, project managers, system engineers, development and maintenance software engineering staff and end users who plan to acquire software products, and also suppliers who provide such products.

The target software products of the evaluation process in this part of ISO/IEC 14598 can be integrated into a larger system as components or can be used stand-alone. They are classified as:

a) Commercial off-the-shelf software products;

b) Existing software products developed or acquired for other applications, or for a wide range of common applications;

c) Custom software products or modifications to existing software products.

The evaluation process that is defined in this part is also applicable to CASE tools. Because evaluation of CASE tools is specifically addressed in ISO/IEC 14102, CASE tools are considered out of scope of this part of ISO/IEC 14598.

ISO/IEC 14598-4 is designed to work in partnership with other standards. For systems with high integrity requirements, additional requirements may be included in the evaluation process described in ISO/IEC 14598-4, that are derived from sector-specific standards, e.g., IEC 880, DOA-167A , MOD-55, etc.

2 Conformance

Because of the freedom of choice afforded to the user by the general nature of its recommendations, a simple claim of compliance with this part of ISO/IEC 14598 is not valid. Any organization imposing this part of ISO/IEC 14598 as a condition of trade is responsible for specifying and making public the evaluation process that meets the mandatory objectives specified in 6.1.1. The specified evaluation process constitutes the terms for compliance for a given application of this part of ISO/IEC 14598. All activities of clauses 6 and 7 shall be considered for applicability.

Requirements on the evaluation process can also be established contractually during execution of the acquisition process. Compliance with the evaluation process described in this part of ISO/IEC 14598 is then easily established.

3 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 14598. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/IEC 14598 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 9126-1, *Information technology - Software quality characteristics and metrics – Part 1: Quality characteristics and subcharacteristics.*[1)]

ISO/IEC 12207:1995, *Information technology - Software life cycle processes.*

ISO/IEC 14598-1:1999, *Information technology – Software product evaluation - Part 1: General overview.*

ISO/IEC 14598-5:1998, *Information technology – Software product evaluation - Part 5: Process for evaluators.*

ISO/IEC 15026:1998, *Information technology – System and software integrity levels.*

[1)] To be published. Until this part is published ISO/IEC 9126 :1991 should be used.