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# Space project management

## Tailoring of space standards

**ECSS Secretariat**
**ESA-ESTEC**
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# 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.

The formulation of this Standard takes into account the existing ISO 9000 family of documents.

This Standard has been prepared by the ECSS Tailoring Working Group, reviewed by the ECSS Technical Panel and approved by the ECSS Steering Board.

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# Introduction

The requirements defined in the series of ECSS Standards are generally applicable to all actors working on space projects, but are intended to be viewed from the perspective of a specific project context, and tailored to match the genuine requirements of the project. The project is determined, amongst other things, by its environment, technology maturity, product class, cost and risk constraints, organizational complexity, and the procurement approach adopted for a given acquisition. The tailoring process is carried out by the relevant customer at each level in the hierarchy, in a systematic manner within the rules and constraints of the customer organization, and with due consideration of the engineering, quality and management aspects of the project.

The conclusions of the tailoring exercise are incorporated into the project requirements documents. The results of the tailoring decisions by the actor's organization leads to an optimized project implementation process, whereby actors are only constrained by requirements appropriate to their roles and responsibilities in any level within the project hierarchy.

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# 1

# Scope

## 1.1 General

This Standard is part of a collection of ECSS Standards belonging to the management branch. It defines the process of tailoring, applicable to all standards in the M-, Q-, and E- branches of ECSS as a guideline.

This Standard defines the objectives, principles, methods and processes of tailoring, which are necessary for the establishment of project requirement documents.

## 1.2 Objective

The objective of this Standard is to facilitate the application of a coherent approach to the tailoring of ECSS Standards, and their subsequent implementation and traceability for a specific project.

## 1.3 Applicability

The requirement for tailoring is applicable to all customers at all levels in a space project, in accordance with the definitions of the customer-supplier network as defined in ECSS-M-00. This Standard lays down applicable principles, and identifies a method for tailoring of ECSS Standards. It does not address contributions from the supplier towards the finalization of the project requirement document, which is envisaged as part of the contractual negotiation process.

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# 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 revisions 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 most recent editions of the normative documents indicated below. For undated references the latest edition of the publication referred to applies.

| | |
|---|---|
| ECSS-M-00 | Space project management — Policy and principles |
| ECSS-M-00-03 | Space project management — Risk management |
| ECSS-P-001 | Glossary of terms |

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# 3

# Terms and definitions

The following term and definition is specific to this Standard in the sense that it is complementary or additional with respect to those contained in ECSS-P-001.

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

NOTE The evaluation determines the extent to which the requirements are most suitable for the acquisition or development of constituents of a space project.

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# 4

# Principles of tailoring

## 4.1 General

The general principles for the tailoring of ECSS Standards are as follows:

a. Applicable standards subject to tailoring, are identified by the customer.

b. The set of applicable requirements from the identified standards are established through an integrated approach, after balanced consideration of the project phase, management, quality and technical aspects of the project, and the analysis of cost-technical drivers and risks.

c. Tailoring is performed at each level of the project hierarchy by the relevant customer, to ensure that the requirements selected are only those necessary for the successful completion of the work under the relevant business agreement. Therefore, as a matter of principle, tailoring results in an appropriately lightened set of requirements at the lower level of the customer-supplier network.

d. Tailoring at all levels is performed systematically in accordance with the method described in this Standard.

e. Tailoring is performed for each phase of the project to ensure that due account is taken of the necessary shift in management objectives and emphases.

f. Overall programme requirements are taken into account while tailoring is performed during the life cycle of the project, in conjunction with specific project phases, and for the relevant agreements when the parameters change.

g. The identification of exceptional requirements to be mandatorily applied at each level of the customer-supplier network, to ensure that higher-level customer requirements are reflected at the lower levels of the organization.

h. In special cases new requirements, which are not included in the standards, are introduced into the project requirements documents. This occurrence should be minimized, and the addition of new requirements should be justified. The same principle applies to the modification or substitution of existing requirements. While adding or substituting requirements, the coherence of the overall requirements is maintained.

i. The tailoring process addresses the need to review and harmonize the selected requirements, to ensure that a coherent set of requirements is developed, and also to ensure elimination of not applicable requirements.

