Australian/New Zealand Standard™

Dependability management

Part 3.3: Application guide – Life cycle costing

AS/NZS IEC 60300.3.3:2019

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Part 3.3: Application guide – Life cycle costing

First published as AS IEC 60300.3.3—2005.
Jointly revised and redesignated as AS/NZS IEC 60300.3.3:2019.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee QR-005, Dependability to supersede AS IEC 60300.3.3—2005, *Dependability management — Part 3.3: Application guide — Life cycle costing.*

The objective of this Standard is to establish a general introduction to the concept of life cycle costing and covers all applications. Although costs incurred over the life cycle consist of many contributing elements, this document particularly highlights the costs associated with the dependability of an item. This forms part of an overall dependability management programme as described in AS/NZS IEC 60300.1.

Guidance is provided on life cycle costing for use by managers, engineers, finance staff, and contractors; it is also intended to assist those who may be required to specify and commission such activities when undertaken by others.

This Standard is identical with, and has been reproduced from, IEC 60300-3-3:2017, *Dependability management — Part 3-3: Application guide — Life cycle costing*

As this document has been reproduced from an International Standard, a full point substitutes for a comma when referring to a decimal marker.

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FOREWORD

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International Standard IEC 60300-3-3 has been prepared by the IEC technical committee 56: Dependability.

This third edition cancels and replaces the second edition published in 2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) addition of a complete analysis process;
b) greater reference to international accounting practices;
c) increased discussion of financial concepts.

The text of this standard is based on the following documents:

FDIS	Report on voting
56/1713/FDIS	56/1720/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60300 series, published under the general title *Dependability management*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Life cycle costing is the process of performing an economic analysis to assess the cost of an item over a portion, or all, of its life cycle in order to make decisions that will minimize the total cost of ownership while still meeting stakeholder requirements. Generally, an organization may only be able to, or need to, evaluate cost for a portion of the total life of an item. Across the life of any item, decisions involving a trade-off between current and future costs will be necessary. This trade-off process will be enhanced by defining the short and long term implications of feasible expenditure decisions.

The principal use of this document is to compare one alternative system solution to another where future cost of ownership comprising maintenance, operations, enhancement and disposal actions is significant and require a balance between the cost of acquisition and the residual unrealized risk of ownership. Such a balance is achieved by technical and monetary assessments that take into account varying outcomes of availability, reliability, maintainability and supportability. Life cycle costing can also provide essential data to develop budgetary estimates.

This document is also intended to assist those who may be required to specify, commission and manage such activities when undertaken by others.

The highest value from life cycle costing is achieved early in the life of an item when many configuration options are possible and influence on future costs the greatest. Studies have shown that life cycle costs are mostly committed and the opportunity for affordable change is progressively reduced as item detailed design is approached.

Life cycle costing comprises only expense elements, which may be tangible or intangible; revenue or value outcomes are not included. Costs comprise all expected future expenditure including financial allowance for residual risk. Value outcomes, such as revenue, are analysed in the subsequent financial or economic trade-off analysis that use the results of the life cycle cost analysis.

Analysis outcomes are often presented as a single figure representing all future expenditures at a single point in time. The analysis may also be presented as a future cost profile without inclusion of the time value of money. However, as future costs are uncertain in both approaches, the analysis may also be presented as a probability distribution to highlight any potential sensitivity of the outcome to that uncertainty.

When assessing the impacts of potential options, analysts may need to cost intangible outcomes such as safety exposure, loss of public amenity or damage to corporate image. The use of multi-attribute rank ordering or semi-quantitative matrixes are not applicable for assessing these impacts as life cycle costing has a quantitative outcome of cost, namely: life cycle cost (LCC). Many quantitative techniques, such as “willingness to pay” or “choice modelling” have been developed and are often applied to assure all direct consequences are included in the analysis.

The approach defined in this document recognizes that life cycle costing has been applied for many decades across many industries, some of which have developed their own set of terms and language. An organization may adapt the terms used in this document to their context of use to ensure that the intent of this document is achieved.

DEPENDABILITY MANAGEMENT –

Part 3-3: Application guide – Life cycle costing

1 Scope

This part of IEC 60300 establishes a general introduction to the concept of life cycle costing and covers all applications. Although costs incurred over the life cycle consist of many contributing elements, this document particularly highlights the costs associated with the dependability of an item. This forms part of an overall dependability management programme as described in IEC 60300-1 [1][1].

Guidance is provided on life cycle costing for use by managers, engineers, finance staff, and contractors; it is also intended to assist those who may be required to specify and commission such activities when undertaken by others.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
acquisition cost
initial cost of developing and realizing an item so it can be utilized and placed into service

3.1.2
amortization
paying off of debt with a fixed repayment schedule in regular instalments over a period of time

Note 1 to entry: Amortization is also defined as the spreading out of capital expenses for intangible assets over a specific period of time (usually over the asset's useful life) for accounting and tax purposes.

3.1.3
base date
fixed point in time set as the common cost reference

3.1.4
cost breakdown structure
framework of cost elements so that they can be distinctly defined and estimated

[1] Numbers in square brackets refer to the Bibliography.