INTERNATIONAL STANDARD

ISO 11893

First edition
2011-04-15

Space systems — Programme management — Project organization

Systèmes spatiaux — Management de programme — Organisation de projet

Reference number
ISO 11893:2011(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11893 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

Introduction

A coherent organization is a prerequisite for the successful execution of a project. The activities of organizing a project consist of setting up the project's internal organization and the external interfaces. This is done by defining the responsibilities and authority of the participants, and their interrelations, taking into account information technologies and subsequently documenting the project organization.

This International Standard is intended to be applied for project organization in space programmes and applications.

The formulation of this International Standard takes into account the existing ISO 9000 family of documents and ISO 14300-1 and ISO 14300-2.

ISO 11893 defines specific requirements for the project organization for space projects.

Space systems — Programme management — Project organization

1 Scope

This International Standard defines the project organization principles and requirements needed to provide satisfactory and coherent management of space projects.

The general requirements for project organization are given in ISO 14300-1.

This International Standard addresses the following, in particular:

a) responsibility and authority of the actors (all actors, customer, supplier),

b) interrelations between the actors (meetings, action monitoring, reporting, assessments and audits),

c) information technologies, and

d) project organization documentation.

The requirements specified herein apply to and affect the supplier and customer at all levels.

This International Standard is applicable to the customer-supplier relationship for space products to the extent agreed by both parties. It is intended to be used as a basis when establishing and negotiating customer program/project management requirements and to guide the supplier's responses. When viewed in a specific project context, the requirements defined in this International Standard should be tailored to match the specific requirements of a particular profile and circumstances of a project.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9000:2005, *Quality management systems — Fundamentals and vocabulary*

ISO 14300-1, *Space systems — Programme management — Part 1: Structuring of a programme*

ISO 14300-2, *Space systems — Programme management — Part 2: Product assurance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9000:2005 apply.

4 Organization principles

4.1 Introduction

The establishment of a well structured and coherent organizational structure for implementing a project at all levels in the customer/supplier chain is a key factor for ensuring an effective and efficient management approach. At each level in the customer/supplier chain, a project organization can be built as an independant project team containing all necessary disciplines within the team structure or, more often, can be built around a core project team containing key project functions with other necessary functions being provided from outside the project team as external support. Irrespective of the organizational approach followed for a project, the elements summarized below are relevant at all levels in the customer/supplier chain.

4.2 Basic principles

A coherent organization is a prerequisite for the successful execution of a space project.

ISO 14300-1 defines the organizational principles (organization at customer and industrial levels for programme/project management) and specifies the organizational requirements concerning information circuits, internal and external to the programme/project and its environment.

The activities of organizing a project consist of setting up the project internal organization and the external interfaces. This is done by defining the responsibilities and authority of the participants, and their interrelations, taking into account information technologies and subsequently documenting the project organization.

4.3 Organizational structure

It is essential that the project's organizational structure is arranged to include all disciplines essential to implement the project with well-defined functions as well as clear reporting lines, interrelationships and interfaces. All project actors below the top level customer and above the lowest level supplier(s) have the roles of suppliers and customers, and their organizational structures are constructed to accommodate both roles.

The organizational structure provides a clear and unambiguous definition and allocation of individual roles and responsibility together with the necessary authority to implement these within the internal project set-up as well as towards project external interfaces.

4.4 Responsibilities and authority of the actors

For the successful execution of a space project, a clear and unambiguous definition and allocation of individual roles, with their associated responsibilities and authority, is essential.

The project organization defines these roles with respect to the internal project set-up as well as to interfaces to the project's external environment (both internal and external to the organization).

Certain roles are relevant to all actors, some to customers (at all levels) only and some to suppliers (at all levels) only.

4.5 Interrelations between actors

The complex nature of space projects leads to the vital need for effective communication between actors. This communication takes the form of direct contact (meetings) and other means. Communications have varying levels of formalism associated with them, ranging from informal information exchanges to contractually binding commitments.

Communication serves initially to provide clarity about the project's goals and objectives. Subsequently, communication supports the work towards achieving these objectives.

The use of formalized action monitoring systems has become established as good practice.

Regular reporting is a uniform means of exchanging information concerning the progress of the project.

Monitoring and control activities give the customer the ability to verify the supplied information (e.g. reports. This can be done by subsequent assessments and audits.

4.6 Information technologies

Information technology is the primary means for the exchange of information. It is therefore important that data compatibility is ensured.

