



# **Space management**

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## **Organization and conduct of reviews**

**ECSS Secretariat  
ESA-ESTEC  
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Noordwijk, The Netherlands**

## Foreword

This Standard is one of the series of ECSS Standards intended to be applied together for the management, engineering and product assurance in space projects and applications. ECSS is a cooperative effort of the European Space Agency, national space agencies and European industry associations for the purpose of developing and maintaining common standards. Requirements in this Standard are defined in terms of what shall be accomplished, rather than in terms of how to organize and perform the necessary work. This allows existing organizational structures and methods to be applied where they are effective, and for the structures and methods to evolve as necessary without rewriting the standards.

This Standard has been prepared by the ECSS-M-ST-10-01 Working Group, reviewed by the ECSS Executive Secretariat and approved by the ECSS Technical Authority.

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## Change log

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ECSS-M-30-01A	First issue
ECSS-M-30-01B	Never issued
ECSS-M-ST-10-01C 15 November 2008	Second issue Significant changes between ECSS-M-30-01A and this version are: <ul style="list-style-type: none"><li>- Definition of review entities and their roles and activities in project reviews.</li><li>- Update and rationalization of requirements.</li><li>- Document restructuring to maintain correspondences between the descriptive section (clause 4) and requirement section (clause 5).</li><li>- Addition of DRDs to specify the content of expected documentation.</li></ul>

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# 1 Scope

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This Standard provides means for identifying and structuring all of the activities and information required in a project review. It identifies the information outputs and activities necessary to complete the process. It also provides a check-list of activities and information required for each of the project reviews identified in the ECSS Management Standards.

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

## 2

# Normative references

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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.

ECSS-S-ST-00-01	ECSS system - Glossary of terms
ECSS-M-ST-10	Space project management - Project planning and implementation
ECSS-E-ST-10	Space engineering - System engineering general requirements
ECSS-Q-ST-10	Space product assurance - Product assurance management

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## Terms, definitions and abbreviated terms

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### 3.1 Terms from other standards

For the purpose of this Standard, the terms and definitions from ECSS-S-ST-00-01 apply, in particular for the following terms:

#### **customer**

NOTE 1 In the context of the current document, it identifies the body ensuring the execution of all tasks necessary for the realization of the project according to the high level requirement document and within the financial resources allocated by the consumer.

NOTE 2 The customer is responsible for the implementation of the review recommendations endorsed by the review authority.

NOTE 2 See informative annex F for example of application of the above to different levels of a space project

#### **supplier**

NOTE 1 In the context of the current document, it identifies the body executing all tasks necessary for the realization of the project according to the terms and condition of a business agreement submitted by the customer.

NOTE 2 See informative Annex F for example of application of the above to different levels of a space project

### 3.2 Terms specific to the present standard

#### **3.2.1 consumer**

body specifying a project or (product) through a high level requirement document (such as mission statement or SFS and STS) and providing the necessary financial resources for its realization.



NOTE See informative Annex F for example of application of the above to different levels of a space project

### **3.2.2 review authority**

body appointed by the consumer organization, having the mandate to issue recommendations to the customer and issue decisions relating to the review process

NOTE This is also referred to as the review board.

### **3.2.3 review item discrepancy (RID)**

issue, identified by a reviewer, that is not compliant with a requirement, a review objective or a design goal

### **3.2.4 review prerequisite**

conditions necessary to be fulfilled prior to the start of the review

### **3.2.5 review team**

body appointed by the review authority, having the mandate to evaluate the status of the project under review

### **3.2.6 review team leader**

person responsible for the review team activities and issuing the review team report

## **3.3 Abbreviated terms**

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

<b>Abbreviation</b>	<b>Meaning</b>
<b>DRD</b>	document requirement description
<b>FEPS</b>	Fiche d'étude de problème soulevé
<b>MRD</b>	mission requirements document
<b>RID</b>	review item discrepancy
<b>SRD</b>	system requirements document

## 4

# Fundamentals of reviews

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## 4.1 Basic principles

Project reviews are examinations of the technical status of a project and associated issues at a particular point in time. Their primary purpose is to provide a comprehensive assessment of the project status against targets and requirements. Through independent participation, they give additional support to the project concerned at crucial stages and give the responsible management confidence in the technical progress being achieved. Additionally, reviews can identify potential lessons learned.

