AS ISO/IEC 25022:2019
ISO/IEC 25022:2016

AS ISO/IEC 25022:2019

Australian STANDARD

Systems and software engineering — Systems and software quality requirements and evaluation (SQuaRE) — Measurement of quality in use

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Australian Computer Society
Australian Digital Health Agency
Australian Society for Technical Communication (NSW)
Department of Defence (Australian Government)
Engineers Australia
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IT Service Management Forum Australia
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Preface

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

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to define quality in use measures for the characteristics defined in AS/NZS ISO/IEC 25010, and is intended to be used together with AS/NZS ISO/IEC 25010. It can be used in conjunction with the ISO/IEC 2503n and the ISO/IEC 2504n standards or to more generally meet user needs with regard to product or system quality.

This Standard contains the following:

(a) a basic set of measures for each quality in use characteristic; and

(b) an explanation of how quality in use is measured.

It provides a suggested set of quality in use measures to be used with the quality in use model in AS/NZS ISO/IEC 25010. They are not intended to be an exhaustive set.

This Standard is identical with, and has been reproduced from, ISO/IEC 25022:2016, *Systems and software engineering — Systems and software quality requirements and evaluation (SQuaRE) — Measurement of quality in use*.

As this document has been reproduced from an International Standard, the following applies:

(i) In the source text "this International Standard" should read "this Australian Standard".

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

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms "normative" and "informative" are used in Standards to define the application of the appendices or annexes to which they apply. A "normative" appendix or annex is an integral part of a Standard, whereas an "informative" appendix or annex is only for information and guidance.

Contents

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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 7, *Software and systems engineering*.

This first edition of ISO/IEC 25022, which is a part of the SQuaRE series of standards, cancels and replaces ISO/IEC 9126-4:2004, with the following changes:

— measures are given for the revised quality model for quality in use in ISO/IEC 25010;

— measures are categorized as generally applicable, could be used in a wide range of situations, or specialized for specific needs;

— annexes that were common to ISO/IEC 9126-2, ISO/IEC 9126-3, and ISO/IEC 9126-4 have been removed (and might be included in a future revision of ISO/IEC 25020).

The SQuaRE series of standards consists of the following divisions under the general title *Systems and software quality requirements and evaluation:*

— ISO/IEC 2500n — Quality Management Division

— ISO/IEC 2501n — Quality Model Division

— ISO/IEC 2502n — Quality Measurement Division

— ISO/IEC 2503n — Quality Requirements Division

— ISO/IEC 2504n — Quality Evaluation Division

— ISO/IEC 25050 — 25099 SQuaRE Extension Division

Annexes A, B, C, D, E, F and G are for information only.

Introduction

This International Standard is a part of the SQuaRE series of International Standards. It provides a set of measures for the characteristics of quality in use (defined in ISO/IEC 25010) that can be used for specifying quality in use requirements (in conjunction with ISO/IEC 25030) and measuring and evaluating quality in use (in conjunction with ISO/IEC 25040 and ISO/IEC 25041).

The quality measures included in this International Standard were selected based on their practical value. They are based on established practice (including, for example, Reference [17]). They are not intended to be exhaustive, and users of this International Standard are encouraged to refine them, if necessary.

Quality Measurement Division

This International Standard is a part of ISO/IEC 2502n Quality Measurement Division of SQuaRE series that currently consists of the following International Standards:

— ISO/IEC 25020 — Measurement reference model and guide: provides a reference model and guide for measuring the quality characteristics defined in ISO/IEC 2501n Quality Model Division;

— ISO/IEC 25021 — Quality measure elements: provides a format for specifying Quality Measure Elements and some examples of QMEs that can be used to construct software quality measures;

— ISO/IEC 25022 — Measurement of quality in use: provides measures, including associated measurement functions for the quality characteristics in the quality in use model;

— ISO/IEC 25023 — Measurement of system and software product quality: provides measures, including associated measurement functions and QMEs for the quality characteristics in the product quality model;

— ISO/IEC 25024 — Measurement of data quality: provides measures, including associated measurement functions and QMEs for the quality characteristics in the data quality model.

Figure 1 depicts the relationship between this International Standard and the other standards in the ISO/IEC 2502n division.