4.7 Communication and reporting

Effective means of communication are essential tools for ensuring clear and efficient interaction between all project actors, as well as between the project team and its external interfaces. Information technology is the primary means for the exchange of information. Communication serves initially to provide clarity about the project's goals and objectives and subsequently, to support the day-to-day work of the project team. Regular reporting is an important tool for exchanging information concerning the progress of the project.

4.8 Project organization documentation

The organization is clearly defined in an implementation document to ensure that all project actors are aware of the project organization.

The documentation serves also to ensure that coherence is maintained throughout all disciplines and functions.

5 Requirements

5.1 Organizational requirements

For the general requirements and principles, ISO 14300-1 defines the organizational requirements.

5.2 Responsibilities and authority of the actors

5.2.1 All actors

Requirements for all actors are the following:

a) Each participant shall identify the individual responsible for the definition and set-up of the project organization.

b) Each participant shall establish and maintain a project organization relative to its level.

c) Each participant shall define the authority for project management and business agreement signing.

d) If the project has links with other projects, each participant shall define the responsibilities relating to the definition and the management of interfaces.

e) If a participant is responsible for more than one business agreement within a project, and the business agreements have different customers, then each business agreement shall be clearly identified and accomplished according to the appropriate relationships.

f) Where a participant employs consultants or other specialists to assist him in performing his duties, then the roles, responsibilities and authority of these consultants and specialists shall be clearly defined.

5.2.2 Customer

Requirements for the customer are the following:

a) The customer shall identify the project characteristics and define the projects requirements, the availability and the implementation requirements of the system including support elements.

b) The customer shall maintain the definition of project performance requirements and constraints throughout the life of the project.

c) The customer shall verify supplier compliance with requirements and constraints.

d) When a customer supplies a product to lower-tier actors he/she shall have the responsibility of a supplier with respect to that product.

5.2.3 Supplier

Requirements for the supplier are the following:

a) To ensure a complete definition and implementation of a project organization with clear roles, responsibilities and authority for all actors, the supplier shall set up the project management organization in such away that adequate resources are allocated to the project to ensure timely completion of the contract.

b) The supplier's project management organization shall exercise an active monitoring and control over its own activities and the lower-tier supplier's activities, and lead its lower-tier supplier's in the execution of subcontracted activities to ensure that their services conform to the customer's requirements.

c) The supplier's project management organization shall implement the approved management plan.

d) The supplier shall identify the key personnel to be deployed on the work, and include them in the project organization. The following project functions shall be considered:

   1) project management,

   2) contracts,

   3) project control,

   4) configuration management,

   5) documentation management,

   6) information systems,

   7) procurement,

   8) assembly, integration and verification,

   9) product assurance and safety, and

   10) engineering.

e) The supplier shall designate a project manager with a team assigned to the project. The members of the project team shall be under the authority and responsibility of the project manager and shall report to the project manager or designated key personnel.

f) The supplier's project manager shall have authority to ensure proper execution of all tasks needed under the contract. The supplier's project manager shall have direct access to company management hierarchy so that conflicts can be resolved at the appropriate level.

g) Suppliers shall demonstrate that the key personnel have the necessary qualification, skills and experience to perform the task for which they are allocated.

h) Where a supplier has lower-level suppliers, the supplier shall act as a customer.

i) The first level supplier shall establish, maintain and distribute a project directory including key personnel, as a minimum.

5.3 Interrelations between the actors

5.3.1 Meetings

Meeting requirements are the following:

a) To ensure that understanding, consensus, agreement and approval are achieved concerning all the major project issues, formal meetings between the supplier and customer shall be held to discuss major deviations from the plans defined in the implementation documents (e.g. management plan), or to discuss major changes proposed to the project requirements documents.

b) Meetings may be scheduled on a periodic basis, but they shall only take place if deemed to be necessary.

c) Any planned meeting shall be based on an agreed written agenda.

d) The minutes should be taken during the meeting, and signed after the meeting by all parties involved.

e) The results of the meeting shall be documented in the agreed minutes of the meeting.

f) Action items shall be reviewed at each meeting.

g) Agreed actions shall be documented in an action item list.

h) A chairperson and secretary shall be designated at the beginning of the meeting.

i) Any matters documented in the minutes of the meeting having contractual impact shall be subject to the contract change procedure for implementation.

j) The expected output of the formal meetings shall be:

   1) agreed agenda;

   2) agreed minutes of meeting;

   3) agreed action item list.

