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Space systems — Interface control documents between ground systems, ground support equipment and launch vehicle with payload

Systèmes spatiaux — Documents de contrôle d'interface entre les systèmes au sol, l'équipement de soutien au sol et le véhicule de lancement de charge utile

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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

This second edition cancels and replaces the first edition (ISO 17689:2015), which has been technically revised.

The main changes are as follows:

— terms were updated.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document is intended for application at realization of interstate, intergovernmental or non-governmental space activities, between operators of different countries and organizations on the basis of their space activity contracts.

Interfaced (connected) devices development by two and more designers (commands, organizations, developers of other specializations, etc.) creates a need for coordination between them to prevent interfaces incompatibility, taking into account unlimited possibilities for design (structure) improvement in the course of space systems development.

Interface control documents (ICDs) make it possible to systematically create (develop), operate and manage interfaces (see Clause 1) at all stages of the life cycle of a launch system. They are necessary in order to ensure the normal functioning of a launch system, prevent accidents and reduce acceptable risks when implementing joint space projects and providing spacecraft launch services. ICD between payload and a launch vehicle is defined in ISO 15863.

Application of this document at design and development stages improves control and compatibility of interfaces (see Clause 1).

Application of this document at operation stage improves a launch system safety and facilitates control of interfaces.

Interface control documents format defined in this document does not contain the descriptions regarding various properties of ground support equipment (i.e. performance, functions or endurance to launch mechanical environment or quality assurance provisions), which are defined in technical specifications.

Control of interfaces, independently of its frequency or depth, cannot replace stages of parameters definition of high-quality production and development of technical requirements of project, design and development. Interfaces control is used as a control process that can provide necessary verification of successful finishing of design at a stated in contract period.

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Space systems — Interface control documents between ground systems, ground support equipment and launch vehicle with payload

1 Scope

This document establishes basic requirements for interface control documents (ICD) writing and interface control procedures for the following items included in the launch system: payload, launch vehicle, ground support equipment (according to ISO 14625) and launch site (buildings with utility systems), specifically:

a) ICD between the ground support equipment and the payload;

b) ICD between the ground support equipment and the launch vehicle;

c) ICD between items of the ground support equipment;

d) ICD between the ground support equipment and the launch site.

This document is applicable to organizations developing ground support equipment and to operators performing space activity.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
acceptable risk
safety risk, the severity and the probability of which can be reasonably accepted by humanity, without durable or irreversible foreseeable consequence on health, Earth, and the environment, at the present time and in the future

EXAMPLE A safety risk can be acceptable for crew members of a manned space vehicle when it is comparable to that of test pilots, for the personnel participating in hazardous activities when it is comparable to that of industrial workers, for people, public and private property, and the environment when it is comparable to that of other hazardous human activities (e.g. high-speed surface travel).

3.2
accident
undesired event arising from operation of any project-specific items which results in:

a) human death or injury;

b) loss of, or damage to, project hardware, software or facilities that can then affect the accomplishment of the mission;

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