## 4.2 Project characteristics

Project characteristics are the primary influence on the decisions taken during the requirements tailoring process. All tailoring decisions taken are driven by the characteristics identified for the project and the associated considerations.

The identification of project characteristics is the prerequisite to establish the project context, scope, scale, orientation and the key project elements important to successful achievement of objectives.

Project characteristics are defined in both programmatic and technical terms. Programmatic characteristics, with a stronger subjective element, focus on strategic aspects of the project: risk policy, political, financial, economic, contractual. Mission, engineering, scientific and generally product-oriented factors determine the objective technical characteristics.

Examples of such characteristics in the programmatic domain are included in the example tailoring template (see annex A).

## 4.3 Responsibility

Tailoring is the responsibility of and performed by the relevant customer at each level of the project hierarchy in accordance with the overall principles of the customer-supplier network. Tailoring results in the establishment of the project requirements documents that form the basis for tailoring at the next level.

A further aspect of the responsibility of the customer's organization with respect to tailoring, is for the management discipline to ensure the integration and harmonization of requirements across all project disciplines.

At any level of the customer-supplier network an appropriate authority within the actor's organization verifies the consistency of local procedures and methodologies with the application of ECSS Standards, in order to avoid conflict between customer and ECSS Standard requirements.

See ECSS-M-00 for a definition of the structure and responsibilities within the customer-supplier network.

# 5

# Tailoring process

## 5.1 Overview

Considering the principles in clause 4, the tailoring process has several stages that shall be completed in order to develop a full set of tailored M-, Q-, and E- requirements which reflect the specific circumstances of the project in question.

The steps of the tailoring process are:

a. Identify project characteristics.

b. Analyse project characteristics and identified risks.

c. Select applicable standards subject to tailoring from related standards.

d. Select applicable requirements from applicable standards.

e. Harmonize M-, Q-, and E- project requirements.

f. Verify that the tailored (additional or modified) requirements are consistent with the set of ECSS Standards and respect the policies and constraints of the organization.

g. Provide tailored requirements to project requirements documents.

The flowchart in Figure 1 depicts the sequencing of the activities of the tailoring process, together with the respective inputs and outputs, relationships with other processes. Although this process is not prescriptive, it provides a framework to complete the tailoring process with proper consideration of all factors.

Included in the tailoring process flowchart is the concept of the “tailoring template”. The tailoring template provides a concept to enable the tailoring process. A tailoring template example is defined addressing programmatic project characteristics (see annex A).

The tailoring process involves performing the tasks of tailoring according to the logic suggested by the flowchart and the example tailoring template. The output is the record of the tailoring decisions and serves as the list of harmonized, tailored requirements which shall be the final input to the project requirements documents.

If appropriate technology is available, the tailoring templates may be completed electronically, serving both to support the addition and modification of requirements and to provide a clear means of presenting the final list of tailored standards.

