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Software and systems engineering — Reference model for product line engineering and management

*Ingénierie du logiciel et des systèmes — Modèle de référence pour
l'ingénierie et la gestion de lignes de produits*

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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Introduction

Software and Systems Product Line (SSPL) engineering and management creates, exploits, and manages a common platform to develop a family of products (e.g., software products, systems architectures) at lower cost, reduced time to market, and with better quality. As a result, it has gained increasing global attention since 1990s.

This standard provides a reference model consisting of an abstract representation of the key processes of software and systems product line engineering and management and the relationships between the processes. The key characteristics of product line engineering are that there are domain and application engineering lifecycle processes and the explicit definition of product line variability. The goal of domain engineering is to define and implement domain assets commonly used by member products within a product line, while the goal of application engineering is to develop applications by exploiting the domain assets including common and variable assets. Domain engineering explicitly defines product line variability which reflects the specific needs of different markets and market segments. Variability may be embedded in domain assets and during application engineering they are exploited in accordance with the defined variability models.

The reference model for SSPL engineering and management can be used in subsequent standardization efforts to create high-level of abstraction standards (e.g. product management, scoping, requirements engineering, design, realization, verification and validation, organizational and technical management), medium-level of abstraction standards (e.g. configuration management, variability modeling, risk management, quality assurance, measurement, evaluation, asset repository), and detailed-level of abstraction standards (e.g. texture, configuration mechanism, asset mining) of software and systems product line engineering.