Reviews are carried out throughout the project life cycle, as defined in ECSS-M-ST-10, at all levels from mission to unit level.

The review purpose, mandate and documentation vary for each particular project and for the specific phase or stage of activity of the project.

The efficiency of any review process is dependent upon the planning and organization of the review work, including specific assignment of responsibilities and the plan to close out the action items raised during the review.

The current ECSS document specifies basic principles in order to establish these organisational aspects.

## 4.2 Review tasks

### 4.2.1 Initiation of the review

This task comprises the assignment of review members to the review bodies, the preparation and release of the review procedure and the assessment of the prerequisites.

### 4.2.2 Preparation and distribution of the review data-package

This task comprises the preparation and distribution of the documentation as defined in the review procedure. In a kick-off meeting review participants are familiarized with the review objectives and the documentation submitted for the review.

### 4.2.3 Review of the documentation

This task comprises the detailed review of the review data-package including additional information provided in the kick-off presentation. Identified problems, questions and solutions arising from the examination of the documentation are recorded on review item discrepancy (RID) forms.

Collocation meetings between the review team and the customer/supplier serve to solve issues raised in RIDs, to consolidate findings and to provide recommendations for RID closure.

Finally a report is issued on the behalf of the review team, synthesizing the results of the review and identifying major issues for attention of the review authority.

The information flow for this review activity is illustrated in Figure 4-1.

An example of a logic diagram for the RID processing is presented in Annex E.

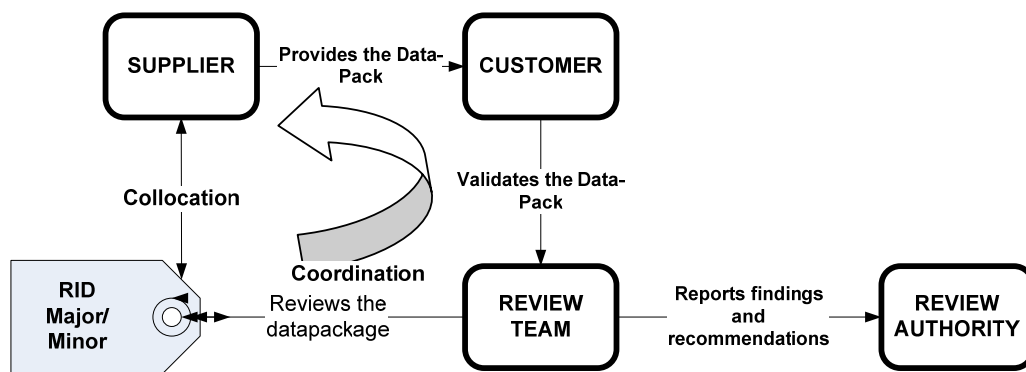


Figure 4-1: Review information flow

### 4.2.4 Review findings and conclusions

This task comprises the examination of the review team findings, confirmation of the recommendations, decisions for follow-up activities and confirmation of the achievement of the review objectives.

# 5 Requirements

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## 5.1 General

- a. The customer shall ensure the level of independent expertise in the review team and provide access to the information identified in the review procedure.
- b. A project review shall provide the customer with advice and recommendations aiming at the resolution of any deficiencies identified during the process.
- c. The activity specified in 5.1b shall typically cover the following aspects:
  - compliance with the mission objectives or applicable STS or SFS;
  - adequacy of the requirements;
  - credibility of the proposed design, development and verification;
  - risk assessment and mitigation;
  - credibility of plans and schedules.
- d. The customer shall organize the review with the approval of the consumer.
- e. A project review shall be based on the examination of a data-package that:
  1. is compliant with the list of documents to be delivered as specified for the review
  2. is sufficient to demonstrate achievement of the review objectives.

