

Australian/New Zealand Standard™

**Software engineering—Software
product Quality Requirements and
Evaluation (SQuaRE)—Guide to SQuaRE**



AS/NZS ISO/IEC 25000:2007

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 3 November 2006 and on behalf of the Council of Standards New Zealand on 17 November 2006. This Standard was published on 8 January 2007.

The following are represented on Committee IT-015:

Australian Computer Society
Australian Electrical and Electronic Manufacturers Association
Australian Society or Technical Communications
Australian Software Metrics Association
Engineers Australia/ACTS Joint Board in Software Engineering
Griffith University
National Association of Testing Authorities Australia
National ICT Australia
New Zealand Organisation for Quality
Software Quality Association, ACT
Software Quality Association, NSW
Systems Engineering Society of Australia
The University of Queensland
University of Auckland, NZ
University of South Australia
University of Technology, Sydney
Vendor Interests, NZ

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

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 06547.

Australian/New Zealand Standard™

**Software engineering—Software
product Quality Requirements and
Evaluation (SQuaRE)—Guide to SQuaRE**

First published as AS/NZS ISO/IEC 25000:2007.

COPYRIGHT

© Standards Australia/Standards New Zealand

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 7965 4

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 Software Engineers with guidance for the use of the new series of International Standards named Software product Quality Requirements and Evaluation (SQuaRE). This guide provides a general overview of SQuaRE contents, common reference models and definitions, as well as the relationship among the documents, allowing users of the guide a good understanding of those series of standards, according to their purpose of use.

This Standard is identical with, and has been reproduced from ISO/IEC 25000:2005, *Software engineering—Software product Quality Requirements and Evaluation (SQuaRE)—Guide to SQuaRE*.

Many of the documents listed in the Bibliography have been adopted as Australian or Australian/New Zealand Standards.

For further information, refer to the Standards Australia catalogue or website.

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

- (a) Its number appears on the cover and title page while the international standard number appears only on the cover.
- (b) In the source text ‘this International Standard’ should read ‘this Australian/New Zealand Standard’.
- (c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

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

	<i>Page</i>
1	Scope 1
2	Conformance 1
3	Normative references 1
4	Terms and definitions..... 1
5	SQuaRE: Software product Quality Requirements and Evaluation – the series of standards on product quality requirements and evaluation 10
5.1	Organisation of SQuaRE series of standards..... 10
5.2	SQuaRE: overview of documents within series 11
5.3	SQuaRE common models 12
Annex A	(informative) Relationship between SQuaRE series and other ISO Standards..... 16
A.1	ISO/IEC 12207:1995/Amd 1:2002 16
A.2	ISO/IEC 15504..... 16
A.3	ISO 9000 family of standards..... 16
A.4	ISO/IEC 15939..... 19
A.5	ISO/IEC 15288..... 19
Annex B	(informative) Overview of ISO/IEC 14598 and ISO/IEC 9126..... 21
B.1	Overview of ISO/IEC 14598 and ISO/IEC 9126 21
B.2	Quality model framework 22
B.3	Evaluation process 23
B.4	Support for evaluation..... 24
B.5	Software quality characteristics and metrics 24
B.6	The evaluation process 26
Annex C	(informative) History and transition process between ISO/IEC 9126, ISO/IEC 14598 and SQuaRE series of standards 34
C.1	History..... 34
C.2	Relationship between ISO/IEC 9126 and ISO/IEC 14598 series and SQuaRE series of standards 35
Annex D	(informative) Examples of the application of SQuaRE series of standards 37
Bibliography 40

INTRODUCTION

Computers are being used in an increasingly wide variety of application areas, and their intended and correct operation is often critical for business success and/or human safety. Developing or selecting high quality software products is therefore of prime importance. Comprehensive specification and evaluation of software product quality is a key factor in ensuring adequate quality. This can be achieved by defining appropriate quality characteristics, while taking account of the intended use of the software product. It is important that every relevant software product quality characteristic is specified and evaluated, whenever possible using validated or widely accepted measures.

As quality characteristics and associated measures can be useful not only for evaluating a software product but also for defining quality requirements, the predecessor of SQuaRE, ISO/IEC 9126:1991 has been replaced by two related multipart International Standards: ISO/IEC 9126 (Software product quality) and ISO/IEC 14598 (Software product evaluation). The following points derived from practical use of both series gave the logical impulse for creating the new SQuaRE series of International Standards:

- Both ISO/IEC 9126 and ISO/IEC 14598 have common normative, referential and functional roots,
- ISO/IEC 9126 and ISO/IEC 14598 form a complementary set of standards,
- The independent life cycles of both series have created inconsistencies between them.

