

Australian Standard™

**Dependability management**

**Part 3.14: Application guide—  
Maintenance and maintenance support**

This Australian Standard was prepared by Committee QR-005, Dependability. It was approved on behalf of the Council of Standards Australia on 8 April 2005. This Standard was published on 5 May 2005.

---

The following are represented on Committee QR-005:

AirServices Australia  
Australian Organisation for Quality  
Department of Defence (Australia)  
Engineers Australia  
The University of New South Wales

Additional Interests:

Australian Bankers Association  
Australian Chamber of Commerce and Industry  
Australian Electrical and Electronic Manufacturers Association  
Australian Industry Group  
Australian Nuclear Science & Technology Organisation  
Certification Interests (Australia)  
Commonwealth Department of Transport and Regional Services  
Energy Supply Association of Australia  
Federal Chamber of Automotive Industries  
Federation of Automotive Products Manufacturers  
QSA International

---

### **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 Standards may also be withdrawn.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 Standards can be found by visiting the Standards Web Shop at [www.standards.com.au](http://www.standards.com.au) and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

Australian Standards™ and other products and services developed by Standards Australia are published and distributed under contract by SAI Global, which operates the Standards Web Shop.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at [mail@standards.org.au](mailto:mail@standards.org.au), or write to the Chief Executive, Standards Australia, GPO Box 5420, Sydney, NSW 2001.

---

Australian Standard™

**Dependability management**

**Part 3.14: Application guide—  
Maintenance and maintenance support**

First published as AS IEC 60300.3.14—2005.

**COPYRIGHT**

© Standards Australia

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.

Published by Standards Australia GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 6668 4

## PREFACE

This Standard was prepared by Standards Australia Committee QR-005, Dependability.

It is identical with, and has been reproduced from, IEC 60300-3-14, Ed.1.0 (2004), *Dependability management, Part 3-14: Application guide—Maintenance and maintenance support*.

‘Dependability’ is a collective term for performance characteristics (reliability, availability, maintainability) of simple or complex products and systems. This Standard is part of the AS IEC 60300 series of dependability management Standards, which provide general guidelines for establishing a dependability management system to meet most organizational or project needs, supported by a ‘tool kit’ of non-prescriptive standards on a range of dependability application guidelines and methods, and outlines maintenance and maintenance support process as a major component of dependability.

The objective of this Standard is to provide an outline of the maintenance, maintenance support and management processes and techniques that can be applied to achieve adequate dependability and meet operational needs throughout the life cycle of systems, products and equipment.

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) The page numbers do not correspond to the IEC dual language (English/French) version.
- (c) In the source text ‘this part of IEC 60300’ should read ‘this Australian Standard’.

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

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
IEC		AS IEC	
60300	Dependability management	60300	Dependability management
60300-1	Part 1: Dependability systems management	60300.1	Part 1: Dependability systems management
60300-2	Part 2: Guidelines for dependability management	60300.2	Part 2: Guidelines for dependability management
60300-3-3	Part 3: Application guide – Life cycle costing	60300.3.3	Part 3.3: Application guide – Life cycle costing
60300-3-10	Part 3-10: Application guide – Maintainability	60300.3.10	Part 3.10: Application guide – Maintainability
60300-3-11	Part 3-11: Application guide – Reliability centred maintenance	60300.3.11	Part 3.11: Application guide – Reliability centred maintenance
60300-3-12	Part 3-12: Application guide – Integrated logistic support	60300.3.12	Part 3.12: Application guide – Integrated logistic support

Only international references identical to Australian or Australian/New Zealand Standards have been listed.

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

	<i>Page</i>
1 Scope .....	1
2 Normative references .....	1
3 Terms, definitions and acronyms .....	2
3.1 Terms and definitions .....	2
3.2 Acronyms .....	5
4 Maintenance and maintenance support overview .....	5
4.1 Life cycle aspects .....	5
4.1.1 General .....	5
4.1.2 Scenarios for maintenance and maintenance support .....	6
4.1.3 Concept and definition phase .....	7
4.1.4 Design and development phase .....	7
4.1.5 Manufacturing phase .....	8
4.1.6 Installation phase .....	8
4.1.7 Operation and maintenance phase .....	8
4.1.8 Disposal phase .....	9
4.2 Description of maintenance .....	9
4.2.1 General .....	9
4.2.2 Maintenance policy and concept .....	9
4.2.3 Indenture levels .....	10
4.2.4 Maintenance echelons .....	10
4.2.5 Preventive and corrective maintenance .....	10
4.3 Description of maintenance support .....	11
5 Management responsibility .....	11
5.1 Management commitment .....	11
5.2 Customers .....	12
5.3 Maintenance policy .....	12
5.4 Planning of maintenance and maintenance support .....	12
5.5 Responsibility, authority and communication .....	12
6 Maintenance process implementation .....	13
6.1 General .....	13
6.2 Maintenance management .....	13
6.3 Maintenance and maintenance support planning .....	14
6.3.1 General .....	14
6.3.2 Determination of maintenance support .....	15
6.3.3 Maintenance task identification .....	16
6.3.4 Maintenance task analysis .....	17
6.3.5 Identification of maintenance support resources .....	17
6.4 Maintenance preparation .....	18
6.5 Maintenance execution .....	18
7 Resource management .....	19
7.1 Provision of resources .....	19
7.2 Human resources .....	19
7.2.1 General .....	19