## 5.2 Review bodies

- a. The participants in a review shall include the review authority at the level of the consumer, the project teams at the level of the customer and supplier, and the review team.
- b. The members of the review authority shall be appointed by the consumer organization.
- c. The review authority shall be chaired by an independent representative of the consumer organization and may be co-chaired by a representative of the customer organization.

- d. The review team shall include representatives of the consumer organization having no direct involvement in the project activities.

## 5.3 Roles and tasks

### 5.3.1 Review authority

- a. The review authority shall approve the review procedure and in particular:
  - 1. the objectives of the review according to ECSS-M-ST-10 requirements;
  - 2. the review team composition;
  - 3. the execution of the review.
- b. The review authority shall examine the final review team report(s).
- c. The review authority shall endorse or amend the recommendations and actions resulting from the review.
- d. The review authority shall decide whether the review objectives have been met
- e. The review authority shall make recommendations to the customer.
- f. The review authority shall report its findings and final recommendations in a document in conformance with the DRD of Annex D.

### 5.3.2 Customer

- a. The customer shall propose a procedure for the review conforming to the DRD of Annex A for review authority approval.
- b. The customer shall ensure the practical organization of the following review events:
  - 1. Prerequisite keypoint
  - 2. Kick-off meeting
  - 3. Intermediate coordination meetings
  - 4. Collocation meeting between the review team and the supplier
  - 5. Final meeting with the review authority.
- c. The customer shall provide the review team with a data management system for distribution and storage of:
  - 1. Review data-package
  - 2. Additional technical documentation as required
  - 3. Review item discrepancies and action items.

### 5.3.3 Supplier

- a. The supplier shall support the customer in providing all facilities and logistics for the review meetings and sessions as required by the customer.
- b. The supplier shall support the customer in ensuring that all necessary means, information and documentation specified in the procedure are available and current for the review.
- c. The supplier shall support the customer in preparing responses to RIDs and proposing a schedule for the identified actions as required by the customer.

### 5.3.4 Review team leader

- a. The review team leader shall manage the activities of the review team.
- b. After consultation with the customer, the review team leader shall confirm that the prerequisite conditions defined in the review procedure are met.
- c. The review team leader shall approve RID contents and dispositions.
- d. The review team leader shall prepare and issue the final review team report in conformance with the DRD of Annex C and in accordance with the requirements of the review procedure.

### 5.3.5 Review team

- a. The review team shall:
  1. Review the documentation
  2. Identify problems, make recommendations or request explanations by means of RIDs
  3. Assess the adequacy of the responses to RIDs
  4. Support the review team leader in preparing the report.

## 5.4 Prerequisite conditions for holding the review

- a. Prior to starting the review, fulfilment of the review prerequisites defined in the procedure shall be confirmed by the customer and agreed by the review team leader.

NOTE See also 5.3.4b.

- b. If the prerequisite conditions of a review are not fulfilled, the review team leader shall propose one of the following to the review authority for final decision:
  1. redefinition of the review with revised objectives;
  2. corrective actions necessary for the review to proceed;
  3. postponement of the review.

## 5.5 Review meetings

### 5.5.1 Prerequisite key point

- a. The prerequisite key point shall confirm that all conditions necessary to start the review are fulfilled.

### 5.5.2 Kick-off meeting

- a. Attendees to the kick-off meeting shall be the members of the review authority and the review team, supported by representatives from the customer and supplier.
- b. The kick-off meeting shall:
  1. Present the review procedure and organization
  2. Provide information on the product to be reviewed
  3. Provide a presentation of the documentation submitted for review
  4. Formally authorize the start of the review.

### 5.5.3 Coordination meeting

- a. Attendees to the coordination meeting shall be defined by the review team leader.
- b. The coordination meeting shall:
  1. Review all inputs from the review team
  2. Agree with the customer issues to be resolved with the supplier
  3. Release all RIDS to the supplier.

### 5.5.4 Collocation meeting

- a. Attendees to the collocation meeting shall be defined by the review team leader.
- b. The collocation meeting shall:
  1. Review the RID responses provided by the supplier
  2. Agree the final RID disposition with the customer and supplier
  3. Identify action items and due dates
  4. Identify disagreements to be reported to the review authority.

