

Australian/New Zealand Standard™

**Information technology—
Software maintenance**

AS/NZS 14764:2001

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee IT/15, Software Engineering. It was approved on behalf of the Council of Standards Australia on 16 June 2000 and on behalf of the Council of Standards New Zealand on 16 June 2000. It was published on 7 February 2001.

The following interests are represented on Committee IT/15:

Australian Computer Society
Australian Information Industry Association
Australian Society for Technical Communication
Australian Software Metrics Association
Defence Science and Technology Organisation
Department of Defence, Australia
Griffith University
New Zealand Organisation for Quality
Quality Society of Australasia
Software Engineering Australia
Software Quality Association
Software Verification Research Centre
Software Process Improvement Network, Sydney
Systems Engineering Society of Australia
University of New South Wales
University of South Australia

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 Standards may also be withdrawn.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 Australia web site 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 International or Standards New Zealand at the address shown on the back cover.

Australian/New Zealand Standard™

Information technology— Software maintenance

First published as AS/NZS 14764:2001.

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 International Ltd, GPO Box 5420, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 3503 7

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT/15, Software Engineering. This Standard is identical with and has been reproduced from, ISO/IEC 14764:1999, *Information technology—Software maintenance*.

The objective of this Standard is to give software designers guidance that applies to planning, execution, control, review, evaluation and closure of the maintenance process and the development of maintenance plans which apply to software products.

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.

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

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text ‘this International Standard’ should read ‘this Australian/New Zealand Standard’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

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

<i>Reference to International Standard</i>		<i>Australian or Australian/New Zealand Standard</i>	
ISO		AS	
5807	Information processing— Documentation symbols and conventions for data, program and system flowcharts, program network charts and system resources charts	—	
8402	Quality management and quality assurance—Vocabulary	—	
ISO/IEC			
2382	Information technology—Vocabulary	1189	Data processing—Vocabulary
2382-20	Part 20: System development	1189.20	Part 20: System development
		AS/NZS	
9126	Information technology—Software product evaluation—Quality characteristics and guidelines for their use	4216	Information technology—Software product evaluation—Quality characteristics and guidelines for their use
12207	Information technology—Software life cycle processes	12207	Information technology—Software life cycle processes

CONTENTS

Page

1 Scope	1
1.1 Purpose.....	1
1.2 Field of application	1
1.3 Limitations.....	2
2 Conformance	2
3 Normative references	2
4 Terms and definitions.....	3
4.1 Adaptive maintenance.....	3
4.2 Baseline	3
4.3 Corrective maintenance	3
4.4 Maintainability Plan	3
4.5 Maintenance enhancement	3
4.6 Maintenance Plan.....	3
4.7 Maintenance Process	4
4.8 Maintenance programme	4
4.9 Modification Request (MR).....	4
4.10 Perfective maintenance	4
4.11 Preventive maintenance	4
4.12 Problem Report (PR).....	5
4.13 Software Engineering Environment (SEE).....	5
4.14 Software Test Environment (STE).....	5
4.15 Software transition	5
5 Application of this International Standard.....	5
5.1 Maintenance process	5

5.2 Organization of this International Standard	5
6 Implementation considerations	6
6.1 Introduction.....	6
6.2 Types of maintenance.....	6
6.3 Arrangements for maintenance.....	7
6.4 Tools for maintenance.....	7
6.5 Software measurement.....	8
6.6 Documentation of process.....	8
6.7 Early involvement in development.....	8
6.8 Maintainability.....	8
6.8.1 Maintainability and the development process.....	9
6.8.2 Maintainability and specific activities in the development process.....	10
6.9 Software transition.....	11
6.10 Documentation.....	11
7 Software maintenance strategy	11
7.1 Introduction.....	11
7.2 The maintenance concept.....	12
7.2.1 Scope.....	12
7.2.2 Tailoring of the process.....	12
7.2.3 Designation of who will provide maintenance.....	12
7.2.4 Estimate of maintenance costs.....	13
7.3 Maintenance planning.....	13
7.3.1 Introduction.....	13
7.3.2 The maintenance plan.....	13
7.3.3 Guidelines for a maintenance plan.....	14
7.4 Resource analysis.....	16
7.4.1 Personnel resources.....	16
7.4.2 Environment resources.....	16
7.4.3 Financial resources.....	16
8 Maintenance processes	17

8.1 Process implementation	18
8.1.1 Inputs	18
8.1.2 Tasks	19
8.1.3 Controls	20
8.1.4 Support	20
8.1.5 Outputs	20
8.2 Problem and modification analysis.....	21
8.2.1 Inputs	21
8.2.2 Tasks.....	21
8.2.3 Controls.....	23
8.2.4 Support.....	23
8.2.5 Outputs	24
8.3 Modification implementation	24
8.3.1 Inputs	24
8.3.2 Tasks.....	25
8.3.3 Controls.....	25
8.3.4 Support.....	25
8.3.5 Outputs	26
8.4 Maintenance review/acceptance	26
8.4.1 Inputs	26
8.4.2 Tasks.....	26
8.4.3 Controls.....	27
8.4.4 Support.....	27
8.4.5 Outputs	27
8.5 Migration.....	28
8.5.1 Inputs	28
8.5.2 Tasks.....	28
8.5.3 Controls.....	31
8.5.4 Support.....	31

	<i>Page</i>
8.5.5 Outputs	31
8.6 Software retirement	32
8.6.1 Inputs	32
8.6.2 Tasks	32
8.6.3 Controls	34
8.6.4 Support	34
8.6.5 Outputs	34
Annex A (informative) Cross-reference between ISO/IEC FDIS 14764 and ISO/IEC 12207	36
Bibliography	38
Figures	
Figure 1 Modification Request	4
Figure 2 Maintenance Process	18

AUSTRALIAN/NEW ZEALAND STANDARD

Information technology – Software maintenance

1 Scope

This International Standard describes in greater detail management of the Maintenance Process described in ISO/IEC 12207. This International Standard also establishes definitions for the various types of maintenance. This International Standard provides guidance that applies to planning, execution and control, review and evaluation, and closure of the maintenance process. The scope includes maintenance for multiple software products with the same maintenance resources. "Maintenance" in this International Standard means software maintenance unless otherwise stated.

This International Standard provides the framework within which generic and specific software maintenance plans may be executed, evaluated, and tailored to the scope and magnitude of given software products.

This International Standard provides the framework, precise terminology, and processes to allow the consistent application of technology (tools, techniques, and methods) to software maintenance.

This International Standard provides guidance for the maintenance of software. The basis for the Maintenance Process and its activities comes from the definitions of ISO/IEC 12207. It defines the activities and tasks of software maintenance, and provides maintenance planning requirements. It does not address the operation of software and the operational functions, e.g., backup, recovery, system administration, which are normally performed by those who operate the software.

This International Standard is written primarily for maintainers of software and additionally for those responsible for development and quality assurance. It may also be used by acquirers and users of systems containing software who may provide inputs to the maintenance plan.

1.1 Purpose

This International Standard provides guidance on the management of (or how to perform) the maintenance process. It identifies how the Maintenance Process can be invoked during acquisition and operation.

1.2 Field of application

This International Standard is intended to provide guidance for the planning for and maintenance of software products or services, whether performed internally or externally to an organization. It is not intended to apply to the operation of the software.

This International Standard is intended to provide guidance for two-party situations and may be equally applied where the two parties are from the same organization. This International Standard is intended to also be used by a single party as self-imposed tasks (ISO/IEC 12207).