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Space systems — Integrated logistic support

Systèmes spatiaux — Soutien logistique intégré

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16091 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Foreword

This document EN ISO 16091:2002 has been prepared by CMC, in collaboration with Technical Committee ISO/TC 20 "Aircraft and space vehicles".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2003, and conflicting national standards shall be withdrawn at the latest by June 2003.

The European Standard EN ISO 16091 was prepared by the European Cooperation for Space Standardization (ECSS) Management Standards Working Group for CEN in close collaboration with ISO Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee, SC 14, *Space systems and operations,* WG 3*, Operations and ground support*.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

The Integrated Logistic Support (ILS) approach is justified in the space context by improvement of current practices in terms of development of material resources and services essential to support operation and maintenance and to control associated operational risks, particularly in terms of utilization cost and availability.

It is also justified by heightening the awareness of all the programmes and project participants of the need for cost-effective preparation, transfer, and management of information needed to operate, maintain, resupply and dispose of a product. This is as well as ensuring the recording of unscheduled events in order to perform essential support analyses.

The ILS approach differs for different types of space programmes or projects and this International Standard permits appropriate tailoring. Consequently, the requirements in this European Standard are applied at management level, with identification of the objectives to be achieved, rather than with methods and techniques to be implemented to achieve these objectives.

These objectives include:

a) the participation of the supportability objectives to the system design;

b) the optimization of the operational and maintenance concepts;

c) the identification of the required logistic support elements;

d) the timely delivery of the logistic support elements;

e) the determination of the system resilience to unscheduled operational events.

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Logistic support is not a new activity: its integration into the programme or project is for coordinating, throughout the life cycle, the activities and resources involved in the preparation and optimization of the system and its support elements, aiming at minimum overall life cycle cost, according to the requirements and operational risks.

The advantages and increased efficiency resulting from integrating the logistic support requires that the logistic support functions need to be addressed starting from programme or project definition. It also requires that an integrated approach be established between the design and development of the system and the operational requirements to be fulfilled. This approach is designed to ensure the ability to deliver on time and in proper quantity, material resources and services to deploy, operate, maintain and upgrade the system throughout its utilization phase, within cost requirements, in its operational environment. It also helps to ensure that the capability of the organization and resources dedicated to define, collect, manage and handle the information required to control the logistic support functions throughout the system life cycle from the feasibility phase to the disposal phase are fully developed.

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1 Scope

1.1 General

This European Standard describes the set of management requirements needed to identify and provide logistic support, so the customer can operate and maintain a product in its operational environment for the expected lifetime.

These requirements also aim, throughout the product life cycle, at implementing everything pertinent to the control of the risks considered as critical regarding the operational objectives.

The management requirements are applicable to those activities necessary to design, develop, deliver, deploy and manage an organized and structured set of materials and software, services, processes and information dedicated to support the system throughout its life cycle.

This European Standard specifies management, studies, production activities, information management processes and tasks to meet the customer's need for logistic support.

1.2 Tailoring

When viewed from the perspective of a specific programme or project context, the requirements defined in this European Standard should be tailored to match the genuine requirements of a particular profile and circumstances of a programme or project.

NOTE Tailoring is the process by which individual requirements of specifications, standards and related documents are evaluated, and made applicable to a specific programme or project by selection, and in some exceptional cases, modification of existing or addition of new requirements.

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2 Normative references

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This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO 14300-1, *Space systems – Programme management — Part 1: Management.*

EN 13290-6, *Space project management – General requirements — Part 6: Information/document management.*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

3.1.1
availability
the ability of an item to be in a state to perform a required function under given conditions at a given instant of time or over a given time interval, assuming that the required external resources are provided

NOTE 1 This ability depends on the combined aspects of the reliability performance, the maintainability performance and the maintenance support performance.

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NOTE 2 Required external resources, other than maintenance resources do not affect the availability performance of the item.

NOTE 3 In French, the term “disponibilité” is used to denote both the performance and the measure.

NOTE 4 When referring to the measure for "availability", the preferred term is "instantaneous availability".

NOTE 5 Adapted from IEC 60050:(191,603):1992.