### 5.5.5 Review team close-out meeting

- a. Attendees to the close-out meeting shall be defined by the review team leader.
- b. The review team close-out meeting shall:

1. synthesize the results of the collocation meeting;
2. provide inputs for the review team report;
3. agree on major issues requiring the attention of the review authority.

### **5.5.6 Review authority meeting**

- a. Attendees to the review authority meeting shall be the members of the review authority supported by representatives from the review team.
- b. The review authority meeting shall:
  1. confirm that the review has been performed according to the approved procedure;
  2. examine the findings of the review team;
  3. endorse or amend the recommendations;
  4. make decisions if mandated by the consumer;
  5. confirm the achievement of the review objectives;
  6. issue a review authority report, conforming to the DRD of Annex D, summarising the recommendations and decisions to the customer.

## **5.6 RID processing and action item follow-up**

- a. The Review Item Discrepancy (RID) shall be the mechanism used to record questions or identified problems and solutions arising from examination of the review documentation.
- b. RIDs shall be categorized as:
  - Major - if the issue impacts an objective of the review
  - Minor - if considered part of normal work
- c. The content of the RID form shall conform to the DRD in Annex B.
- d. The customer shall monitor all actions arising from the review.
- e. The originator of an issue shall be informed of the closure of any corresponding action item.
- f. A RID shall be considered as closed when the disposition and any associated actions have been agreed by all parties.
- g. Open RIDs shall be submitted to the review authority for final disposition.



# Annex A (normative)

## Review procedure - DRD

---

### A.1 DRD identification

#### A.1.1 Requirement identification and source document

This DRD is called from ECSS-M-ST-10-01, requirement 5.3.2a.

#### A.1.2 Purpose and objective

The review procedure states the purpose and organization of the review and defines the review data-package.

### A.2 Expected response

#### A.2.1 Scope and content

##### <1> Introduction

- a. The review procedure shall provide an overview of the status of the project under review and the purpose and scope of the review.

##### <2> Applicable documents

- a. The review procedure shall list the applicable documents for the review evaluation.

##### <3> Review prerequisite, objectives and success criteria

- a. The review procedure shall define the:
  1. Prerequisites for the go-ahead of the review as planned
  2. Review objectives
  3. Success criteria.

##### <4> Organization and responsibilities

- a. The review procedure shall define the:

1. Review entities  
NOTE For example, authority and review panels.
2. Participants in the review entities and their responsibilities
3. Implementation of the review data management system for documentation, RIDs and action items
4. Review schedule including the following milestones:
  - Prerequisite key point
  - Kick-off meeting
  - Coordination meeting
  - Collocation meeting
  - Review team close-out meeting
  - Issue of panel reports
  - Review authority meeting.

<5> **Review data-package**

- b. The review procedure shall define the list of the documents required to be delivered for the review.

**A.2.2 Special remarks**

None.

## **Annex B (normative)**

# **Review item discrepancy (RID) - DRD**

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### **B.1 DRD identification**

#### **B.1.1 Requirement identification and source document**

This DRD is called from ECSS-M-ST-10-01, requirement 5.6c.

#### **B.1.2 Purpose and objective**

RIDs are prepared to record identified problems and questions arising from the examination of the review documentation.

### **B.2 Expected response**

#### **B.2.1 Scope and content**

- a. A RID shall contain at least the following information:
1. Issue raised and reference of the applicable document violated
  2. Originator recommendation to resolve the issue
  3. Classification in major or minor
  4. Endorsement of the RID by the review team
  5. Response from the supplier
  6. Concurrence (or not) of the review team with the supplier response
  7. Identification of action items
  8. Confirmation of RID status or close-out reference
  9. Any attached document supporting the issue.

NOTE An example of a RID form is provided in Figure B-1.

#### **B.2.2 Special remarks**

None.

