INTERNATIONAL STANDARD

ISO/IEC/ IEEE 42010

First edition
2011-12-01

Systems and software engineering — Architecture description

Ingénierie des systèmes et des logiciels — Description de l'architecture

Reference number
ISO/IEC/IEEE 42010:2011(E)

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Published in Switzerland

Contents

Page

Foreword

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ISO/IEC/IEEE 42010 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*, in cooperation with the Software and Systems Engineering Standards Committee of the Computer Society of the IEEE, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This first edition of ISO/IEC/IEEE 42010 cancels and replaces ISO/IEC 42010:2007, which has been technically revised.

Introduction

The complexity of man-made systems has grown to an unprecedented level. This has led to new opportunities, but also to increased challenges for the organizations that create and utilize systems. Concepts, principles and procedures of architecting are increasingly applied to help manage the complexity faced by stakeholders of systems.

Conceptualization of a system's architecture, as expressed in an architecture description, assists the understanding of the system's essence and key properties pertaining to its behaviour, composition and evolution, which in turn affect concerns such as the feasibility, utility and maintainability of the system.

Architecture descriptions are used by the parties that create, utilize and manage modern systems to improve communication and co-operation, enabling them to work in an integrated, coherent fashion. Architecture frameworks and architecture description languages are being created as assets that codify the conventions and common practices of architecting and the description of architectures within different communities and domains of application.

This International Standard addresses the creation, analysis and sustainment of architectures of systems through the use of architecture descriptions.

This International Standard provides a core ontology for the description of architectures. The provisions of this International Standard serve to enforce desired properties of architecture descriptions. This International Standard also specifies provisions that enforce desired properties of architecture frameworks and architecture description languages (ADLs), in order to usefully support the development and use of architecture descriptions. This International Standard provides a basis on which to compare and integrate architecture frameworks and ADLs by providing a common ontology for specifying their contents.

This International Standard can be used to establish a coherent practice for developing architecture descriptions, architecture frameworks and architecture description languages within the context of a life cycle and its processes (not defined by this International Standard). This International Standard can further be used to assess conformance of an architecture description, of an architecture framework, of an architecture description language, or of an architecture viewpoint to its provisions.

Users of this International Standard are advised to consult Clause 4 to gain appreciation of the provided ontology, its concepts and principles.

Systems and software engineering — Architecture description

1 Scope

This International Standard specifies the manner in which architecture descriptions of systems are organized and expressed.

This International Standard specifies architecture viewpoints, architecture frameworks and architecture description languages for use in architecture descriptions.

This International Standard also provides motivations for terms and concepts used; presents guidance on specifying architecture viewpoints; and demonstrates the use of this International Standard with other standards.