3.1.2
configuration
functional and physical characteristics of a product as defined in technical documents and achieved in the product

[ISO 10007:1995]

3.1.3
customer
organization or person that receives a product

EXAMPLE Consumer, client, end-user, retailer, beneficiary and purchaser.

NOTE A customer can be internal or external to the organization.

[EN ISO 9000:2000]

3.1.4
data
information represented in a manner suitable for automatic processing

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[IEC 60050:(701,721):1992]

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3.1.5
dependability
the collective term used to describe the availability performance and its influencing factors: reliability performance, maintainability performance and maintenance support performance

NOTE Dependability is used only for general descriptions in non-quantitative terms.

[IEC 60050:(191):1992]

3.1.6
document
a medium and the data recorded on it for human use, for example, a report sheet, a book; by extension, any record that has permanence and that can be read by man or machine

NOTE Where reference is intended only to the carrier medium, the term “document medium” should be used.

[IEEE Std 100 - 1988]

3.1.7
down time
the time interval during which an item is in a down state

[IEC 60050: (191):1992]

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3.1.8
function
intended effect of a system, subsystem, product or part

NOTE Functions should have a single definite purpose. Function names should have a declarative structure (e.g. “Validate telecommands”), and say “what” is to be done rather than “how”. Good naming allows design components with strong cohesion to be easily derived.

[EN 1325-1:1997]

3.1.9
implementation document
formal response from a supplier to the customer describing how all requirements in the project requirements document will be met at his level, in respect to his own organization

[EN 13701:2001]

3.1.10
industrial organization
the identity, interfaces and responsibilities of all participants in the supplier chain for a project

[EN 13701:2001]

3.1.11
mean time to recovery
the expectation of the time to restoration

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[IEC 60050: (191): 1992]

3.1.12
mission analysis
assessment of the mission as a result of the programme or project with exploration of concepts conforming to expressed objectives to be reached - performance, cost, schedule

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3.1.13
phase (project phase)
that part of a total project during which activities are performed to attain a designated objective as one of a series of distinct steps in carrying out a project that together constitute the project life cycle

NOTE Adapted from BS 6079:1996.

3.1.14
process
set of interrelated or interacting activities which transforms inputs into outputs

NOTE 1 Inputs to a process are generally outputs of other processes.

NOTE 2 Processes in an organization are generally planned and carried out under controlled conditions to add value.

NOTE 3 A process where the conformity of the resulting product cannot be readily or economically verified is frequently referred to as a “special process”.

[EN ISO 9000:2000]

3.1.15
programme
a coordinated set of activities, not necessarily interdependent, that continue over a period of time and are designed to accomplish broad scientific or technical goals or increased knowledge in a specific subject

EXAMPLE The defence programme; The Apollo programme; Earth observation programme; Manned space and mirogravity programme.

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NOTE 1 A programme can comprise several projects.

NOTE 2 A programme can last several years.

NOTE 3 "program" is American Standard English spelling for "programme".

NOTE 4 "program" is British Standard English for 'a series of coded instructions to control the operation of a computer or other machine' – Oxford English Dictionary.

3.1.16
project
a unique set of coordinated activities, with definite starting and finishing points, undertaken by an individual or organization to meet specific objectives within defined schedule, cost and performance parameters

[BS 6079:1996]

3.1.17
project requirements documents
those documents, including all normative references, which establish requirements which are subsequently used to control work or work products

NOTE 1 Examples of project requirements documents include, but are not limited to, standards, management specifications, technical specifications, statements of work and data requirements lists.

NOTE 2 This does not include the contract and associated terms and conditions.

[EN 13701:2001]

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3.1.18
resource
any physically or conceptually identifiable entity whose use and state at any time can be unambiguously determined

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[IEC 60050: (715): 1992]

3.1.19
safety
state in which the risk of harm (to persons) or damage is limited to an acceptable level

NOTE 1 Safety is one of the aspects of quality.

NOTE 2 The above definition is valid for the purposes of quality standards. The term “safety” is defined differently in ISO/IEC Guide 2.

3.1.20
space element
a product or a set of products intended to be operated in outer space

[EN 13701:2001]

3.1.21
specification
document stating requirements

NOTE A specification can be related to activities (e.g. procedure document, process specification and test specification), or products (e.g. product specification, performance specification and drawing).

[EN ISO 9000:2000]

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