

Australian Standard™

**Dependability management  
Part 3.1: Application guide—  
Analysis techniques for dependability—  
Guide on methodology**

This Australian Standard was prepared by Committee QR-005, Reliability and Maintainability. It was approved on behalf of the Council of Standards Australia on 28 May 2003 and published on 25 July 2003.

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Guide on methodology**

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## INTRODUCTION

The analysis techniques described in this part of IEC 60300 are used for the prediction, review and improvement of reliability, availability and maintainability of an item.

These analyses are conducted during the concept and definition phase, the design and development phase and the operation and maintenance phase, at various system levels and degrees of detail, in order to evaluate, determine and improve the dependability measures of an item. They can also be used to compare the results of the analysis with specified requirements.

In addition, they are used in logistics and maintenance planning to estimate frequency of maintenance and part replacement. These estimates often determine major life cycle cost elements and should be carefully applied in life cycle cost and comparative studies.

In order to deliver meaningful results, the analysis should consider all possible contributions to the dependability of a system: hardware, software, as well as human factors and organizational aspects.

**DEPENDABILITY MANAGEMENT –****Part 3-1: Application guide –  
Analysis techniques for dependability – Guide on methodology****1 Scope**

This part of IEC 60300 gives a general overview of commonly used dependability analysis techniques. It describes the usual methodologies, their advantages and disadvantages, data input and other conditions for using various techniques.

This standard is an introduction to selected methodologies and is intended to provide the necessary information for choosing the most appropriate analysis methods.

**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 60050(191):1990, *International Electrotechnical Vocabulary (IEV) – Chapter 191: Dependability and quality of service*

IEC 60300-3-2:1993, *Dependability management – Part 3: Application guide – Section 2: Collection of dependability data from the field*

IEC 60300-3-4:1996, *Dependability management – Part 3: Application guide – Section 4: Guide to the specification of dependability requirements*

IEC 60300-3-5:2001, *Dependability management – Part 3-5: Application guide – Reliability test conditions and statistical test principles*

IEC 60300-3-10:2001, *Dependability management – Part 3-10: Application guide – Maintainability*

IEC 60706-1:1982, *Guide on maintainability of equipment – Part 1: Sections One, Two and Three – Introduction, requirements and maintainability programme*

IEC 60706-2:1990, *Guide on maintainability of equipment – Part 2: Section Five – Maintainability studies during the design phase*

IEC 60312:1985, *Analysis techniques for system reliability – Procedure for failure mode and effects analysis (FMEA)*

IEC 61078:1991, *Analysis techniques for dependability – Reliability block diagram method*

IEC 61165:1995, *Application of Markov techniques*

IEC 61709:1996, *Electronic components – Reliability – Reference conditions for failure rates and stress models for conversion*

IEC 61882:2001, *Hazard and operability studies (HAZOP studies) – Application guide*

ISO 9000:2000, *Quality management systems – Fundamentals and vocabulary*