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Obsolescence management

Gestion de l'obsolescence

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INTERNATIONAL
ELECTROTECHNICAL
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COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 21.020

ISBN 978-2-8322-6960-2

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OBSOLESCENCE MANAGEMENT

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This second edition cancels and replaces the first edition published in 2007. This edition constitutes a technical revision.

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

- a) this document has now been written with requirements as a standard, not a guide;
- b) this document continues to have guidance in the informative annexes;
- c) this document has been written as a general process for all technologies and items.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
56/1838/FDIS	56/1843/RVD

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

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

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

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INTRODUCTION

For the purposes of this document, obsolescence management is a discipline used at all phases of an item's life cycle to ensure an item and its sub items can continue to fulfil their requirements over their expected useful life.

This document takes a different view of obsolescence from the standard dictionary definition. Instead of an item becoming outdated or no longer used, this document views obsolescence as the transition of a required item still in use from available to unavailable from the manufacturer. Any item that remains in use will be subject to obsolescence. Obsolescence manifests itself as difficulty in obtaining supplies, spares and/or support.

This document defines the requirements for managing the obsolescence of any type of item. Obsolescence management helps prevent unnecessary losses (for example loss of commercial service or capability) and treat risks associated with obsolescence. The assessment of risk associated with obsolescence takes account of factors including but not limited to: the likelihood of an item becoming obsolete during its expected useful life, the likelihood of an impact occurring during that projected useful life, and the severity of that impact. Obsolescence management treats risks associated with obsolescence by reducing the likelihood or severity of impact, or both.

It has become essential to include obsolescence management within planning activities from the earliest life cycle phases. The guidance provided in this document could be characterized as strategic obsolescence management when obsolescence management is planned and implemented during the early life cycle phases.

Even though this situation may not be a direct case of obsolescence, this document will also be of assistance in the management of items that have diminished manufacturing sources and materiel shortages that can result in long lead times, reduced availability and ultimately obsolescence of those items.

Managing obsolescence contributes to the dependability of an item, particularly supportability, which is defined as the 'ability to be supported to sustain the required availability with a defined operational profile and given logistic and maintenance resources'. As such, obsolescence management may be performed as part of an overall dependability management programme as described in IEC 60300-1 [1]¹.

¹ Numbers in square brackets refer to the Bibliography.

OBSOLESCENCE MANAGEMENT

1 Scope

This document provides requirements and guidance for obsolescence management applicable to any organization that is dependent on another organization to obtain value from the usefulness of the items that it provides. A cost-effective obsolescence management process and the activities used to implement the process are applicable throughout all phases of an item's life cycle.

This document covers the following areas:

- establishing an obsolescence management policy;
- establishing an infrastructure and an organization;
- developing an obsolescence management plan (OMP);
- developing strategies to minimize obsolescence during design;
- determining an obsolescence management approach;
- selecting obsolescence resolution and implementation;
- measuring and improving the performance of the outcomes of the obsolescence management activities.

Guidance on obsolescence management is included as notes, in the informative annexes and references in the Bibliography.

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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

alternative item

item whose characteristics can be different from that specified for one or more reasons

EXAMPLE Items with different quality or reliability level, tolerance, parameters, temperature range.

Note 1 to entry: See also 'substitutes' (10.4).

3.1.2

commercial off-the-shelf

COTS

conforming to the manufacturer's datasheet and available to any purchaser

Note 1 to entry: A single user is not able to influence the manufacturer's datasheet.

Note 2 to entry: This note applies to the French language only.

3.1.3 emulation

process that produces a substitute item for the purpose of replacing another item while maintaining the same form, fit and function, and interface

Note 1 to entry: Microcircuit emulation can replicate, with state-of-the-art, items that emulate the original item.

3.1.4 end of production EOP

date of discontinuance from manufacture

Note 1 to entry: This note applies to the French language only.

3.1.5 equivalent item

item which is functionally, parametrically and technically interchangeable

Note 1 to entry: This term is also known as 'form, fit, function and interface' F3I.

Note 2 to entry: See also 'substitutes' (10.4).

3.1.6 existing stock

sub item(s) from within the supply chain and inventory that can be allocated to the item without requalification

3.1.7 indenture level

level of sub-division within a system hierarchy

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EXAMPLE System, subsystem, assembly, and component.

Note 1 to entry: From the maintenance perspective, the indenture level depends upon various factors, including the complexity of the item's construction, the accessibility of sub items, skill level of maintenance personnel, test equipment facilities, and safety considerations.

