AS/NZS ISO/IEC 25040:2013
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Australian/New Zealand Standard™

Systems and software engineering—Systems and software Quality Requirements and Evaluation (SQuaRE)—Evaluation process

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee IT-015, Software and Systems Engineering. It was approved on behalf of the Council of Standards Australia on 6 May 2013 and on behalf of the Council of Standards New Zealand on 29 April 2013.
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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR AS/NZS ISO/IEC 25040.

Australian/New Zealand Standard™

Systems and software engineering—Systems and software Quality Requirements and Evaluation (SQuaRE)—Evaluation process

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-015, Software and Systems Engineering.

The objective of this Standard is to provide requirements and recommendations for the evaluation of software product quality and clarifies the general concepts. It provides a process description for evaluating software product quality and states the requirements for the application of this process.

This Standard is identical with, and has been reproduced from ISO/IEC 25040:2011, *Systems and software engineering—Systems and software Quality Requirements and Evaluation (SQuaRE)—Evaluation process.*

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

(b) A full point substitutes for a comma when referring to a decimal marker.

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

CONTENTS

INTRODUCTION

- ISO/IEC 2502n - *Quality Measurement Division*,
- ISO/IEC 2503n - *Quality Requirements Division*, and
- ISO/IEC 2504n - *Quality Evaluation Division*.

Annex A provides an explanation on levels of evaluation, aspects to be considered when defining evaluation levels and suggestions on evaluation techniques to be applied according to the rank of evaluation level.

Annex B provides examples of evaluation methods.

Annex C provides a table showing relationships between some evaluation methods, possible cost rank and effectiveness per software quality characteristics.

Annex D provides relationships between the software product quality evaluation process reference model and the software and system life cycle processes.

Annex E provides an example template of an evaluation report.

Annex F provides the diagrams of inputs, outcomes, constraints and resources for each evaluation activity.

Figure 1 illustrates the organization of the SQuaRE series representing families of standards, further called Divisions.

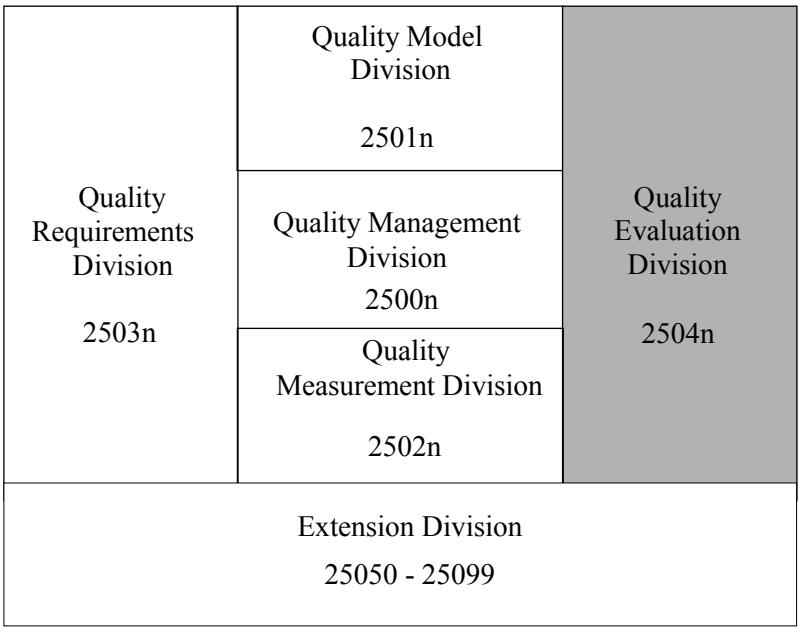

Figure 1 — Organization of the SQuaRE series of International Standards

The Divisions within the SQuaRE model are as follows.

- **ISO/IEC 2500n - Quality Management Division**. The International Standards that form this division define all common models, terms and definitions referred to by all other standards from the SQuaRE series. Referring paths (guidance through SQuaRE documents) and high-level practical suggestions in applying proper standards to specific application cases offer help to all types of users. The division also provides requirements and guidance for a supporting function which is responsible for the management of software product requirements, specification and evaluation.

- **ISO/IEC 2501n - Quality Model Division**. The International Standard that forms this division presents detailed quality models for software, quality in use and data. Practical guidance on the use of the quality model is also provided.

