INTERNATIONAL STANDARD

ISO 16192

Second edition
2017-04

Space systems — Experience gained in space projects (lessons learned) — Principles and guidelines

Systèmes spatiaux — Évaluation de la connaissance pratique — Principes et lignes directrices

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 16192:2017
https://standards.iteh.ai/catalog/standards/iso/d0d7afed-e513-4e51-be00-23f461d7f992/iso-16192-2017

Reference number
ISO 16192:2017(E)

© ISO 2017

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 16192:2017
https://standards.iteh.ai/catalog/standards/iso/d0d7afed-e513-4e51-be00-23f461d7f992/iso-16192-2017

COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

iTeh Standards (https://standards.iteh.ai) Document Preview ISO 16192:2017 https://standards.iteh.ai/catalog/standards/iso/d7d7afed-0513-4e51-be00-23ff61d7f992/iso-16192-2017

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

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 16192:2010), which has been technically revised.

ISO 16192:2017
https://standards.iteh.ai/catalog/standards/iso/d0d7afed-e513-4e51-be00-23f461d7f992/iso-16192-2017

The main changes compared to the previous edition are as follows:

— information previously in Clause 2 (role of lessons learned) and Clause 4 (the lessons learned process) has been reorganised and rewritten to eliminate duplication and inconsistent text; and

— information describing the lessons learned process which was previously in Annex A has been removed and combined with similar information in Clause 4 to further simplify the text in Clause 4.

 © ISO 2017 – All rights reserved

Introduction

In order to improve the quality of products and to work efficiently, it is important to consider past experiences and how the knowledge of those experiences is transmitted. The aim is to decrease errors (in terms of both quantity and gravity), improve working methods and decrease risks of nonconformity to specified objectives (management, technical, quality, costs and schedules).

In the process of lessons learned, future space projects or programmes are intended to draw benefit from past experience, by capturing and communicating knowledge from the past through recording, classifying and making the information available.

An efficient processing of lessons learned is considered essential for:

— ongoing efficiency and quality improvement inside any organization;

— successful project management.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 16192:2017
https://standards.iteh.ai/catalog/standards/iso/d0d7afed-e513-4e51-be00-23f461d7f992/iso-16192-2017

© ISO 2017 – All rights reserved

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 16192:2017
https://standards.iteh.ai/catalog/standards/iso/d0d7afed-e513-4e51-be00-23f461d7f992/iso-16192-2017

Space systems — Experience gained in space projects (lessons learned) — Principles and guidelines

1 Scope

This document outlines lessons learned principles and guidelines that are applicable in all space project activities (management, technical, quality, cost and schedule).

The application of this document is intended to be included in the supplier quality management system, but can be tailored in individual contracts as agreed by the customer and supplier, depending on:

— the content of each project (size, technological level and novelty, particular organization, participants, etc.);

— the interest and usefulness of the related information.

The lessons learned information can result from any situation which might be encountered in similar contexts for future projects, i.e.:

— undesirable experiences that need to be avoided;

— strategies, rules, principles of design, validation, tests and operations that proved to be successful or necessary.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

This document neither endorses nor recommends the transmission of company proprietary information to external entities as part of a lessons learned process.

Implementing a formal lessons learned process as outlined in this document makes it possible to capture and benefit from this information.

ISO 16192:2017

The lessons learned activity is an important contribution to the processing of the preventive and corrective actions specified in ISO 9001 and ISO 17666.

This document also provides lessons learned processes and suggested lessons learned forms.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

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

© ISO 2017 – All rights reserved

4 The role of a lessons learned activity

4.1 Role

The role of a lessons learned activity is to ensure that projects benefit from the experiences – good and bad – of previous projects. The main activities involved in the process are:

a) to identify and collect relevant information;

b) to analyse information, classify lessons learned and issue recommendations;

c) to document the process;

d) to make information available.

The outputs of the activity are:

— root event background;

— lessons learned;

— recommendations.

The steps involved in the lessons learned process are described in detail in Clause 6.

4.2 Information availability

Information should be made available, as necessary, by referring to a collection of data and by consulting a shared database. External provision of data should be in accordance with agreements between the customer and supplier. This database should include any information considered by the participants to be useful for ongoing or future project activities.

The database should be searchable by domain, type of project, period and type of anomaly.

Information may also be made available by means of more "active" ways of knowledge transfer, such as a debriefing or presentation of lessons learned to interested personnel (e.g. within the company) or the presentation of lessons learned to relevant project teams (e.g. within the company).

5 Lessons learned management

5.1 The main applications of the lessons learned

Lessons learned should be systematically applied in the following situations:

a) before the start of a space project;

EXAMPLE Information about costs and duration, technical performance and quality of previous projects are made available to a new project.

b) transition from one phase to another phase;

EXAMPLE The lesson learned during phase B (definition phase) or phase C (development phase) is that a qualification of an advanced technology is followed by specific inspection during manufacturing.

c) when the results from one project could benefit another coexisting project;

EXAMPLE The lessons learned from analysis of a component in a given project is directly beneficial to another project.

d) when the knowledge of one field can benefit another.

