



DPC: 22 / 30448056 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 10 February 2022

Origin: European

Latest date for receipt of comments: 5 April 2022

Project No. 2021/03282

Responsible committee: ACE/68 Space systems and operations

Interested committees:

Title: BS EN 16601-70 Space project management - Integrated support and services engineering (ISSE)

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

February 2022

ICS 49.140

English version

Space project management - Integrated support and services engineering (ISSE)

Raumfahrt-Projektmanagement - Integrierte
logistische Unterstützung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/CLC/JTC 5.

If this draft becomes a European Standard, CEN and CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN and CENELEC in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation. Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



CEN-CENELEC Management Centre:
Rue de la Science 23, B-1040 Brussels

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European Foreword

This document (prEN 16601-70:2022) has been prepared by Technical Committee CEN/CLC/TC 5 "Space", the secretariat of which is held by DIN (Germany).

This document (prEN 16601-70:2022) originates from ECSS-M-ST-70C DIR1.

This document is currently submitted to the ENQUIRY.

This document has been developed to cover specifically space systems and will therefore have precedence over any EN covering the same scope but with a wider do-main of applicability (e.g. : aerospace).

1

Scope

This Standard defines the processes and specifies a set of Integrated Support and Services Engineering (ISSE) requirements aimed at the identification and provision of logistic support, such that the space system can be acquired, operated and maintained in its operational conditions, for the expected lifetime.

NOTE The subject of “Integrated Support and Service Engineering” was previously known in ECSS as “Integrated Logistic Support” that was covered by ECSS-M-70A. Due to new content of the document the emphasis is more on Engineering than on Management.

The requirements specified in this Standard are also oriented to implement mitigation measures against the risks considered critical for the operational objective during the whole space system life cycle.

This Standard is applicable for support segment of ground, launch and space segments, manned and unmanned space systems, ensuring that they are properly harmonized, mutually optimized and phased together since the very early design and development phases leading to integrated solutions that have the lowest possible Maintenances Costs within the operational and safety limitations and constraints imposed by the operational environment.

This Standard may be tailored for the specific phase, characteristics and constraints of a space project taking into consideration the supplier’s position in the supply chain.

This standard may be tailored for the specific characteristic and constrains of a space project in conformance with ECSS-S-ST-00.

2

Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this ECSS Standard. For dated references, subsequent amendments to, or revision of any of these publications do not apply, however, parties to agreements based on this ECSS Standard are encouraged to investigate the possibility of applying the more recent editions of the normative documents indicated below. For undated references, the latest edition of the publication referred to applies.

EN reference	Reference in text	Title
EN 16601-00-01	ECSS-S-ST-00-01	ECSS system - Glossary of terms
EN 16603-11	ECSS-E-AS-11	Adoption Notice of ISO 16290, Space Systems - definition of the Technology Readiness Levels (TRLs) and their criteria of assessment

Terms, definitions and abbreviated terms

3.1 Terms from other standards

- a. For the purpose of this Standard, the terms and definitions from ECSS-S-ST-00-01 apply, in particular for the following terms:
 - 1. availability
 - 2. business agreement
 - 3. configuration item
 - 4. critical item
 - 5. customer
 - 6. integration
 - 7. maintainability
 - 8. product
 - 9. reliability
 - 10. safety
 - 11. space system
 - 12. supplier
 - 13. support segment
 - 14. work breakdown structure
- b. For the purpose of this Standard, the terms and definitions from ECSS-E-AS-11 apply, in particular for the following term:
 - 1. Technological readiness review

3.2 Terms specific to the present standard

3.2.1 ISSE function

entity of the supplier responsible for managing the integrated support and services engineering

NOTE more details are in section 4.3.1.3

3.2.2 Key performance indicator (KPI)

quantifiable measurement, agreed beforehand between the interested parties, which reflects the performance of a business process and is suitable to monitor the success of process improvements

3.2.3 PSSA function

entity of the supplier responsible for analysing and challenging the design in order to meet Customer's requirements and preparing the data for the production of support elements

NOTE More details can be found in 5.3.2

3.2.4 Technical Publication

[CONTEXT: ISSE] entity inside ISSE entity defining the processes and activities needed to identify, plan and provide the resources and requirements to assure the Production and Delivery of Maintenance and Operations documentation according to the specific standards.