<i>SHEET A</i>				
CONSUMER Organisation		REVIEW ITEM DISCREPANCY		Project Review
(A) TITLE:		RID No:		
Originator reference:		ID No:		
Originator:		Assoc. RID:		
(B) REF. AND DOCUMENT TITLE: Page/Section/Para: <b>of the document under review</b>				
(C) DISCREPANCY:				
(D) INITIATOR RECOMMENDED SOLUTION:				
Originator' Signature				
(E) REVIEW TEAM RECOMMENDATIONS:				
Status:	Classification:	Panel Chairman' Signature		
<b>(accepted/rejected/withdrawn)</b>	<b>(Major/Minor)</b>			

Figure B-1: Example of RID form

<i>SHEET B</i>				
CONSUMER Organisation		REVIEW ITEM DIPOSITION		Project Review
(A) TITLE:		RID No:		
-	-	ID No:		
-	-	Assoc. RID:		
(G) SUPPLIER POSITION:				

<b>Status</b>	<b>Responsible:</b>	<b>Supplier' Signature</b>
<b>(H) REVIEW TEAM DISPOSTION:</b>		
<b>Signature Consumer</b>	<b>Published:</b>	<b>Signature Supplier</b>
<input type="checkbox"/> Accepted with action	<input type="checkbox"/> Closed Board <input type="checkbox"/> To Pre-Board <input type="checkbox"/> To	<input type="checkbox"/> Postponed
<b>(I) REVIEW TEAM CLOSEOUT:</b>		
<b>Signature Consumer</b>	<b>Signature Supplier</b>	
<b>(K) CLOSE OUT REFERENCES:</b>	<b>Closed:</b>	<b>Date:</b>
	<b>SIGNATURE</b>	

Figure B-2: Example of RID form (continued)

# Annex C (normative)

## Review team report - DRD

---

### C.1 DRD identification

#### C.1.1 Requirement identification and source document

This DRD is called from ECSS-M-ST-10-01, requirement 5.3.4d

#### C.1.2 Purpose and objective

The review team report summarizes the results the review team findings based on the assessment of the documentation and identifies issues brought to the review authority for resolution.

### C.2 Expected response

#### C.2.1 Scope and content

- a. The review team report shall provide the following information:
  1. Scope of the review team, review team activities and meeting dates and participants.
  2. Assessment of the adequacy of the documentation submitted for review.
  3. Review item discrepancy (RID) statistics.
  4. Assessment of the review with respect to the:
    - (a) Status of actions from previous reviews
    - (b) Major findings and recommendations
    - (c) Issues brought to the review authority for resolution
    - (d) Achievement of the review objectives.
  5. Conclusions and any lessons learned applicable to this or other projects.
  6. Annexes:
    - (a) RID list with status

- (b) RIDs related to significant findings
- (c) RIDs for resolution by the review authority
- (d) Action item list.

### **C.2.2 Special remarks**

None.

## **Annex D (normative)**

# **Review authority report - DRD**

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### **D.1 DRD identification**

#### **D.1.1 Requirement identification and source document**

This DRD is called from ECSS-M-ST-10-01, requirement 5.5.6b.6.

#### **D.1.2 Purpose and objective**

The review authority report summarizes the major findings of the review and records recommendations and decisions.

### **D.2 Expected response**

#### **D.2.1 Scope and content**

- b. The review authority report shall provide the:
  - 1. Major findings and recommendations
    - (a) major findings
    - (b) recommendations and decisions on issues requiring resolution by the review authority
    - (c) additional recommendations
  - 2. Assessment of the achievement of the review objectives
  - 3. Conclusions.

