AS/NZS ISO/IEC 25020:2013
ISO/IEC 25020:2007

AS/NZS ISO/IEC 25020:2013

Australian/New Zealand Standard™

Software engineering—Software product Quality Requirements and Evaluation (SQuaRE)—Measurement reference model and guide

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 2 May 2013 and on behalf of the Council of Standards New Zealand on 29 April 2013.
This Standard was published on 24 May 2013.

The following are represented on Committee IT-015:

Australian Computer Society
Australian Society for Technical Communication, NSW
Charles Sturt University
Department of Defence, Australia
Griffith University
Quantitative Enterprise Software Performance
La Trobe University
National Association of Testing Authorities Australia
National ICT Australia
New Zealand Organisation for Quality
NSW Business Chamber
Systems Engineering Society of Australia
University of Auckland
University of Technology, Sydney
Vendor Interests, New Zealand

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 Standards may also be withdrawn.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.saiglobal.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

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 AS/NZS ISO/IEC 25020.

Australian/New Zealand Standard™

Software engineering—Software product Quality Requirements and Evaluation (SQuaRE)—Measurement reference model and guide

First published as AS/NZS ISO/IEC 25020:2013.

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140.

ISBN 978 1 74342 462 9

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 specify the selection and construction of software product quality measures, with respect to their use in conjunction with the other SQuaRE series documents.

This Standard is identical with, and has been reproduced from ISO/IEC 25020:2007, *Software engineering—Software product Quality Requirements and Evaluation* (SQuaRE)—*Measurement reference model and guide.*

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.

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

Reference to International Standard		*Australian/New Zealand Standard*	
ISO/IEC		AS/NZS ISO/IEC	
15939	Systems and software engineering—Measurement process	15939	Systems and software engineering—Measurement process
25000	Software Engineering—Software product Quality Requirements and Evaluation (SQuaRE)—Guide to SQuaRE	25000	Software Engineering—Software product Quality Requirements and Evaluation (SQuaRE)—Guide to SQuaRE

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

The general goal of creating the SQuaRE series of International Standards is to move to a logically organized, enriched and unified series covering three complementary processes: requirements specification, measurement and evaluation. The purpose of the SQuaRE series 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 and their evaluation. It includes a two-part quality model for aligning customer definitions of quality with characteristics of the software product. In addition, the series defines measures of software product quality characteristics 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. The Quality Management Division of the SQuaRE series deals with software products, and is separate and distinct from the "Quality Management" of processes which is defined in the ISO 9000 family of International 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 Quality Measurement Reference model presented in this International Standard.

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

— introduction of the new general reference model,

— introduction of dedicated and detailed guides for each division,

— introduction of Quality Measure Elements within the Quality Measurement Division,

— introduction of the Quality Requirements Division,

— incorporation and revision of the evaluation processes,

— introduction of guidance for practical use in the form of examples, and

— co-ordination and harmonization of content with ISO/IEC 15939.

SQuaRE consists of the following five divisions:

— Quality Management Division (ISO/IEC 2500n),

— Quality Model Division (ISO/IEC 2501n),

— Quality Measurement Division (ISO/IEC 2502n),

— Quality Requirements Division (ISO/IEC 2503n), and

— Quality Evaluation Division (ISO/IEC 2504n).

SQuaRE provides:

— terms and definitions,

— reference models,

— a general guide,

— individual division guides, and

— standards for requirements specification, measurement and evaluation purposes.

SQuaRE includes International Standards and technical reports for a quality model and measures, as well as on quality requirements and evaluation. SQuaRE replaces current ISO/IEC 9126 series and ISO/IEC 14598 series.

This International Standard is intended to be used together with ISO/IEC 25010. It is strongly recommended that users refer to ISO/IEC 2500n, ISO/IEC 2501n, ISO/IEC 2503n, and ISO/IEC 2504n division of International Standards prior to using this International Standard and the associated measurement technical reports, particularly if the user is not familiar with the use of software measures for requirements specification and product evaluation. These International Standards discuss the planning and use of the software quality measures defined in the ISO/IEC 2502n series on software product quality measurement.

ISO/IEC 25010 will provide a model and defines terms for software product quality characteristics and how these characteristics are decomposed into subcharacteristics. It does not describe how any of these subcharacteristics could be measured. The Quality Measurement Division provides information and guidance about how to measure the characteristics and subcharacteristics of a quality model. This International Standard provides a reference model and guide for measuring the quality characteristics defined in ISO/IEC 2501n Quality Model Division (Figure 1). The associated standards and technical reports within the Quality Measurement Division describe measures of quality throughout the product life cycle.

ISO/IEC 25021 offers quality measure elements that can be used to construct software quality measures. Quality measure elements are the base and derived measures used to create measures of software product quality characteristics. Quality measure elements may measure a static representation of the software, the behaviour of the software, or the effects of the software when it is used.

ISO/IEC 25022, ISO/IEC 25023 and ISO/IEC 25024 will describe measures for the characteristics in the quality model. Internal measures characterize software product quality based upon static representations of the software, external measures characterize software product quality based upon the behaviour of the computer-based system including the software, and quality in use measures characterize software product quality based upon the effects of using the software in a specific context of use.

The measures in these technical reports should not be construed as an exhaustive or required set. Figure 2 depicts the relationship between this International Standard and the technical reports in the Quality Measurement Division. Developers, evaluators, quality managers, acquirers, suppliers, maintainers and other users of software may select measures from these technical reports for the measurement of quality characteristics of interest. In practice this may be with respect to defining requirements, evaluating software products, quality management and other purposes. Users may also modify the measures or use measures which are not included in those technical reports.

AUSTRALIAN/NEW ZEALAND STANDARD

Software engineering—Software product Quality Requirements and Evaluation (SQuaRE)—Measurement reference model and guide

1 Scope

The scope of this International Standard is the selection and construction of software product quality measures, with respect to their use in conjunction with the other SQuaRE series documents.

This International Standard also contains the following informative annexes (A through C) and Bibliography:

— Criteria for selecting software quality measures and quality measure elements

— Demonstrating predictive validity and assessing measurement reliability

— Example format for documenting software quality measures

— Bibliography

The SQuaRE series of International Standards is intended for, but not limited to, developers, acquirers and independent evaluators of software, particularly those responsible for defining software product quality requirements and for software product evaluation. It is recommended that users of SQuaRE use this International Standard as a guide to execute their software product quality measurement tasks.

2 Conformance

Any software product quality measurement that conforms to this International Standard shall fulfil 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.

ISO/IEC 25000, *Software Engineering — Software product Quality Requirements and Evaluation (SQuaRE) — Guide to SQuaRE*

ISO/IEC 15939:2002, *Software engineering — Software measurement process*