3.2.5 Training Services

[CONTEXT: ISSE] entity inside ISSE entity delivering to Customers, training material and training to support the life cycle of product and services delivered

3.3 Abbreviated terms

For the purpose of this Standard, the abbreviated terms and symbols from ECSS-S-ST-00-01 and the following apply:

Abbreviation	Meaning
EIS	Entry Into Service
FMECA	failure modes, effects and criticality analysis
GHS	Ground Handling Support
GSE	Ground Support Equipment
IETM	interactive electronic technical manuals
ISSE	Integrated Support & Services Engineering
ISSEP	Integrated Support & Services Engineering Plan
IT	information technology
ITAR	International Traffic in Arms Regulations
KPI	key performance indicator
LORA	level of repair analysis
LRU	line replaceable unit
MTBF	mean time between failure
PHST	packing, handling, storage and transportation
PSSA	Product support & services analysis

Abbreviation	Meaning
PSSAR	Product support & services analysis record (PSSA database)
PSSAP	Product support & services analysis plan
RAMS	reliability, availability, maintainability, safety
SSA	Support software analysis
SMA	Schedule Maintenance Analysis
TADSS	training aids, device, simulators, and simulations
WBS	work breakdown structure

3.4 Nomenclature

The following nomenclature applies throughout this document:

- a. The word “shall” is used in this Standard to express requirements. All the requirements are expressed with the word “shall”.
- b. The word “should” is used in this Standard to express recommendations. All the recommendations are expressed with the word “should”.

NOTE It is expected that, during tailoring, recommendations in this document are either converted into requirements or tailored out.

- c. The words “may” and “need not” are used in this Standard to express positive and negative permissions, respectively. All the positive permissions are expressed with the word “may”. All the negative permissions are expressed with the words “need not”.
- d. The word “can” is used in this Standard to express capabilities or possibilities, and therefore, if not accompanied by one of the previous words, it implies descriptive text.

NOTE In ECSS “may” and “can” have completely different meanings: “may” is normative (permission), and “can” is descriptive.

- e. The present and past tenses are used in this Standard to express statements of fact, and therefore they imply descriptive text.

4

Principles

4.1 General principles

4.1.1 ISSE objectives

ISSE is the discipline responsible for ensuring that the necessary support resources are in place, when a space system enters into service and during the service provision. The objective is to enable the space system to fulfil its mission on time, with the right quality and within the expected cost.

ISSE integration into the project aims at coordinating, throughout the life cycle, the activities and resources involved in the preparation and optimization of the support segment, aiming at minimum Maintenance Costs according to the requirements and operational risks. In summary, the main objectives of ISSE are:

- Optimize the support by influencing the space system design in the early project phase.
- Identify and develop the support resource requirements.
- Acquire the appropriate support resources.
- Provide the required in-service support in order to achieve the availability and safety objectives at the optimum Maintenance Costs.
- Ensure that the ISSE solution proposed is compliant with Export Control regulation.

The system life cycle refers to the entire spectrum of activities commencing with the identification of the needs for the space system and culminating in its disposal. The objectives of ISSE are to ensure that all support requirements are identified and put in place in a manner which contributes to the optimization of Maintenance Costs, throughout its planned life cycle.

4.1.2 ISSE process

The ISSE process is a deliberate, unified and iterative methodology used to develop a support strategy that:

- Optimizes functional support elements for a space system.
- Leverages existing investments in manpower, systems, equipment, training, facilities, and other resources from various segments.