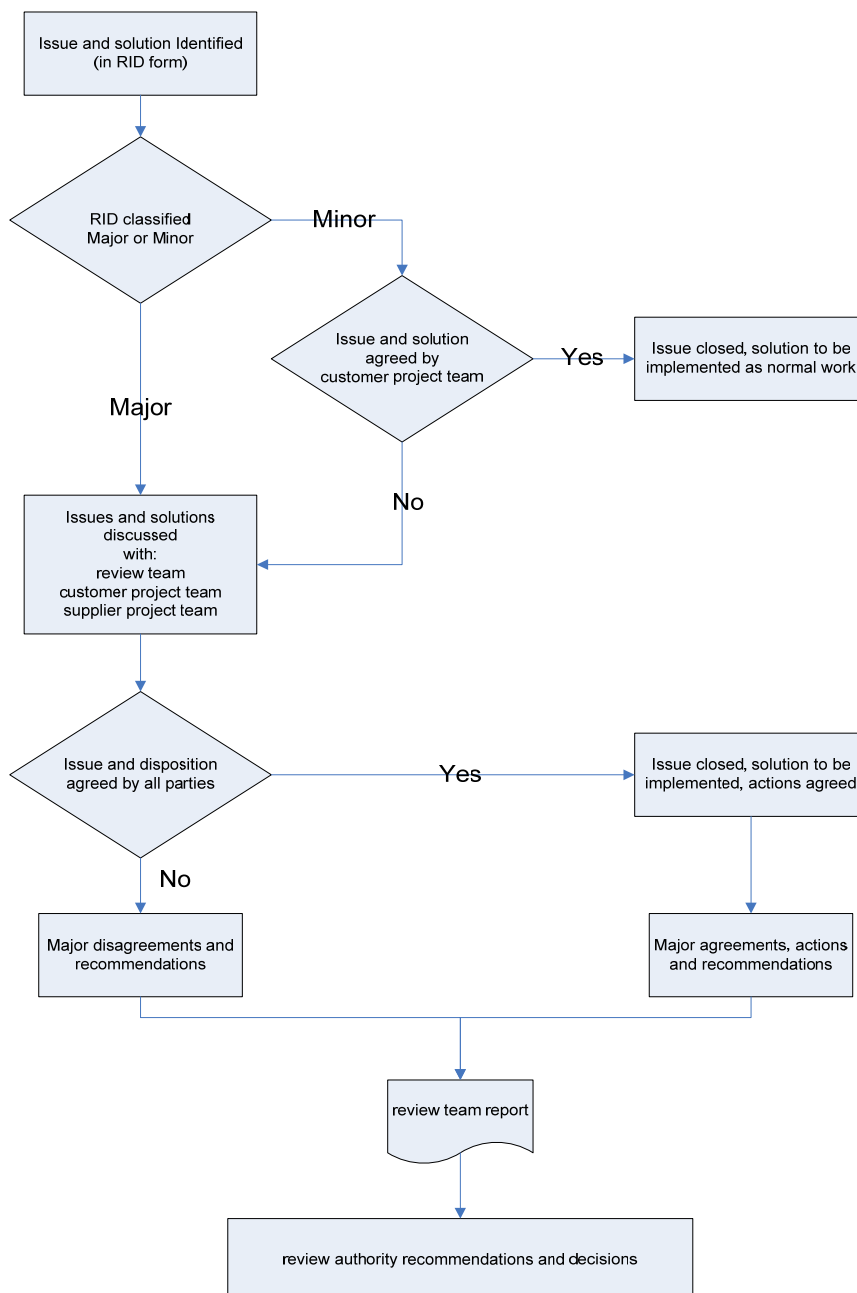
#### **D.2.2 Special remarks**

None.



## Annex E (informative)

# Logic diagram for RID processing



**Figure E-1: Flow logic for the RID processing**

# Annex F (informative)

## Examples for defined terms

### F.1 Examples of actors against review levels

Table F-1: Typical actors against review levels

Level	Mission level	System level	Subsystem level	Unit level
<b>Consumer</b>	Agency	Directorate	Project	Prime contractor
<b>Customer</b>	Directorate	Project	Prime contractor	Sub-contractor
<b>Supplier</b>	Project	Prime contractor	Sub-contractor	Unit supplier

### F.2 Examples of missions

Space mission identified by a Mission Requirement Document

### F.3 Examples of systems

- Flight segment: the satellite
- Ground segment: the control centres
- Launch segment: the launcher with its supporting infrastructure

### F.4 Examples of subsystems

Examples for a satellite:

- Structure
- Thermal control
- Guidance and navigation
- Payload

### F.5 Examples of units

- Electronic units
- Scientific instruments
- Propulsion components

## Bibliography

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ECSS-E-ST-00      ECSS system – Description, implementation and general requirement.