

IRIS ***International Railway*** ***Industry Standard***

GUIDELINE 5 : 2012
OBSOLESCENCE

English



We would like to thank the following people for the excellent cooperation and contribution, without which this Guideline would not have been possible:

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1 INTRODUCTION

The lifetimes associated with components used in rail industry can stretch out over several decades. The expected level of performance and lifetime within the rail industry can only be achieved if products (equipments) involved are supported by structured maintenance programs that rely on the availability of replacement parts.

The specific challenge within the rail industry is the variety of rolling stock and infrastructure ranging from very old to very modern design. They cannot all be treated in the same way.

The answer lies in a proactive, rather than a reactive approach and needs to be addressed through the whole supply chain and supported by engineering services. To mitigate problems, all parts potentially affected by obsolescence need to be identified, the various means of replacing them fully evaluated, and they have to be monitored on a regular basis.

2 PURPOSE

Obsolescence affects all products, and it influences all stages of their lives. Obsolescence is inevitable and cannot be prevented, but careful and foresighted planning can minimize its impact and the potentially high costs.

The goal of obsolescence Management is to ensure that it is as an integral part of the design, development, procurement, production and service processes, in order

to minimize costs and bad influences over the entire product life cycle.

The purpose of this guideline is to provide guidance on the planning of a cost-effective obsolescence Management process taking into account that product life cycle costs are considered.

3 TERMS, DEFINITIONS, ABBREVIATIONS

- ▶ **Equipment:** The totality of all tools necessary for an activity or work or contract.
- ▶ **Obsolescence (EN62402):** Transition from availability of products by the original manufacturer or supplier to unavailability.
(Permanent transition from operability to non-functionality due to external reasons.)
- ▶ **Obsolescence Management (EN 62402):** Coordinated activities to direct and control an organization with regard to obsolescence.
- ▶ **Obsolescence management plan (EN 62402):** description of the strategies for the identification and mitigation of the effects of obsolescence through all stages of the life of a product.
- ▶ **Obsolescent:** Subject to an announced future stop production of service, software support, production by original component manufacturer (OCM) and delivery of consumables.

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- ▶ **Obsolete:** no longer be procured or available
- ▶ **Products:** Investment goods, infrastructure, durables, consumables, software products etc.

4 IRIS OBSOLESCENCE REQUIREMENTS

According to IRIS § 7.12 a Process shall be established to ensure, for the defined and agreed Product life cycle, the availability of the supplied Products and spare parts.

This Process may be part of the change management or Configuration Management process. Spare parts may be of the same Product configuration or coming from alternative solutions which have been developed, validated and qualified according to the original requirements.

5 RESPONSIBILITY

According to the needs related to the organization, project and product objectives as well as responsibilities such as quality and technical requirements are to be defined by the organization's top management.

Obsolescence principles are to be set in consistence with the overall business strategy. These are to be derived from the needs and expectations of customers.

Adequate resources need to be provided to support operations of the organization in accordance to obsolescence activities including using and monitoring of external components and services.

Obsolescence activities may be related to legal, regulatory or statutory requirements, also.

Top management need to formally appoint a member of the organization's management having the power to manage obsolescence topics, monitor, evaluate and coordinate all related activities.

Obsolescence management may be implemented as an integral part of other organization's management system such as quality or safety management. This may promote the effective and efficient process and continual improvement. Following this approach it is suggested to setup an obsolescence management team with appropriate power and resources, consisting of

Purchasing, Production, Development, Quality, Sales and any additional needed department.

6 PROCESSES OF OBSOLESCENCE MANAGEMENT

6.1 Management of obsolescence

An overall obsolescence management plan needs to be developed by the organization, to ensure adequate choice and timely implementation of required key obsolescence activities.

The aim of the obsolescence management plan is to develop strategies for the identification and mitigation of potential obsolescence impacts through all stages of products life cycle.

Potential affected products may be identified and evaluated by risk analysis. In order to ensure availability of the products, even product alternatives (replacements) on a higher level may be considered as necessary part of the total lifetime solution.

6.2 Applicability

6.2.1 Technical obsolescence

Technical obsolescence may occur when a new product or technology supersedes the old, and it becomes preferred to utilize the new technology in place of the old.

Historical examples of superseding technologies causing obsolescence include higher-quality multimedia DVD over videocassette recorder and the telephone, with audio transmission, over the telegraph's coded electrical signals.

On a smaller scale, particular products may become obsolete due to replacement by a newer version of the product. Many products in the computer industry become obsolete in this manner; for example, central processing units frequently become obsolete in favor of newer, faster units. Singularly, rapid obsolescence of data formats along with their supporting hardware and software can lead to loss of critical information, a process known as digital obsolescence.

Another complementary reason for obsolescence can be that supporting technologies may no longer be availa-

ble to produce or even repair a product. For example many integrated circuits, including CPUs, memory and even some relatively simple logic chips may no longer be produced because the technology has been superseded, their original developer has gone out of business or a competitor has bought them out and effectively killed off their products to remove competition.