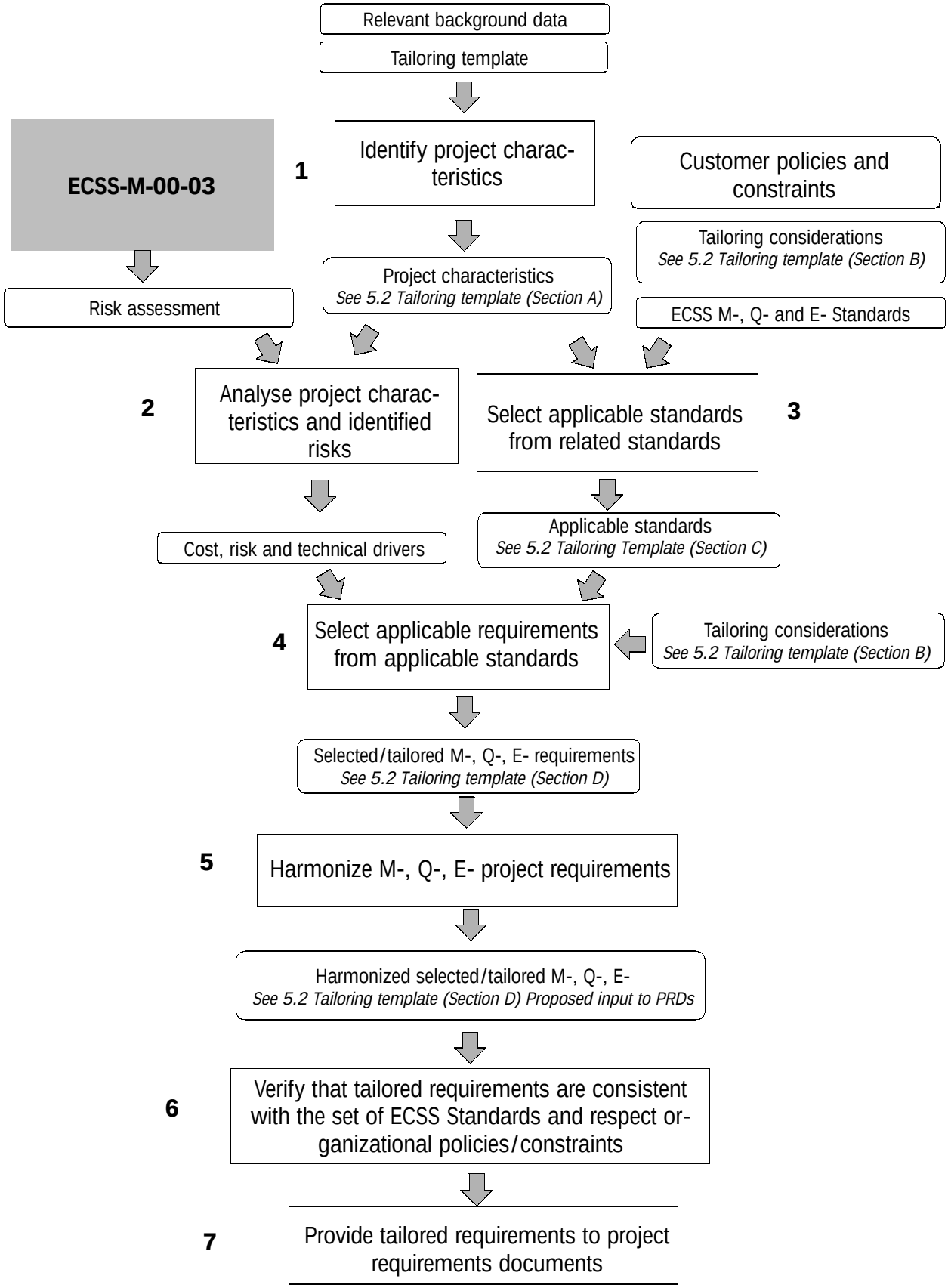


**Figure 1: Tailoring process flowchart**

## 5.2 Tailoring template

The following is an example of a tailoring template with a description of the columns in it.

| | *(Section A)* | *(Section B)* | *(Section C)* | | *(Section D)* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| n | **Programmatic or technical characteristic** | **Tailoring considerations** | **Related standards** | n | **Related reqmts** | **Applicability** Y n | N n | M n | A n | **Comments on exceptions** |
| | | | | | | | | | | |

**Programmatic or technical characteristic**
*(Section A)*

These are attributes of the project that defines its context and most significant features, and together with the tailoring considerations, are the key drivers in the tailoring of standards and requirements. Characteristics are defined at both programmatic and technical domains together with the impact they have on other relevant characteristics and with those they are influenced by.

**Tailoring considerations**
*(Section B)*

Tailoring considerations are factors to consider that have a bearing on selection of requirements in the light of the associated project characteristic. They detail how the project characteristic shall be taken into account when selecting and applying standards and requirements.

Considerations are based on accrued experience, lessons learned from previous projects, and best practice, and are provided as examples only, to aid deliberation.

**Related standard**
*(Section C)*

These are the standards which are related to the project characteristic and tailoring considerations, and are identified in the tailoring template, for determining their applicability.

