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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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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For an explanation of 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 www.iso.org/iso/foreword.html.

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

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.

Introduction

The objectives of software product assurance are to provide adequate confidence to the customer and supplier that the software satisfies its requirements throughout the system lifetime.

This document describes a set of product assurance activities related to software engineering and software safety to be used for the development, maintenance and operation of software for space systems. These activities deal with management and engineering process, life cycle models, assessment and improvement processes, in summary, the quality and safety characteristics of software space products.

Space systems include manned and unmanned spacecraft, launchers, payloads, experiments and their associated ground equipment and facilities. Software includes ground and on-board applications.

Space software can be divided into two macro areas for its development, maintenance and operations: the space software segment and the ground software segment. The space software segment is the software embedded in the vehicle which flies into space (on-board computer, payload platform, etc.); and the ground software segment is the software of the equipment on ground during the launch or during the control the spacecraft (telemetry stations, control bench for launch, satellite control, etc.).

This document does not distinguish between software product assurance and software safety, dependability and quality assurance roles. Software product assurance is a management process that integrates software safety, software dependability and software quality assurance. The purpose is to organically integrate safety, dependability and quality assurance activities. As a result, the goal of providing safe and reliable products that meet customer requirements is that these three areas work closely in tandem.

The purpose of this document is to identify a set of management guidelines and requirements for dealing with space systems engineering activities and is intended to define the minimum existing processes on the subject seeking to reach an international agreement on the topic.