- **ISO/IEC 2502n - Quality Measurement Division**. The International Standards that form this division include a software product quality measurement reference model, mathematical definitions of quality measures, and practical guidance for their application. This division presents internal measures of software quality, external measures of software quality and quality in use measures. Quality measure elements (QME) forming foundations for the latter measures are defined and presented.

- **ISO/IEC 2503n - Quality Requirements Division**. The International Standard that forms this division helps specifying quality requirements. These quality requirements can be used in the process of quality requirements, elicitation for a software product to be developed or as inputs for an evaluation process. The requirements definition process is mapped to technical processes defined in ISO/IEC 15288.

- **ISO/IEC 2504n - Quality Evaluation Division**. The International Standards that form this division provide requirements, recommendations and guidelines for software product evaluation, whether performed by independent evaluators, acquirers or developers. The support for documenting a measure as an evaluation module is also presented.

ISO/IEC 25050 to ISO/IEC 25099 are reserved to be used for SQuaRE extension International Standards and/or Technical Reports.

This International Standard is part of the 2504n series on quality evaluation division that currently consists of the following International Standards:

- **ISO/IEC 25040 - Evaluation process**: contains general requirements for specification and evaluation of software quality and clarifies the general concepts. Provides a process description for evaluating quality of software product and states the requirements for the application of this process. The evaluation process is the basis for software product quality evaluation for different purposes and approaches. Therefore, the process can be used for the evaluation of quality in use, external measure of software quality and internal measure of software quality and can be applied to evaluate the quality of pre-developed software or custom software during its development process. The software product quality evaluation can be conducted, for instance, by an acquirer, a developer organization, or an independent evaluator.

- **ISO/IEC 25041 - Evaluation guides for developers, acquirers and evaluators**: contains specific requirements and recommendations for developers, acquirers and evaluators.

- **ISO/IEC 25042 - Evaluation modules**: defines the structure and content of the documentation to be used to describe an evaluation module. These evaluation modules contain the specification of the quality model (i.e. characteristics, subcharacteristics and corresponding internal, external or quality in use measures), the associated data and information about the planned application of the model and the information about its actual application. Appropriate evaluation modules are selected for each evaluation. In some cases it may be necessary to develop new evaluation modules. Guidance for developing new evaluation modules is found in ISO/IEC 25042. This International Standard can also be used by organizations producing new evaluation modules.

- **ISO/IEC 25045 - Evaluation module for recoverability**: provides the specification to evaluate the subcharacteristic of recoverability defined under the characteristic of reliability of the quality model. It determines the external measures of software quality of resiliency and autonomic recovery index when the information system composed of one or more software products' execution transactions is subjected to a series of disturbances. A disturbance could be an operational fault (e.g. an abrupt shutdown of an OS process that brings down a system) or an event (e.g. a significant increase of users to the system).

ISO/IEC 25040 is a revised version and replaces the current ISO/IEC 14598-1.

AUSTRALIAN/NEW ZEALAND STANDARD

Systems and software engineering—Systems and software Quality Requirements and Evaluation (SQuaRE)—Evaluation process

1 Scope

This International Standard contains requirements and recommendations for the evaluation of software product quality and clarifies the general concepts. It provides a process description for evaluating software product quality and states the requirements for the application of this process. The evaluation process can be used for different purposes and approaches. The process can be used for the evaluation of the quality of pre-developed software, commercial-off-the-shelf software or custom software and can be used during or after the development process.

This International Standard establishes the relationship of the evaluation reference model to the SQuaRE documents as well as shows how each SQuaRE document should be used during the activities of the evaluation process.

It is intended for those responsible for software product evaluation and is appropriate for developers, acquirers and independent evaluators of software products. These three different approaches are detailed in ISO/IEC 14598-3, ISO/IEC 14598-4, and ISO/IEC 14598-5.

It is not intended for evaluation of other aspects of software products (such as functional requirements, process requirements, business requirements, etc.).

2 Conformance

Evaluation of software product quality conforms to this International Standard if it complies with the requirements of Clause 6.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

There are no normative references in this document.

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1
acquirer
individual or organization that acquires or procures a system, software product or software service from a supplier

NOTE Adapted from ISO/IEC 12207:2008.