7.2.2	Training .....	20
7.3	Infrastructure .....	20
7.3.1	General .....	20
7.3.2	Support equipment .....	21
7.3.3	Built-in test equipment (BITE) .....	22
7.3.4	Maintenance facilities .....	23
7.3.5	Administration and technical facilities .....	23
7.3.6	Computerized maintenance information systems .....	24
7.4	Information resources .....	24
7.4.1	General .....	24
7.4.2	Documentation .....	24
7.4.3	Maintenance information .....	26
7.5	Materials and spare parts .....	28
7.5.1	General .....	28
7.5.2	Spare parts quantification .....	28
7.5.3	Spare parts identification .....	30
8	Measurement, analysis and improvement .....	30
8.1	General .....	30
8.2	Monitoring and measurement .....	30
8.2.1	General .....	30
8.2.2	Customer-related measurement .....	30
8.2.3	Maintenance-related measurement .....	31
8.3	Maintenance assessment .....	31
8.4	Maintenance improvement .....	32
8.5	Modifications .....	32
Annex A (informative)	Factors affecting maintenance and maintenance support .....	33
Bibliography	.....	36
Figure 1	– Maintenance and maintenance support during the life cycle .....	6
Figure 2	– Interrelationship of maintenance terms .....	9
Figure 3	– Types of maintenance tasks .....	11
Figure 4	– Maintenance processes .....	13
Figure 5	– Maintenance and maintenance support planning process .....	15
Figure 6	– Spare parts provisioning process .....	29

## INTRODUCTION

The provision of maintenance and maintenance support is a key element in ensuring the dependability of items (products, equipment and systems) throughout their life cycle. Proper functionality, capability and dependability performance are achieved by providing the necessary maintenance and maintenance support in conjunction with appropriate design, quality manufacturing, and sound operating practices.

The amount and type of maintenance and maintenance support depends on customer needs, the nature of the item, its condition, required availability and other factors. As these factors change, especially during the operation and maintenance phase, maintenance and maintenance support may need to be adjusted.

A number of different functions, such as maintenance management and asset management, include maintenance and maintenance support. This standard does not preclude their use, but does indicate what should be addressed under these headings.

Inadequate, excessive or incorrect maintenance can cause failures, which may significantly reduce the availability of items and result in greatly increased cost due to loss of performance and possible secondary damage. The reduced availability often produces operational penalties and a consequent loss of revenue, which can be significantly greater than the cost of maintenance or even the cost of the original failure. Safety may also be affected and in some industries this may be the most important consideration.

This standard provides a more general approach to maintenance and maintenance support than used in integrated logistic support (ILS). ILS is a method by which all logistic support services are considered and provided for customers as an integral part of product development. This standard addresses the case for complex systems where maintenance and maintenance support need to be adjusted to specific situations during both the design phase and the operation and maintenance phase.

Currently in preview, click buy full vers.

## STANDARDS AUSTRALIA

**Australian Standard****Dependability management****Part 3.14: Application guide—Maintenance and maintenance support****1 Scope**

This part of IEC 60300 describes a framework for maintenance and maintenance support and the various minimal common practices that should be undertaken. The purpose of this standard is to outline, in a generic manner, management, processes and techniques related to maintenance and maintenance support that are necessary to achieve adequate dependability to meet the operational needs of the customer.

NOTE 1 Maintenance and maintenance support are a major element of dependability as described in IEC 60300-1 and IEC 60300-2.

In some cases, regulatory and other mandatory requirements need to be considered. Maintenance and maintenance support requirements and obligations may therefore need to be specified in a contract, which cites this standard.

This standard is intended for use by a wide range of suppliers, maintenance support organizations and users and can be applied to all items.

This standard is applicable to items, which include all types of products, equipment and systems (hardware and associated software). Most of these require a certain level of maintenance to ensure that their required functionality, dependability, capability, economic, safety and regulatory requirements are achieved.

NOTE 2 For consistency, this standard will use the term "item" as defined in 3.1.5, except where the context requires otherwise.

**2 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.

IEC 60300-1:2003, *Dependability management – Part 1: Dependability management systems*

IEC 60300-2:2004, *Dependability management – Part 2: Guidelines for dependability management*

IEC 60300-3-2, *Dependability management – Part 3: Application guide – Section 2: Collection of dependability data from the field*

IEC 60300-3-3, *Dependability management – Part 3: Application guide – Section 3: Life cycle costing*

IEC 60300-3-10, *Dependability management – Part 3-10: Application guide – Maintainability*