5.3.2 Action monitoring

Action monitoring requirements are the following:

a) To allow recording and follow-up of actions decided for the project (after meetings, assessments and reviews), up to the close-out, the programme/project shall define, implement and maintain an action-monitoring system for use and access by all project participants.

b) Each action shall be allocated within an implemented action monitoring system:

   1) a unique identification,

   2) the identification of the origin (e.g. meeting),

3) the initiator,

4) the description of the action (clear and concise),

5) the person responsible for the action,

6) the close-out date,

7) the current status, and

8) the close-out reference (e.g. document, letter).

c) When reporting progress at the individual supplier level, the report shall contain an action status list.

5.3.3 Reporting

Reporting requirements are the following:

a) To provide visibility to the customer on the supplier's project activities, each supplier's project manager shall regularly report on work progress to his/her customer. This shall include his/her assessment and analysis of the reports from his/her lower-tier suppliers.

b) To ensure consistency between the technical status and the schedule report, and give an integrated view of the overall progress status and support decision-making, the progress report shall contain as a minimum:

1) the project manager's assessment of the current situation in relation to the forecasts and risks, at a level of detail agreed between the relevant actors,

2) the status of the progress of work being performed by the supplier,

3) identification of achievements measured against planned results,

4) status and trends of agreed key performance and engineering data parameters,

5) adverse trends in technical and programmatic performance and proposals for remedial actions,

6) planning for implementation of remedial actions,

7) a consolidated report derived from the lower-level status reports, and a status report indicating progress on all actions since the previous report.

c) A supplier's progress report shall be based on work packages and the corresponding schedules.

d) The progress report periodicity shall be agreed between the actors.

e) The supplier shall notify the customer within an agreed period of time of any event that could significantly affect the achievement of the contract objectives in terms of cost, technical performance and schedule, and any situation resulting in a substantial schedule or planning change demanding immediate customer involvement.

5.3.4 Assessments and audits

Assessment and audit requirements are the following:

a) To ensure that the assessments or audits are performed in a planned, controlled and productive manner, and results are properly documented, every supplier shall accept to be assessed by the customer or by a third party agreed between the customer and the supplier in the framework of the business agreement.

b) The supplier may demand that the assessment be performed by a third party, and that the third party obtain authorization each time the audit needs access to information concerning patent rights or confidentiality associated with defence secrecy.

c) Each supplier shall provide his/her customer access to his facilities and data which are relevant in the frame of the business agreement.

d) The customer shall notify the supplier in due time of:

   1) his/her intention to perform (or to delegate performance of) the assessment or audit,

   2) the objectives and the limits of the assessment or audit,

   3) the designated assessor and his/her terms of reference, and

   4) the assessment or audit schedule.

e) Every assessment or audit performed shall be followed by a report prepared by the assessor and shall contain the views of both parties.

f) The conclusions of the assessment or audit and the draft report shall be discussed with the supplier, before it is finalized and released.

g) In the event of disagreement with any of the assessment or audit conclusions, the supplier may add his/her observations and comments.

h) When finalized, the assessment or audit report shall not be divulged without the agreement of the assessed supplier.

5.4 Information technologies

To facilitate a compatible and efficient exchange of information, the actors shall agree upon the standards to be used for information exchange.

The agreement shall address the following as a minimum:

a) compatibility of data,

b) flow of information,

c) availability and accessibility of information,

d) binding nature of information exchanged, and

e) security of data (secrecy and protection against viruses).

5.5 Project organization documentation

Project organization documentation requirements are the following:

a) The customer shall draw up as part of the project requirements documents the project organization requirements for the next level supplier.

b) Each supplier in the project shall produce an implementation document describing how he/she intends to respond to the project requirements document for project organization, in respect of his/her own organization (e.g. project organigramme).

c) The supplier shall submit his/her implementation document for project organization to his/her customer for acceptance. After acceptance, this document becomes an integral part of the business agreement.

d) Implementation document for project organization shall cover:

1) responsibility and authority of the actors,

2) resource requirements,

3) personnel qualification and training,

4) interrelation between the actors,

5) business agreement aspects between the actors,

6) the organizational structure of the supplier and a definition of the responsibility and authority of personnel who manage, perform and verify work affecting project performance,

7) facilities and logistics (offices, clean rooms), and

8) information technology (hardware and software).

ICS 49.140

Price based on 8 pages