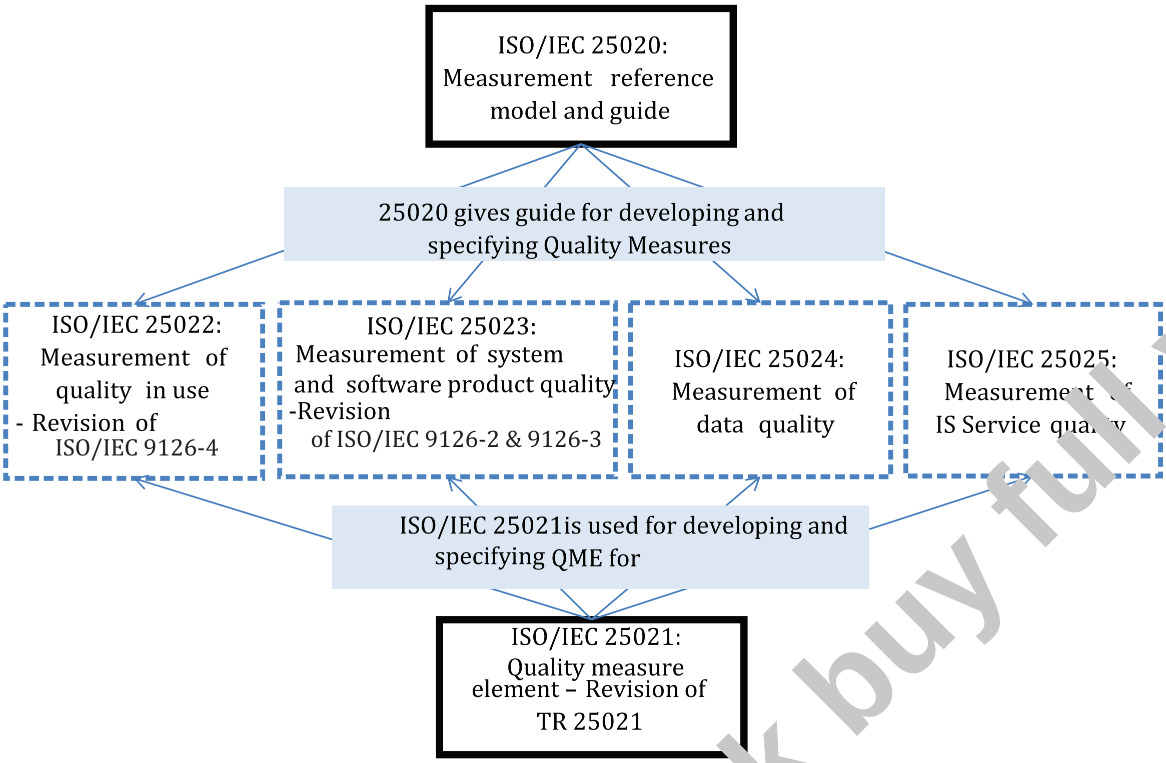

Figure 1 — Structure of the Quality Measurement Division

Outline and Organization of SQuaRE Series

The SQuaRE series consists of five main divisions and extension division. The outline of each divisions within the SQuaRE series are as follows.

— ISO/IEC 2500n — Quality Management Division. The standards that form this division define all common models, terms, and definitions referred further by all other standards from SQuaRE series. The division also provides requirements and guidance for the planning and management of a project.

— ISO/IEC 2501n — Quality Model Division. The standards that form this division provide quality models for system/software products, quality in use, and data. An IT service quality model is under development. Practical guidance on the use of the quality model is also provided.

— ISO/IEC 2502n — Quality Measurement Division. The standards that form this division include a system/software product quality measurement reference model, 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 forming foundations for the quality measures are defined and presented.

— ISO/IEC 2503n — Quality Requirements Division. The standard that forms this division helps specifying quality requirements. These quality requirements can be used in the process of quality requirements elicitation for a system/software product to be developed, designing a process for achieving necessary quality, or as inputs for an evaluation process.

— ISO/IEC 2504n — Quality Evaluation Division. The standards that form this division provide requirements, recommendations, and guidelines for system/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 for SQuaRE extension International Standards, which currently include ISO/IEC 25051 and the ISO/IEC 25060 to ISO/IEC 25069.

Australian Standard®

Systems and software engineering — Systems and software quality requirements and evaluation (SQuaRE) — Measurement of quality in use

1 Scope

This International Standard defines quality in use measures for the characteristics defined in ISO/IEC 25010, and is intended to be used together with ISO/IEC 25010. It can be used in conjunction with the ISO/IEC 2503n and the ISO/IEC 2504n standards or to more generally meet user needs with regard to product or system quality.

This International Standard contains the following:

— a basic set of measures for each quality in use characteristic;

— an explanation of how quality in use is measured.

This International Standard provides a suggested set of quality in use measures to be used with the quality in use model in ISO/IEC 25010. They are not intended to be an exhaustive set.

It includes as informative annexes examples of how to measure context coverage (Annex A), options for normalising quality in use measures (Annex B), use of ISO/IEC 25022 for measuring usability in ISO 9241-11 (Annex C), a quality in use evaluation process (Annex D), the relationship between different quality models (Annex E), and quality measurement concepts (Annex F).

The measures are applicable to the use of any human-computer system, including both computer systems in use and software products that form part of the system.

This International Standard does not assign ranges of values of the measures to rated levels or to grades of compliance because these values are defined for each system or product depending, on the context of use and users' needs.

Some attributes could have a desirable range of values, which does not depend on specific user needs but depends on generic factors, for example, human cognitive factors.

The proposed quality in use measures are primarily intended to be used for quality assurance and management of systems and software products based on their effects when actually used. The main users of the measurement results are people managing development, acquisition, evaluation, or maintenance of software and systems.

The main users of this International Standard are people carrying out specification and evaluation activities as part of the following:

— development: including requirements analysis, design, and testing through acceptance during the life cycle process;

— quality management: systematic examination of the product or computer system, for example, when evaluating quality in use as part of quality assurance and quality control;

— supply: a contract with the acquirer for the supply of a system, software product, or software service under the terms of a contract, for example, when validating quality at qualification test;

— acquisition: including product selection and acceptance testing, when acquiring or procuring a system, software product, or software service from a supplier;

— maintenance: improvement of the product based on quality in use measures.