**Related requirements**
*(Section D)*

These are the requirements identified in the applicable standards that have a bearing on the project characteristic and associated consideration, and are identified in the tailoring template, for determining their applicability.

n

Indicates the selection of the characteristic or related standards and requirements which are made applicable to the project.

**Related requirements applicability**
*(Section D)*

| | |
|---|---|
| **Y** | Yes |
| **N** | No |
| **M** | Modified |
| **A** | Additional requirements |

## 5.3 Process steps

### 5.3.1 Identify project characteristics

The first step of the tailoring process shall identify the project objectives, scope, constraints and the environment in which the project is executed. This shall be performed in a systematic manner, by screening the project against the characteristics identified in the programmatic and technical characteristics tailoring templates. The screening process shall be supported by:

- results from previous project phases;
- experience gained from similar projects in a comparable context;
- other background information available to the actor responsible for the tailoring.

The project manager and key project personnel shall be responsible for identifying project characteristics in the template.

This process of identifying project characteristics shall encompass that each programmatic and technical characteristic is screened for applicability to the specific project. Those relevant to the overall tailoring process not identified in the appropriate sections of the tailoring templates shall also be recorded. The output of this activity, the results and associated considerations, shall be documented in the tailoring template.

### 5.3.2 Analyse project characteristics and identified risks

After identifying project characteristics, the project shall be analysed to identify significant cost and technical drivers, critical issues and specific constraints. The purpose of this activity is to identify and evaluate inherent and induced risks, together with areas of the project that are candidates for simplification.

Resulting project risk factors shall be recorded, and following consideration of the project life cycle and the various project disciplines, the causes and consequences of the identified risks shall be determined. The output from this process shall be a documented suite of cost-technical drivers and risks, with roughly-estimated risk consequences.

The tailoring templates, and the identification and quantification of major drivers and risk factors, together with mitigation strategies, provides the basis for the selection of requirements from ECSS Standards appropriate to the project objectives and context.

### 5.3.3 Select applicable standards from related standards

In parallel with the analysis of project characteristics, the ECSS M-, Q-, and E-Standards related to the project characteristics shall be identified, for the selection of those which are made applicable to the project.

The process to select applicable standards shall have as input, the known customer policies and constraints, the ECSS M-, Q-, and E- Standards, and the tailoring considerations section of the tailoring templates, to guide the actors responsible in the completion of the related standards section of the template.

The output from this process shall be standards selected from the list of related standards recorded in the appropriate sections of the tailoring templates, following the detailed analysis of ECSS M-, Q-, and E- Standards against the identified project characteristics.

### 5.3.4 Analyse selected standards for applicability of individual requirements

Following the analysis of project characteristics and the selection of applicable M-, Q-, and E- Standards, the selected standards shall be assessed against the cost-technical drivers and quantified risks and mitigation strategies. The objective here is to determine the applicability of each selected requirement to the project. Moreover, modifications to individual requirements may be proposed, should a change be necessary to avoid or reduce the probability of the occurrence of an identified risk.

This process shall have as input the cost-technical drivers, the risk items (these are outputs from 5.2), the tailoring considerations and the selected standards as recorded in the tailoring templates.

The first stage in this task shall be to analyse which requirements of the selected standards (M-, Q-, and E-) are applicable. In some exceptional cases, additional requirements should be defined.

The output from this process is a draft tailoring template identifying the selected-tailored ECSS M-, Q-, and E- Standards proposed by the different disciplines, with proposed modifications and, exceptionally, new requirements appropriate to the project characteristics and the documented cost-technical drivers and risks. These shall be documented in the final section of the tailoring templates.

### 5.3.5 Harmonize proposed project-specific requirements for management, product assurance and engineering

Following the selection of project-specific standards and requirements, together with the proposed requirement modifications to cater for particular project circumstances, the resulting tailoring templates prepared by the various disciplines (management, product assurance and engineering) should be reviewed by the project team to ensure consistency between the selected standards and requirements, to eliminate the risk of conflict or misinterpretation.

