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Space systems — Programme management —

Part 2:
Product assurance

Systèmes spatiaux — Management de programmes —
Partie 2: Assurance produit

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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 3.

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 part of ISO 14300 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 14300-2 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

ISO 14300 consists of the following parts, under the general title *Space systems — Programme management*:

— *Part 1: Structuring of a programme*

— *Part 2: Product assurance*

Introduction

This part of ISO 14300 is intended to be applied for the product assurance in space programmes and applications.

Requirements in this part of ISO 14300 are defined in terms of what must 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 part of ISO 14300 takes into account the existing ISO 9000 family of documents and the content of ISO 14300-1.

Users should note that all International Standards undergo revision from time to time, and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Space systems — Programme management —

Part 2:
Product assurance

1 Scope

This part of ISO 14300 defines the product assurance (PA) policy, objectives, principles, and requirements for the establishment and implementation of PA programmes for space programmes covering mission definition, design, development, production and operations of space products including disposal.

The PA discipline covers: PA management, quality assurance, safety assurance, dependability assurance of software and hardware products including electrical, electromechanical, electronic components, materials, mechanical parts and processes.

This part of ISO 14300 defines their respective objectives, policies, and principles to achieve the stated overall PA objectives throughout the complete life cycle of the products.

The provisions of this part of ISO 14300 apply to space products.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 14300. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 14300 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 normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 9000:2000, *Quality management systems — Fundamentals and vocabulary*

ISO 9000-4:1993, *Quality management and quality assurance standards — Part 4: Guide to dependability programme management*

ISO 9001:2000, *Quality management systems — Requirements*

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

ISO 14620-1, *Space systems — Safety requirements — Part 1: System safety*

ISO 17666, *Space systems — Risk management*

3 Terms and definitions

For the purposes of this part of ISO 14300, the terms and definitions given in ISO 9000:2000 and the following apply.

3.1

product assurance

PA

discipline devoted to the study, planning and implementation of activities intended to assure that the design, controls, methods and techniques in a programme result in a satisfactory level of quality in a product

4 Objectives, policy and principles

4.1 Objectives

The prime objective of product assurance is to assure that the space products accomplish their defined mission objectives and more specifically that they are safe, available and reliable.

A further objective is to achieve more cost effective space programmes by co-ordinating the development and implementation of appropriate PA methods and standards.

In support of programme risk management, PA will assure an adequate identification, appraisal, prevention and control of technical risks within programme constraints.

4.2 Policy and principles

In order to meet these objectives, a PA policy is defined in this part of ISO 14300, which requires a PA programme derived from a system based on preventive approach and includes:

a) protection of human life, space products, investment and environment;

b) definition and maintenance of a programme PA function, with appropriate autonomy with respect to other lines and programme level organizations;

c) integrated application of the PA disciplines and co-ordination with the associated functions of programme management and programme engineering;

d) tailoring of the PA requirements to the specific programme needs;

e) assignment of PA requirements and their control commensurate with the function criticality within the system;

f) integrated PA participation to the overall risk management process;

g) PA contribution to proper control of the technical risks and assuring awareness by the appropriate levels of management until the end of the disposal phase;

h) implementation of a preventive approach, i.e. early identification of potential problems and continuous influence on the development process;

i) verification activities consistent with programme objectives;

j) certification activities by the supplier on the end product for customer's final acceptance.

5 Product assurance management

5.1 Objective

The objective of product assurance management is to ensure and achieve an adequate, effective and efficient co-ordination and implementation of the PA activities through a proper integration of the PA disciplines as well as the integration of PA with all programme management and engineering activities.

5.2 Policy and principles

5.2.1 The PA management policy is that a PA programme is implemented throughout all programme phases and co-ordinated with all the actors, and is managed in such a way as to ensure that:

a) the PA programme and organization, requirements, methods, tools and resources are well defined and implemented at each level from system down to piece part;

b) the applicable standards are tailored appropriately;

c) aspects are identified, which could affect programme requirements having major impacts on safety, mission success and the related cost and schedule consequences;

d) adverse consequences of these aspects are prevented by the early detection, characterization, elimination, minimization and containment of problem contributors and initiators;

e) risks are assessed and controlled, and that acceptability of the residual ones is evaluated;

f) the end product conforms to its specifications and that observed non conformances are properly disposed.

Such a programme provides at any time the necessary visibility of the quality status of the product.

5.2.2 The basic implementation principles are to:

a) define all PA activities consistent with the programme objectives, requirements, criticality and constraints;

b) ensure the allocation and availability of adequate resources, personnel and facilities to carry out the required PA tasks;

c) ensure that lower level contractors and suppliers perform proper PA monitoring and control;

d) ensure proper progress monitoring, reporting and visibility of all PA matters, in particular those related to risk dispositions, alerts, critical items, non-conformances, changes, deviations, waivers, actions and/or recommendations resulting from reviews, inspection and audits, qualification, verification and acceptance.

5.3 Requirements

5.3.1 Responsibility and authority

The requirements for responsibility and authority are as follows.

a) The responsibility, the authority and the interrelation of PA shall be defined.

b) The PA responsibilities and the interfaces of each organization, either external or internal, involved in a programme shall be defined and documented.

c) The delegation of product assurance tasks by a supplier to another lower tier supplier shall be done in a documented and controlled way. The supplier retains the responsibility towards the customer.

d) The parties involved shall take cognizance of ISO 17666.

5.3.2 Resources

The requirements for resources are as follows.

a) The supplier shall provide adequate resources to perform the required PA tasks.

b) Trained personnel shall be assigned to the various PA activities.

c) The supplier shall assign a programme PA manager reporting to the programme manager and having unimpeded access to higher management through the company PA (or equivalent) executive as necessary to fulfil his duties.