[SOURCE: IEC 60050-192:2015 [2], 192-01-05]

3.1.8 item

subject being considered

Note 1 to entry: The item may be an individual part, component, device, functional unit, equipment, subsystem, or system.

Note 2 to entry: The item may consist of hardware, software, people or any combination thereof.

Note 3 to entry: The item is often comprised of elements that may each be individually considered. See sub item (3.1.21) and indenture level (3.1.7).

Note 4 to entry: IEC 60050-191:1990 (now withdrawn; replaced by IEC 60050-192:2015) identified the term "entity" as an English synonym, which is not true for all applications.

Note 5 to entry: The definition for item in IEC 60050-191:1990 (now withdrawn; replaced by IEC 60050-192:2015) is a description rather than a definition. This new definition provides meaningful substitution throughout this document. The words of the former definition form new note 1.

[SOURCE: IEC 60050-192:2015 [2], 192-01-01]

3.1.9 integrator

organization that assembles an item of complex sub items for the end user

Note 1 to entry: Examples of items for the end user are: car, ship, aeroplane, oilrig.

3.1.10 life of need buy LNB

procurement of sub items sufficient to support the item throughout its life cycle, or until the next planned upgrade

Note 1 to entry: Identified as a proactive LNB or a reactive LNB depending on which obsolescence approach is being used for the phase of the life cycle for which the procurement is taking place. (See 10.3).

Note 2 to entry: This term was previously known as lifetime buy.

Note 3 to entry: This note applies to the French language only.

3.1.11 manufacturer

organization or individual with responsibility for the design, manufacture, packaging and labelling of an item before placing the item on the market under their own name or trademark

3.1.12 obsolescence

transition of an item from available to unavailable from the manufacturer in accordance with the original specification

Note 1 to entry: In high reliability items, the sub item's original manufacturer and original specification are generally identified in the item's original configuration.

Note 2 to entry: Obsolescence might be because production has ended or because of the lack of availability of service provision, support of software or processed material.

Note 3 to entry: A specification can be of any form such as a drawing, datasheet, standard, written specification or a list of keywords and properties. A specification cancelled or an item's approval to a withdrawn specification can also cause obsolescence.

3.1.13 obsolescence issue

effect when the item is obsolete or when there is certainty as to when the item will become obsolete

Note 1 to entry: The item has an obsolescence issue when the PDN (see 3.1.18) has been issued by the manufacturer of the item.

3.1.14 obsolescence risk

measure of uncertainty as to when an item will become obsolete

Note 1 to entry: Obsolescence risk is often expressed in terms of a combination of the impact of an item becoming obsolete and the associated likelihood.

3.1.15 obsolete <tangible item>

no longer in production from the manufacturer in accordance with the original specification

Note 1 to entry: Examples include but are not limited to: materials, chemicals, components, electronics, and mechanical hardware.

Note 2 to entry: In high reliability items the sub item's original manufacturer, part number and/or original specification are generally identified in the item configuration.

Note 3 to entry: Discontinued is synonymous with obsolete.

3.1.16**obsolete** <intangible item>

no longer available from the manufacturer in accordance with the original specification

Note 1 to entry: Examples include but are not limited to: software, services, specifications, and processes.

Note 2 to entry: In high reliability items the sub item's original manufacturer and original specification are generally identified in the item configuration.

Note 3 to entry: Discontinued is synonymous with obsolete.

3.1.17**product change notice****PCN**

notification from a manufacturer announcing a change of process, properties, characteristics or specification of an item

Note 1 to entry: This note applies to the French language only.

3.1.18**product discontinuance notice****PDN**

notification of end of production of an item by the manufacturer

Note 1 to entry: This note applies to the French language only.

3.1.19**planned upgrades**

predetermination points during the item life cycle at which the design of all or part of the item will be brought up to date by replacing sub items with better performing sub items and/or replacing obsolete sub items or sub items at risk from becoming obsolete

Note 1 to entry: These upgrades will often involve changes to both the software and the underlying hardware. Between the planned upgrades, one of the other obsolescence resolutions can be necessary (see Clause 10).

3.1.20**reclamation**

use of a sub item that has a remaining useful life from a surplus or redundant item

Note 1 to entry: Reclamation is a controlled process (see 10.2 and recycled item in Annex A).

Note 2 to entry: Reclamation is sometimes referred to as cannibalization.

3.1.21**sub item**

part of the subject being considered

Note 1 to entry: A sub item becomes the item, when individually considered.

[SOURCE: IEC 60050-192:2015 [2], 192-01-02]

3.1.22**supply chain**

entire network of entities, such as organizations, people, technologies, activities, information and resources, directly or indirectly interlinked and interdependent, involved in serving the end user on delivering an item or service

Note 1 to entry: The supply chain is a part of an end-to-end process from the raw materials to the finished item delivered to the end user.