The output from this process shall be the harmonized tailored M-, Q-, E- requirements, manifested in updates to the tailoring templates, that can be now verified for acceptability as an input to the project requirements documents.

### 5.3.6 Verify that tailored requirements are consistent with the set of ECSS Standards and respect organizational policies/constraints

In this step the appropriate authority in the actor's organization verifies that the tailored set of requirements proposed by the project organization does not deviate from the principles laid down in the standards, and that the locally established policies and existing constraints have been taken into account. This step shall be performed to ensure adherence to the set of ECSS Standards and to scrutinize exceptions.

### 5.3.7 Issue project requirements documents

At the final stage in the tailoring process the tailored requirements shall be included in the project requirements documents.

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# Annex A (informative)

# Example tailoring template, programmatic factors

## A.1 Introduction to the example tailoring template

Examples of tailoring for a variety of project characteristics are given in the template. These are provided to demonstrate the concept of systematic tailoring and are not exhaustive.

The tailoring considerations indicated in conjunction with the project characteristics are major “hints”; organizations performing tailoring may have more or other considerations which are specific to their environment and experience. These “hints” can be expanded by the tailoring organizations as appropriate.

The characteristics and considerations should not be analysed in isolation, but their relationship to and impact on other characteristics and considerations should also be looked at.

The related standards and requirements for each characteristic which are shown as “pre-selected”, are intended to ease the tailoring exercise, so that not all ECSS Standards and requirements are screened but only those which are relevant to the characteristics. The current examples include “M” references and should be expanded to include “Q” and “E”.

The presentation of all ECSS Standards and requirements and their mapping against project specific characteristics, together with their complex relationship can be accomplished by introducing a database approach.

## A.2 Example tailoring template, programmatic factors, using ESA as a customer

| n | Programmatic characteristic | Tailoring considerations | Related standards n | Related reqmts | Applicability Y n | N n | M n | A n | Comments on exceptions |
|---|---|---|---|---|---|---|---|---|---|
| | **Investment size** | As the value increases, the requirements applied should be carefully selected to avoid too much data being required for the recipient to process, hence emphasis on meaningful and usable information should be increased.<br>To this end, the selection of control levels for cost (Control Work Packages) and schedule reporting should be made.<br>Emphasis on exception, trend and deviation reports should also increase. | M-10A j | 5.4.1 | j | j | j | j | |
| j | ***< 50 M€*** | | | | | | | | |
| j | ***< 250 M€*** | | | | | | | | |
| j | ***< 800 M€*** | | | | | | | | |
| j | ***< 1000 M€*** | | | | | | | | |
| | **Strategic relevance** | Evolution of space activities from pioneering era to actual scenario has brought up the presence of several space agencies and private companies capable of providing a wide range of services to customers and nation bodies world wide.<br>A market has been created with defined customer needs and fighting competitors.<br>Attention should be paid to the strategic relevance of the project with regard to the specific market segment or niche it is destined for, and, to avoid the underestimation of potential competitors that could threaten the technological and scientific competitiveness of ESA and of its partners in the projects. | | | | | | | |
| j | ***very high*** | | | | | | | | |
| j | ***high*** | | | | | | | | |
| j | ***medium*** | | | | | | | | |
| j | ***low*** | | | | | | | | |