© ISO 2017 – All rights reserved

EXAMPLE The lessons learned from analysis of defects or failures during integration and test results in improvement of the specifications of a contract.

5.2 Information sources for the lessons learned

The search for useful information is an essential step to developing lessons learned.

Suggested sources of useful information include the following:

— opinions of specialists and experts;

— documented conclusions of specialists and experts;

— technical reports, actions and recommendations resulting from reviews;

— non-conformance reports;

— failure analysis reports;

— assessments of success in meeting project objectives (at the end of a project);

— documented results of operation of models of space engineering, or results of space mission, or both;

— feedback from customers;

— alerts;

— accidents, mishaps, incidents and close calls; and

— risk assessments.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

6 The lessons learned process

6.1 General

ISO 16192:2017
https://standards.iteh.ai/catalog/standards/iso/d0d7afed-e513-4e51-be00-23f461d7f992/iso-16192-2017

The lessons learned process is depicted in Figure 1. It comprises three phases with related outputs:

a) the **background** of the experience, in which the following are described in detail:

   — the report of the fact;

   — the analyses which comprise the identification of the causes (possible, probable and proven) and the consequences (immediate, future and potential);

   — the resulting actions;

b) **lessons learned**, which are lessons drawn from the experience;

c) **recommendations** which are applicable to new projects (impact on documentation, impact on product).

© ISO 2017 – All rights reserved

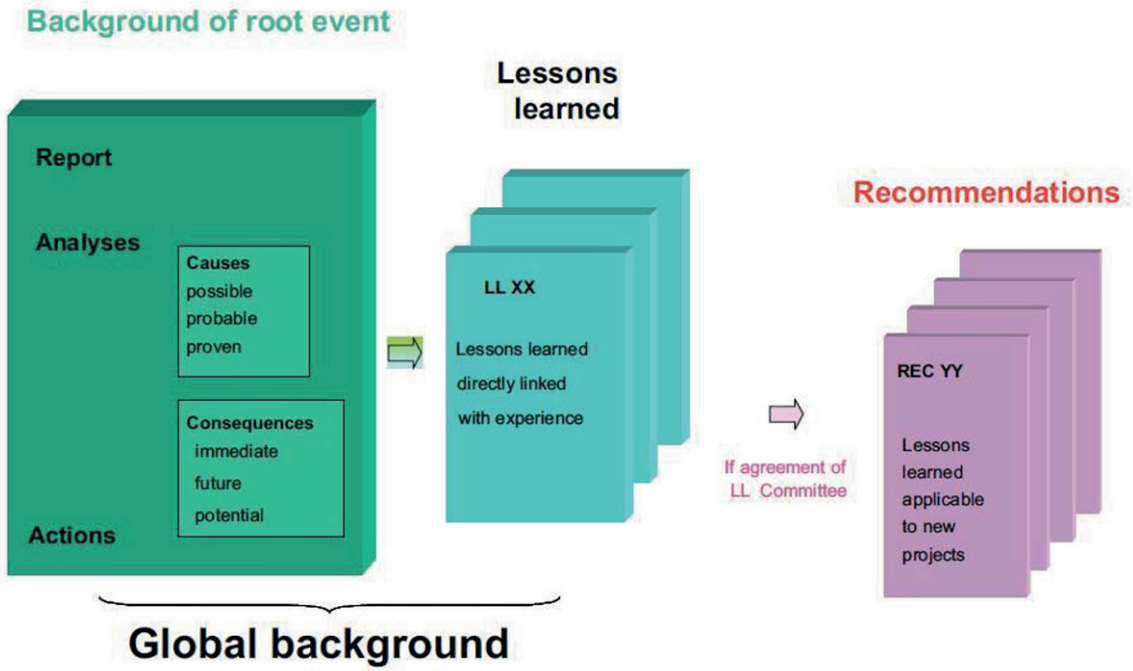

Figure 1 — Lessons learned process

iTeh Standards
(https://standards.iteh.ai)
Document Preview

6.2 Process steps

The lessons learned process is optimized by implementing a common methodology of definition, classification, description and registration.

The three phases in the process each comprise one or more steps. These steps are depicted in Figure 2 and described in 6.3.1 to 6.3.7.

ISO 16192:2017
https://standards.iteh.ai/catalog/standards/iso/d0d7...-513-4e51-...-23f461d7f992/iso-16192-2017

It should be noted that, whilst the process in Figure 2 is shown as a simple sequence, only steps 3 to 5 describe a totally sequential flow. Steps 1 and 2 are performed continuously throughout the life of a project and will trigger the steps that follow. Step 6 is event triggered, and step 7 is scheduled or periodic.

© ISO 2017 – All rights reserved