3.2 Abbreviated terms

COTS commercial off-the-shelf

ECMP	electronic components management plan
EOP	end of production
IOM	International Institute of Obsolescence Management [3]
IPR	intellectual property rights
LNB	life of need buy
OCM	original component manufacturer
OEM	original equipment manufacturer
OMP	obsolescence management plan
PCN	product change notice
PDN	product discontinuance notice
REACH	registration, evaluation, authorization and restriction of chemicals
RoHS	restriction of hazardous substances

4 Obsolescence management

4.1 What is obsolescence

Obsolescence is the transition of an item from available to unavailable from the manufacturer in accordance with the original specification.

Obsolescence is a significant cost driver and can occur at all phases of an item's life cycle. Unforeseen obsolescence issues can happen quickly, can cost a significant amount of unplanned resources to resolve and may put at risk an organization's financial stability, operations and reputation.

Obsolescence management activities ensure an item and its sub items can continue to fulfil their requirements over their expected useful life. Most items will become obsolete eventually; however, there is often uncertainty about when this will occur and the consequences to the item concerned.

Items include but are not limited to:

- physical assets (for example products, equipment, sub-assemblies, components, manufacturing tooling, test equipment, spares);
- consumables (for example ink cartridges, adhesives, computer media, batteries);
- materials (for example metals, fluids, polymers, composites);
- software (for example operating environment, middleware, firmware, specific applications);
- systems (for example information systems, classification systems);
- services (for example maintenance, communication and information).

For the purposes of obsolescence management, items may also include information and knowledge such as data, services, processes, procedures, specifications, standards and regulations.

Environmental legislation may have the potential to affect the use of some materials during the life of the item; those materials affected by the legislation should be considered from the outset of development.

Reasons why items become obsolete are:

- market factors including reduced demand of an item, lack of profitability or the introduction of new technologies and capabilities causing the manufacturer to issue a PDN;

- changes to the configured item (for example configured item number, item updates, item rebranding, merger or acquisition of the manufacturer);
- obsolete sub items (for example raw materials or other sub items that make up an item);
- loss or change to manufacturing capability (for example process re-tooling, test equipment, manufacturing equipment, in-process materials, support equipment, documentation);
- loss of skill or knowledge to manufacture or support the item;
- loss of legal authority for manufacturers to place the item on the market due to regulations (for example export control), legislation (for example environmental protection legislation such as RoHS, REACH), or legal agreements;
- natural or man-made disasters.

NOTE See guidance on the effects of obsolescence on different technologies in informative Annex C.

4.2 What is obsolescence management

Obsolescence is inevitable but normally involves uncertainty as to when it will occur and what the likely consequences in terms of cost and impact will be. Due to this uncertainty, it is essential that obsolescence be addressed in a risk management context by understanding the level of risk and implementing any necessary activities to treat the risks. This makes it necessary to implement a management process to mitigate the negative effects of obsolescence.

Obsolescence management collectively describes the activities taken by individuals or an organization to manage the obsolescence of items. The objective of obsolescence management is to ensure that obsolescence is managed as an integral part of the item's life cycle: concept, development (design), realization (production), utilization (in-service support), enhancement (return to design upgrade) and retirement and then return to concept.

NOTE After the subclauses introducing the obsolescence management process and activities, the relationship between obsolescence management activities and the item's life cycle is shown in Figure 3.

Obsolescence management seeks to reduce the risk of obsolescence through undertaking planned activities to reduce the frequency of obsolescence issues and/or reduce the impact when an item becomes obsolete. The impact of obsolescence can vary depending on the type of item and the context in which it delivers value to the organization. Obsolescence impacts can be categorized in the following ways:

- Financial impacts. Responding to obsolescence can introduce significant costs to an organization from changing supply chains, design or testing new items, changes to item information or processes, or increased item cost as supply becomes scarce.
- Operational impacts. When an item becomes unavailable, the user can no longer derive benefit from the item. The unavailability of the item may also impact the user's ability to derive benefit from other sub items or items.
- Compliance impacts. The obsolescence of an item may prevent an organization from complying with regulatory requirements such as environmental or safety obligations.
- Reputation impacts. Where others are dependent on an organization to provide an item or service, the inability to provide the item or service due to obsolescence may have long term impacts on the reputation of the organization.

4.3 Benefits of obsolescence management

Effective obsolescence management typically delivers:

- an understanding of the current and future obsolescence risk being carried by an organization;
- a lower overall risk to an organization's objectives from obsolescence;