| n | Programmatic characteristic | Tailoring considerations | Related standards n | Related reqmts | Applicability Y n | N n | M n | A n | Comments on exceptions |
|---|---|---|---|---|---|---|---|---|---|
| j | **Technological risk**<br>***very high***<br>***high***<br>***medium***<br>***low*** | As ESA and industrial partners take challenges while developing new projects and products that are state of the art in terms of technology and performance, technological risk should be well determined to focus attention on those projects that are more subject to possible failure and to address the needed actions to mitigate the consequent risks. | | | | | | | |
| j<br>j<br>j<br>j | **Duration**<br>***< 1 year***<br>***< 3 years***<br>***< 6 years***<br>***< 10 years*** | As the duration of a project increases, the schedule management requirements should be tailored accordingly. Reporting frequencies should reflect the overall duration, extending as the duration increases.<br>Similarly the level of detail should decrease with duration, with emphasis on trend reports and deviation reporting to highlight problem areas. In case of very long projects a centralized schedule database access may be considered rather than routine reports. | M-10A j<br>M-60A j | 5.3.3<br>7.4<br>7.8 | j<br>j<br>j | j<br>j<br>j | j<br>j<br>j | j<br>j<br>j | |
| j<br>j<br>j<br>j<br>j | **Hierarchy complexity**<br>***1 level***<br>***2 levels***<br>***3 levels***<br>***4 levels***<br>***5 levels*** | As the depth of a project organization increases, the reporting through the hierarchy becomes more complex and lengthy. To address this problem, requirements for notification of problems directly to different actors should be considered.<br>The need for structure, such as a responsibility structure and business agreement structure, also increases with the complexity of the organization, with customers being required to identify and allocate interface responsibilities to suppliers. | M-10A j<br>M-60A j | 5.4.2<br>5.4.4<br>7.8 | j<br>j<br>j | j<br>j<br>j | j<br>j<br>j | j<br>j<br>j | |

| n | Programmatic characteristic | Tailoring considerations | Related standards | n | Related reqmts | Applicability Y | N | M | A | Comments on exceptions |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | n | n | n | n | |
| | **Countries/actors involved** | The number of actors involved is related to the project size and type of products to be delivered, inducing different depths of project organization, but can also increase depending on the type of cooperation. | M-10A | j | 5.4.2 | j | j | j | j | |
| | | | | | 5.4.4 | j | j | j | j | |
| j | ***1 - 5*** | As the number of actors increases, so does the need for clear and precise responsibility/authority boundaries for interfaces and for structures such as responsibility structure and business agreement structure. | M-20A | j | 4.2.10 | j | j | j | j | |
| j | ***5 - 10*** | | | | | | | | | |
| j | ***10 - 20*** | In addition, consideration should be given to provide for improving communications between the project actors, such as collocation routine teleconferencing, maintenance of project directories and an automated action item system. | | | | | | | | |
| | **Imposed contracting approach** | | | | | | | | | |
| j | ***Cost reimbursement*** | The objective is to ensure a collective set of data to give adequate visibility of the cost and manpower expenditure against project progress. | M-10A | j | 4.6.1 | j | j | j | j | |
| | | | M-60A | j | 5.6 | j | j | j | j | |
| | | | | | 5.11 | j | j | j | j | |
| j | ***Fixed price contracts*** | The objective is to ensure a collective set of data to give adequate visibility of the cost against project progress. | M-10A | j | 4.6.1 | j | j | j | j | |
| | | | M-60A | j | 5.6 | j | j | j | j | |
| | | | | | 5.11 | j | j | j | j | |
| | | | | | 5.20 | j | j | j | j | |
| j | ***Firm fixed price contracts*** | The objective is to ensure a collective set of data to give adequate visibility of the cost against project milestones achievement. | M-10A | j | 4.6.1 | j | j | j | j | |
| | | | M-60A | j | 5.11 | j | j | j | j | |
| | | | | | 5.20 | j | j | j | j | |

| n | Programmatic characteristic | Tailoring considerations | Related standards n | Related reqmts | Applicability Y n | N n | M n | A n | Comments on exceptions |
|---|---|---|---|---|---|---|---|---|---|
| j | **Industrial policy constraints** | | | | | | | | |
| j | ***No constraint*** | No reporting | | | | | | | |
| j | ***European countries*** | Where the customer is obligated to ensure geographical distribution, reporting by the suppliers should be done. | M-60A j | 5.8<br>5.9 | j<br>j | j<br>j | j<br>j | j<br>j | |
| j | ***EEC countries*** | Where the customer is obligated to ensure geographical distribution, reporting by the suppliers should be done. | M-60A j | 5.8<br>5.9 | j<br>j | j<br>j | j<br>j | j<br>j | |
| j | ***ESA member states*** | Where the customer is obligated to ensure geographical distribution, reporting by the suppliers should be done. | M-60A j | 5.8<br>5.9 | j<br>j | j<br>j | j<br>j | j<br>j | |
| j | ***ESA member states and USA*** | Where the customer is obligated to ensure geographical distribution, reporting by the suppliers should be done. | M-60A j | 5.8<br>5.9 | j<br>j | j<br>j | j<br>j | j<br>j | |

