INTERNATIONAL STANDARD

ISO 18238

First edition
2015-11-01

Space systems — Closed loop problem solving management

Systèmes spatiaux — Gestion de résolution du problème de boucle fermée

Reference number
ISO 18238:2015(E)

© ISO 2015



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, 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

Foreword ..... **iv**

Introduction ..... **v**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Basic elements for closed loop problem solving management **2**
4.1 Implemention time 2
4.2 Implemention plan 2
4.3 Problems summary 2
4.4 Review 2
4.5 Records maintenance 3

5 Procedures of closed loop problem solving management **3**

6 Implementation of closed loop problem solving **4**
6.1 Problem report 4
6.2 Start immediate containment actions 5
6.3 Build the team 5
6.4 Define problem 6
6.5 Complete and optimize containment actions 6
6.6 Identify root causes 7
6.7 Conduct recurrence experiments 7
6.8 Define and select root cause corrective actions 8
6.9 Implement root cause corrective actions 8
6.10 Implement lessons learning 9
6.11 Finish “Closed loop problem solving management report” 9
6.12 Recognize and close the team 11

Annex A (informative) **Format of “Closed Loop Problem Solving Management Report”** **12**

© ISO 2015 – All rights reserved

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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

© ISO 2015 – All rights reserved

Introduction

This International Standard is useful to promote a method to identify the root causes of problems including failures, defects, accidents and other undesirable conditions, and to implement corrective actions and preventive actions.

The intent of this International Standard is to define the best practices dealing with root causes analysis and problem solving, prevent recurrence of the problem, and achieve quality improvement. It provides a standard process flow method to identify the root causes and improve the process and achieve quality improvement. It applies to all space products and organizations, at all levels and phases.

The process described in this International Standard is created by comparing and mixing root cause analysis and problem solving methodologies used by main actors of aerospace industry around the world. The process flow chart can be used to find root causes and to solve the problem thoroughly.

This International Standard provides a method for finding the root causes mainly against failures, defects, and accidents. As for non-conformance, ISO 23461 “Programme Management - Nonconformance control system” is usually applied.

When necessary, the problem solving process method in this International Standard should also be used for processing of major non-conformance in ISO 23461.

© ISO 2015 – All rights reserved

Space systems — Closed loop problem solving management

1 Scope

This International Standard provides basic procedures and requirements of closed loop problem solving against product quality problems including failures, defects, accidents, and other undesirable conditions for organizations.

This International Standard is intended to improve the closed loop problem solving management which covers the impact mitigation of the problem, root causes identification and problem containment, and lessons learned.

This International Standard is applicable to problem solving management of all space products, starting from engineering development phase.

2 Normative references

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

ISO 10795, *Space systems — Programme management and quality — Vocabulary*

ISO 16192, *Space systems — Experience gained in space projects (Lessons learned) — Principles and guidelines*

ISO 23461, *Space systems — Programme management — Non-conformance control system*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in ISO 10795 and the following apply.

3.1
root cause
original event, action, and/or condition resulting in an actual or potential undesirable condition, situation, nonconformity or failure

Note 1 to entry: There are often several root causes for one problem.

3.2
root cause analysis
process of identifying all root causes that have or may have resulted in an undesirable condition, situation, nonconformity or failure

3.3
lessons learning
process of distributing the problem information to the whole project and organization as well as other related projects and organizations, warning if similar failure modes or mechanism issues exist and taking preventive actions

© ISO 2015 – All rights reserved