It is rarely worth redeveloping a product to get around these issues since its overall functionality and price/performance ratio has usually been superseded by that time as well.

6.2.2 Functional obsolescence

Particular items may become functionally obsolete when they do not function in the manner that they did when they were created. This may be due to natural wear, or due to some intervening act. For example, if a new mobile phone technology is adopted, and there is no longer a provider who provides service based on the old technology, any mobile phone using that technology would be rendered obsolete due to the inability to access service.

Products which naturally wear out or break down may become obsolete if replacement parts are no longer available, or when the cost of repairs or replacement parts is higher than the cost of a new item. A product may intentionally be designed to use a faster wearing component – for example, use of soft rubber soles on shoes rather than for example rubber used in tires.

6.2.3 Knowledge obsolescence

Besides the technical and functional obsolescence, the loss of personnel expertise, relevant knowledge and skill based sets can be also a matter of obsolescence. It may be prevented by competence management:

- monitoring of skills,
- frequent and repetitive trainings,
- succession planning,
- qualification matrix,

NOTE: you can also refer to IRIS clauses 4.3 and 6.2.2.

6.3 Arrangement and planning

To ensure an efficient and effective process, a close cooperation between all related stakeholders such as original equipment manufacturers, system integrators as well as operators is required. In principle there are two approaches concerning obsolescence management:

Proactive: Development and implementation of an obsolescence management program.

Reactive: React to obsolescence problems as and when they occur.

The proactive approach may prevent bottlenecks and problems that could result from obsolescence within the supply chain. This is why this approach is preferred in principle. The reactive approach only serves to solve the problems caused by obsolescence as possible by mutual agreement between the parties concerned.

Below some examples of preventive obsolescence activities along the stages of product life cycle are listed.

6.3.1 Prevention in development and product management

The preventive activities include an active management as well as their continuous evaluation of the core assortment according to following criteria:

- Ensure modularity of products
- Ensure downward compatibility of products
- Ensure a high level of standardization by definition of assortment classifications (standard assortment)
- Creation of interface standards to ensure compatibility of products at function level (form, fit, function)
- Standardization of product or system specific tools
- Continuous evaluation of consequences to the standard assortment
- Establish an observation process for critical parts (end of life)
- Minor / major redesigns
- Updating system terms

With these preventive measures, the risk using „non standard products“ at project engineering will be reduced.

6.3.2 Prevention and risk minimization in purchasing

The preventive activities of purchasing related to obsolescence management include following focal points:

- Focusing on few strategic important suppliers
- Creation of long term supplier frame contracts and definition of requirements for obsolescence management to be shared with suppliers
- Active supplier risk management for minimization of supply risks
- Detailed supplier's selection and qualification, with focus on obsolescence management of delivered products
- Establish consideration "obsolescence management ability" of potential suppliers, in selection or annual audit process (if applicable) with regards to the delivered products.

6.3.3 Prevention and risk mitigation in sales

In sales, following activities may be done for risk mitigation:

- The frame contracts and respectively projects have a clause to the delivery commitment of components with same function
- A clause in the general terms and conditions about obsolescence exists (concerning manufacturing, maintenance, spares etc.)
- Project engineering takes place by using a standard assortment and suitable assortment classifications
- Check for possible system upgrades
- Manage and preserve know how of engineering, maintenance and field service personnel

6.3.4 Prevention with customers

- Plan system (mid-life) upgrades for vehicles and sub-systems
- Consider IEC 62278 (EN 50126), IEC 62279 (EN 50128) and IEC 62425 (EN 50129) requirements in case of critical or safety relevant application and ensure proper validation and communication in case of changing parts in a timely manner

6.3.5 Other types of preventive management

- tooling management
- Shelf life management

6.3.6 Reactive activities (if all preventive approaches failed)

- Last time buy
- Find component replacement
- Authorize broker purchase (component dealer)

6.4 Upgrade of stored components

All activities related to obsolescence are to be realized as early as possible within the product life cycle in order to minimize potential risks.

Based on risk management process as described in IEC 62198, the steps of risk assessment may be listed as follows:

- Identify the stage of product life cycle, product type and constitution, life expectancy
- Analyze potential risk of affected products and customers as well as statutory requirements
- Evaluate potential risk and related impact, costs and likelihood of obsolescence
- Re-develop follow-up products in case of technical and functional obsolescence by applying adequate processes such as IRIS clause 7.3, 7.5
- Control and mitigate potential risk derived from obsolete products in a proactive or reactive way
- Monitor and review potential risk of obsolete parts and act accordingly
- Network with other stakeholders to share information on potential obsolescence and applied solutions

7 ANNEXES

7.1 Normative references

EN 62402:2007 Obsolescence management- Application guide

A UNIFE initiative supported by

The rail industry



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The rail associations



Verband Deutscher Verkehrsunternehmen



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