| n | Programmatic characteristic | Tailoring considerations | Related standards n | Related reqmts | Applicability Y n | N n | M n | A n | Comments on exceptions |
|---|---|---|---|---|---|---|---|---|---|
| | **Funding** | | | | | | | | |
| j | ***Public*** | Reporting requirements should ensure access to data sufficient to meet the obligations of the customer and the public, and for control of geographical distribution, as applicable. | M-60A j | 5.8<br>5.9 | j<br>j | j<br>j | j<br>j | j<br>j | |
| j | ***Private*** | Consideration should be given to specific consumer requirements, in a co-ordinated fashion with the ECSS Standards, in particular any imposed contracting approaches. | | | | | | | |
| j | ***Co-funded*** | Reporting requirements should ensure data sufficient to meet the obligations of the customer for reporting to the consumer, and for control of geographical distribution as applicable. | M-60A j | 5.8<br>5.9 | j<br>j | j<br>j | j<br>j | j<br>j | |
| j | ***Limited*** | Limited funds or availability necessitates careful integrated cost and schedule planning, to ensure expenditures are kept within the cost baseline. Implementation of design-to-cost methods should be done for limited funds. Strict control of changes and potential cost items, together with regular estimates at completion should be executed. The direct impact of the limitation on the project value and schedule, and indirectly on its complexity, make complete and unambiguous definition of the project boundaries by the consumer and first level customer indispensable. | M-60A j<br>M-20A j | 5.6<br>5.12<br>5.13<br>5.14<br>5.24<br>5.25<br>5.2<br>5.3 | j<br>j<br>j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j<br>j<br>j | |

| n | Programmatic characteristic | Tailoring considerations | Related standards n | Related reqmts | Applicability Y n | N n | M n | A n | Comments on exceptions |
|---|---|---|---|---|---|---|---|---|---|
| j | **Scheduling**<br>***Fixed*** | Projects with a fixed target, such as satellite rendezvousing with a comet require strict schedule control. Requirements should stress proactive schedule management and ensure adequate reporting for visibility, particularly focusing on notification of problems in a timely manner, the careful use of resources, float and ensuring that critical elements are monitored continuously. | M-60A j | 7.2<br>7.3<br>7.4<br>7.6<br>7.8<br>7.9 | j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j | |
| j | ***Tied to other projects*** | Projects with schedules integrated with other projects require careful identification of interfaces and establishment of milestones to monitor progress.<br>This is important, not only to ensure targets are met, but also to allow relaxation of the schedule where delays are recorded on related projects. Reporting of the schedule related to the milestones should be considered. | | 7.3<br>7.8<br>7.9 | j<br>j<br>j | j<br>j<br>j | j<br>j<br>j | j<br>j<br>j | |

