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Australian Standard®

Software quality management
system

Part 1: Requirements



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Australian Computer Society
Australian Electrical and Electronic Manufacturers Association
Australian Information Industry Association
Australian Organization for Quality
Bureau of Steel Manufacturers of Australia
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Australian Standard®

**Software quality management
system**

Part 1: Requirements

First published as AS 3563—1988.
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PREFACE

This Standard was prepared by the Standards Australia Committee on Software Quality Assurance to supersede AS 3563—1988, *Software quality management system*.

It is recognized that the principles contained within this Standard are representative of sound management practice and hence are recommended for use when either invoked as a contractual requirement or for the purpose of providing a quality management system within an organization.

It is intended to provide a common means for establishing an effective quality management system when related to software, which, together with procedures for the specification, design, implementation and evaluation, allow development of software in a controlled manner. This should result in creation of software in the most cost effective way, having due regard to the whole life cycle of the product, and should instil a high degree of confidence that the software will meet the operational requirements.

It is believed that integration of these principles, together with the ability to demonstrate their effectiveness, will also lead to greater confidence in potential purchasing organizations when evaluating a developer's capability.

In format, this Standard closely follows that of AS 3901/NZS 9001/ISO 9001, *Quality systems for design/development, production, installation and servicing*, and thus is suitable for adoption in parallel with hardware requirements under that Standard. This Standard bears a similar relationship to AS 3900 and AS 3904.1 as does AS 3901 to those Standards.

This Standard is presented so as to make obvious the correspondence with AS 3901/NZS 9001/ISO 9001 and adds to that Standard those areas of particular relevance to the software development process. This manner of presentation will enable it to coexist with AS 3901/NZS 9001/ISO 9001 and will also allow updating of this edition in conjunction with the planned upgradings of the International Standard. This reformatting also reflects the view of the Committee that AS 3563.1 places greater emphasis on the design activities whereas AS 3901/NZS 9001/ISO 9001 emphasizes production and quality of conformance aspects. For this reason, some of the clauses in this Standard are identified as not applicable to the software development process.

To assist users who are new to the concepts of quality assurance, interpretive guidance was given for many of the clauses of the Standard in AS 3563—1988. This proved very popular and the concept has been retained for this edition of the Standard, notwithstanding the interpretive guidance given in the forthcoming ISO Standard which is anticipated for publication in 1992: ISO 9000-2, *Guide for the implementation of ISO 9001, ISO 9002, ISO 9003*, and ISO 9000-3, *Guidelines for the application of ISO 9001 to the development, supply and maintenance of software*, published in June 1991.

AS 3563.2, *Software quality management system, Part 2: Implementation*, will provide information as a guide to users for implementing the requirements of Part 1 of this Standard.

In preparing this Standard, cognizance was given of Australian Standards AS 3900/NZS 9000/ISO 9000, *Quality systems—Guide to selection and use*, AS 3901/NZS 9001/ISO 9001, *Quality systems for design/development, production, installation and servicing*, AS 3904.1/NZS 9004.1/ISO 9004, *Quality management and quality system elements—Guidelines*, ISO 9000-3, *Quality management and quality assurance standards—Part 3: Guidelines for the application of ISO 9001 to the development, supply and maintenance of software* and ISO 8402, *Quality—Vocabulary*.

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FOREWORD

The development and acquisition of computerized systems may be characterized by a recognized combination of two major components: hardware and software. The successful integration of these two major components is essential for compliance with overall user requirements. Essential to this successful integration is the application of a disciplined approach to management provided by a quality system.

This Standard is presented as a statement of requirements which may be nominated by individual customers, as a condition of contract or agreement, when seeking to obtain software for which they have need for assurance of quality prior to acceptance. The Standard is also recommended to developers whose software is distributed for general sale, as a guide to identifying the requirements of effective and economical management systems to control and assure the quality of their software.

It should be noted that the Standard only defines the essential features of the system and does not attempt to prescribe how the system will be implemented. Guidance is given after each clause identified as requiring such guidance. It is for developers to establish procedures appropriate to their own scale, methodologies and organization to achieve the requirements of the Standard. In the case of a potential customer, the developer's means of implementing the required system should be agreed on when signing a contract.

Where applicable in this Standard, the word 'software' includes installation and operator documentation, user and maintenance documentation, user procedures and training materials. Care should be taken by the developer and the customer to clarify their intentions in this regard when using this Standard.

This Standard may be used as a replacement for AS 3901/NZS 9001/ISO 9001 *Quality systems for design/development, production, installation and servicing*, in specifying a software quality management system or may be used as a supplement to the application of AS 3901/NZS 9001/ISO 9001 for the development of software.

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STANDARDS AUSTRALIA

Australian Standard
Software quality management system

Part 1: Requirements

1 SCOPE AND FIELD OF APPLICATION

1.1 Scope This Standard establishes requirements for a software developer's quality management system. It identifies each of the elements of a quality management system to be designed, developed and maintained by the developer with the objective of ensuring that the software will meet the requirements of a contract, purchase order or other agreement (collectively referred to as a 'contract').

1.2 Application This Standard is applicable in contractual situations when the contract specifically requires design effort and the product requirements are stated principally in performance terms or require to be established.

When referenced in a contract, this Standard shall apply to the development of software whether the contract is for software alone or for software as a portion of a system. This Standard may also be applied to 'in-house' software development where the 'customer' can be taken to be that part of the organization requesting the development.

This Standard shall also apply to non-deliverable software developed under the contract, which affects the quality of the deliverable product, unless specifically exempted.

If an inconsistency exists between the contract requirements and this document, the contract requirements shall prevail.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

1057

Quality assurance and quality control—Glossary of terms

3901/NZS 9001/ISO 9001

Quality systems for design, development, production, installation and servicing

NOTE: Throughout this Standard reference to AS 3901 is to be taken as reference to AS 3901/NZS 9001/ISO 9001.

3 DEFINITIONS For the purpose of this Standard, the definitions given in AS 1057 and those below apply.

3.1 Baseline The agreed specification of a software item, which has been uniquely identified and becomes the focus for further development, and which can only be altered under strict control procedures.

3.2 Development All activities that are carried out to create a software product.

3.3 Software product requirements document The document that describes the full requirements for the software product that is to be developed.

NOTE: Equivalent names used in the software industry are—

(a) user requirements;

(b) segment specification;

(c) software product requirements specification; and

(d) technical requirements section of the contract.

3.4 Test specification Describes the test criteria and the methods to be used in a specific test to assure that the performance and design specifications have been satisfied. The test specification identifies the capabilities or program functions to be tested, and identifies the test environment.

4 QUALITY SYSTEM REQUIREMENTS**4.1 Management responsibility**

4.1.1 Quality policy The developer's management shall define and document its policy and objectives for, and commitment to, quality. The developer shall ensure that this policy is understood, implemented and maintained at all levels in the organization.

4.1.2 Organization

4.1.2.1 Responsibility and authority The responsibility, authority and the interrelation of all personnel who manage, perform and verify work affecting quality shall be defined; particularly for personnel who need the organizational freedom and authority to—

(a) initiate action to prevent the occurrence of non-conformity;

(b) identify and record any quality problems;