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Software Quality Management System

Part 1: Requirements

IEEE Standards Board

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Abstract: Requirements for a software developer's quality management system are established. Each of the elements of a quality management system to be designed, developed, and maintained by the developer are identified, 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").

Keywords: software development, software quality, software quality management.

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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.

Introduction

(This introduction is not a part of IEEE Std 1298-1992 [AS 3563.1-1991], Software Quality Management System, Part 1: Requirements.)

IEEE Std 1298-1992 (AS 3563.1-1991) is a comprehensive standard for the software development process. The level of detail is constrained by the size of the document. This standard, supplemented by standards in the topic areas of project management, software requirements, programming, testing, software configuration management, and quality assurance, provides an effective framework for achieving quality goals for a software development project.

Suggested references or clarifications for IEEE Std 1298-1992 (AS 3563.1-1991) paragraphs:

Clause 2 :

For AS 1057, Quality Assurance and Quality Control - Glossary of Terms, use ISO 2382-1 : 1984, Data Processing - Vocabulary - Part 01: Fundamental Terms; ISO 8402 : 1988, Quality - Vocabulary; and IEEE Std 610.12-1990, IEEE Standard Glossary of Software Engineering Terminology.

For AS 3901, Quality Systems for Design/Development, Production, Installation, and Servicing, use ISO 9001 : 1987, Quality Systems - Model for Quality Assurance in Design/Development, Production, Installation and Servicing.

Clause 4 :

4.1 For verification and validation, see IEEE Std 1012-1986, IEEE Standard for Software Verification and Validation Plans.

4.2 For quality management, see IEEE Std 730-1989, IEEE Standard for Software Quality Assurance Plans.

4.3 For project planning, see IEEE Std 1058.1-1987, IEEE Standard for Software Project Management Plans.

For software product requirements, see IEEE Std 830-1984, IEEE Guide for Software Requirements Specifications.

For software configuration management, see IEEE Std 828-1990, IEEE Standard for Software Configuration Management Plans, and IEEE Std 1042-1987, IEEE Guide to Software Configuration Management.

4.4 For software configuration management, see IEEE Std 828-1990, IEEE Standard for Software Configuration Management Plans, and IEEE Std 1042-1987, IEEE Guide to Software Configuration Management.

For reviews and audits, see IEEE Std 1028-1988, IEEE Standard for Reviews and Audits.

For design document, see IEEE Std 1016-1987, IEEE Recommended Practice for Software Design Descriptions.

For user documentation, see IEEE Std 1063-1987, IEEE Standard for Software User Documentation.

For program testing, see IEEE Std 829-1983, IEEE Standard for Software Test Documentation, and IEEE Std 1008-1987, IEEE Standard for Software Unit Testing.

4.5 For document configuration management, see IEEE Std 828-1990, IEEE Standard for Software Configuration Management Plans, and IEEE Std 1042-1987, IEEE Guide to Software Configuration Management.

4.8 For software configuration management, see IEEE Std 828-1990, IEEE Standard for Software Configuration Management Plans, and IEEE Std 1042-1987, IEEE Guide to Software Configuration Management.

4.10 For test procedures, see IEEE Std 829-1983, IEEE Standard for Software Test Documentation, and IEEE Std 1008-1987, IEEE Standard for Software Unit Testing.

4.15 For software configuration management, see IEEE Std 828-1990, IEEE Standard for Software Configuration Management Plans, and IEEE Std 1042-1987, IEEE Guide to Software Configuration Management.

4.16 For quality records, see IEEE Std 730-1989, IEEE Standard for Software Quality Assurance Plans.

4.17 For quality audits, see IEEE Std 730-1989, IEEE Standard for Software Quality Assurance Plans.

4.18 The Training Guarantee Act is an Australian law that requires most firms to set aside a percentage of the gross sales for employee training.

4.21 For software development environment configuration management, see IEEE Std 828-1990, IEEE Standard for Software Configuration Management Plans, and IEEE Std 1042-1987, IEEE Guide to Software Configuration Management.

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