| n | Programmatic characteristic | Tailoring considerations | Related standards n | Related reqmts | Applicability Y n | N n | M n | A n | Comments on exceptions |
|---|---|---|---|---|---|---|---|---|---|
| | **Project Phase related documentation** | | | | | | | | |
| j | ***Phase 0 + A Project review (Assessment and feasibility)*** | Project reviews are held as key milestones at the conclusion of each major stage of the project. In this phase attention is focused on the contractor's system technical specifications. The system level System Requirement Review (SRR) should be the baseline from which the contractor conducts his subsystem SRR. | M-30A j | 5.1<br>6.1<br>7.1<br>7.2 | j<br>j<br>j<br>j | j<br>j<br>j<br>j | j<br>j<br>j<br>j | j<br>j<br>j<br>j | |
| j | ***Phase B Project review (Definition)*** | Project reviews are held as key milestones at the conclusion of each major stage of the project. In this phase attention is focused on contractor's product technical specifications. To achieve System Preliminary Design Review (PDR) objectives, a coordinated Subsystem Design Review should be managed. | M-10A j<br>M-30A j | 5.1<br>5.2<br>5.2<br>5.3<br>6.3<br>7.3<br>7.4 | j<br>j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j<br>j | |
| j | ***Phase C Project review (Development)*** | Project reviews are held as key milestones at the conclusion of each major stage of the project. In this phase attention is focused on refinement and maintenance of the product tree and of the WBS. Critical Design Review (CDR) is carried out to approve Production Master File (PMF) and Interface Control Documents (ICD) and to release flight or service unit for manufacture. | M-10A j<br>M-30A j | 5.1<br>5.3<br>6.4<br>7.6 | j<br>j<br>j<br>j | j<br>j<br>j<br>j | j<br>j<br>j<br>j | j<br>j<br>j<br>j | |
| j | ***Phase D Project review (Production)*** | Project reviews are held as key milestones at the conclusion of each major stage of the project. In this phase attention is focused on the qualification process to prove that the product meets the specified requirements and is produceable with qualified methods and means. Qualification Review (QR) and lower level Acceptance Review (AR) leads to the "qualified state of the System". | M-10A j<br>M-30A j | 5.3<br>6.5<br>7.7<br>7.8<br>7.9 | j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j | |

| n | Programmatic characteristic | Tailoring considerations | Related standards | n | Related reqmts | Applicability Y n | N n | M n | A n | Comments on exceptions |
|---|---|---|---|---|---|---|---|---|---|---|
| j | **Project Phase related documentation** | | | | | | | | | |
| | ***Phase E1 Project review (Commissioning)*** | Project reviews are held as key milestones at the conclusion of each major stage of the project. In this phase attention is focused on overall test and commissioning by means of Operational Readiness Review (ORR), Flight Readiness Review (FRR), Launch Readiness Review (LRR), and Commissioning Review (CR). | M-30A | j | 6.6<br>7.10<br>7.11<br>7.12<br>7.13<br>7.14 | j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j | j<br>j<br>j<br>j<br>j<br>j | |
| j | ***Phase E2 Project review (Operations)*** | Project reviews are held as key milestones at the conclusion of each major stage of the project. In this phase attention is focused on routine operations and maintenance of the system. | M-30A | j | 6.6 | j | j | j | j | |
| j | **Project risk management** | | | | | | | | | |
| | ***External risks*** | Attention should be paid to risks originated externally in the uncertainties found in the operating environment, such as financial, political and social instabilities. | M-00A | j | 6.3.6 | j | j | j | j | |
| j | ***Project risks*** | Attention should be paid to risks originated by the conduct of our primary activities (space programmes), and generated either internally, as technical failure, or externally, a defect in vital service (launch failure). | M-00A | j | 6.3.6 | j | j | j | j | |
| j | ***Company risks*** | Attention should be paid to risks generated by the action of the Company as the owner and operator of facilities, as an employer and as a provider of services. | M-00A | j | 6.3.6 | j | j | j | j | |

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# ECSS Document Improvement Proposal

| 1. Document I.D. | 2. Document date | 3. Document title |
|---|---|---|
| ECSS-M-00-02A | 25 April 2000 | Tailoring of space standards |

**4. Recommended improvement** (identify clauses, subclauses and include modified text or graphic, attach pages as necessary)

**5. Reason for recommendation**

**6. Originator of recommendation**

| Name: | Organization: | |
|---|---|---|
| Address: | Phone:<br>Fax:<br>e-mail: | **7. Date of submission:** |

**8. Send to ECSS Secretariat**

| Name: | Address: | Phone: +31-71-565-3952 |
|---|---|---|
| W. Kriedte | ESTEC, P.O. Box 299 | Fax: +31-71-565-6839 |
| ESA-TOS/QR | 2200 AG Noordwijk | e-mail: wkriedte@estec.esa.nl |
| | The Netherlands | |

**Note:** The originator of the submission should complete items 4, 5, 6 and 7.

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http://www.estec.esa.nl/ecss/improve/

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