The general goal of creating the SQuaRE set of International Standards is to move to a logically organized, enriched and unified series covering two main processes: software quality requirements specification and software quality evaluation, supported by a software quality measurement process. The purpose of the SQuaRE set of International Standards is to assist those developing and acquiring software products with the specification and evaluation of quality requirements. It establishes criteria for the specification of software product quality requirements, their measurement, and evaluation. It includes a two-part quality model for aligning customer definitions of quality with attributes of the development process. In addition, the series provides recommended measures of software product quality attributes that can be used by developers, acquirers, and evaluators.

It has to be stressed that the SQuaRE series of International Standards is dedicated to software product quality only. SQuaRE ISO/IEC 25000n — Quality Management Division addresses software product quality requirements specification, measurement and evaluation, and is separate and distinct from the "Quality Management" of processes, which is defined in the ISO 9000 family of standards.

The major benefits of the SQuaRE series over its predecessor standards include:

- the coordination of guidance on software product quality measurement and evaluation,
- guidance for the specification of software product quality requirements, and
- harmonization with ISO/IEC 15939 in the form of Software product Quality Measurement Reference Model presented in ISO/IEC 25020 - Software engineering - Software product Quality Requirements and Evaluation (SQuaRE) Measurement reference model and guide.

The major differences between ISO/IEC 9126, ISO/IEC 14598 and SQuaRE series of International Standards are:

- the introduction of the new general reference model,
- the introduction of dedicated, detailed guides for each division,

- the introduction of Quality Measure elements within Quality Measurement Division,
- the introduction of the Quality Requirements Division,
- incorporation and revision of the evaluation processes,
- the introduction of guidance of practical use in form of examples,
- coordination and harmonization of the content with ISO/IEC 15939.

SQuaRE consists of the following five divisions:

- ISO/IEC 2500n - Quality Management Division,
- ISO/IEC 2501n - Quality Model Division,
- ISO/IEC 2502n - Quality Measurement Division,
- ISO/IEC 2503n - Quality Requirements Division, and
- ISO/IEC 2504n - Quality Evaluation Division,

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

SQuaRE provides:

- Terms and definitions,
- Reference models,
- General guide,
- Individual division guides, and
- International Standards for requirements specification, planning and management, measurement and evaluation purposes.

SQuaRE includes International Standards on quality model and measures, as well as on quality requirements and evaluation.

SQuaRE replaces the current ISO/IEC 9126 series and the 14598 series.

This part of SQuaRE series of standards is a new International Standard with the goal of providing a common set of reference models, terminology, definitions and guidance for practical use of the associated standards and technical reports.

AUSTRALIAN/NEW ZEALAND STANDARD

Software engineering — Software product Quality Requirements and Evaluation (SQuaRE) — Guide to SQuaRE

1 Scope

This International Standard provides guidance for the use of the new series of International Standards named Software product Quality Requirements and Evaluation (SQuaRE). The purpose of this Guide is to provide a general overview of SQuaRE contents, common reference models and definitions, as well as the relationship among the documents, allowing users of the Guide a good understanding of those series of standards, according to their purpose of use. This document contains an explanation of the transition process between the old ISO/IEC 9126 and the 14598 series and SQuaRE and also presents information on how to use the ISO/IEC 9126 and 14598 series in their previous form.

SQuaRE series of standards is intended for, but not limited to, developers, acquirers and independent evaluators of software products, particularly those responsible for defining software quality requirements and for software product evaluation. It is recommended that users of the SQuaRE as well as ISO/IEC 14598 and 9126 series of standards also use this International Standard as a guide to execute their tasks.

2 Conformance

There is no particular conformance clause for this document. Users, for their intended use of SQuaRE series of Standards should follow individual conformance clauses stated in each document of the series.

3 Normative references

This International Standard does not require any normative references. All informative references are presented in the Bibliography.

4 Terms and definitions

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

NOTE The definitions are common to all parts of SQuaRE series of standards.

4.1

acquirer

individual or organisation that acquires or procures a system, software product or software service from a supplier

NOTE Based on the definition in ISO/IEC 12207:1995.

4.2

analysis model

algorithm or calculation combining one or more base and/or derived measures with associated decision criteria



SAI GLOBAL

This is a free 9 page sample. Access the full version online.

The remainder of this document
is available for purchase online at

www.saiglobal.com/shop

SAI Global also carries a wide range of publications from a wide variety of Standards Publishers:



Click on the logos to search the database online.