



ISO/IEC JTC1/SC7
Software and Systems Engineering
Secretariat: CANADA (SCC)

ISO/IEC JTC1/SC7 /N3016

2004-04-07

Document Type	Framework
Title	Framework for ISO/IEC System and Software Engineering Standards, Draft 8.7, 24th March 2004
Source	SWG05
Project	
Status	Draft
Reference	
Action ID	INF or ACT
Due Date	
Distribution	AG
No. of Pages	13
Note	To be discussed at the Brisbane Plenary meeting.

Address reply to: ISO/IEC JTC1/SC7 Secretariat
École de technologie supérieure – Département de génie électrique
1100 Notre Dame Ouest, Montréal, Québec Canada H3C 1K3
secretariat@jtc1-sc7.org

www.jtc1-sc7.org



**Framework for
ISO/IEC System and
Software Engineering
Standards
Draft 8.7, 24th March 2004**

International Electrotechnical Commission

3, rue de Varembe
Case postale 131
CH-1211 Geneva

**International Organization for
Standardization**

1, rue de Varembe
Case postale 56
CH-1211 Geneva

First Edition

Copyright ISO/IEC 2000

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, with permission in writing from the publisher.

Framework for ISO/IEC System and Software Engineering Standards - 2003

Contents

1	Scope	3
1.1	Purpose.....	3
1.2	Field of application	3
2	References	3
3	SC7 Terms of Reference	3
4	SC7 standards framework	3
4.1	Standard Domain classification	4
4.2	Standard Nature classification	4
4.3	Tools and methodological classification.....	4
4.4	SC7 Standards	5
5	ANNEXE A - SC7 Standard list	7

Foreword

The scope of this framework is to organize the collection of ISO/IEC systems and software engineering standards, be they published, under development or contemplated. By organizing and modeling the collection, it becomes possible to:

- Understand their relationship
- Visualize gaps and overlaps

The material contained in this document is drawn from a variety of sources. Notably, the work of James W. Moore, *Software Engineering Standards: A User's Road Map*, IEEE Computer Society Press, Los Alamitos, CA, 1997.

History:

- Draft 3: Prepared by FC and JM as a baseline for BPG consideration, 3 December 1999.
- Draft 4: Typographical improvements made by JM, 28 December 1999.
- Draft 5: Resolves comments on ODP from ballot of Draft 4, 30 June 2000.
- Draft 6: Resolves remaining comments from ballot of Draft 4.
- Draft 7: Resolves remaining comments from ballot of Draft 6 and restructure document from the work of SWG5.
- Draft 8: Resolves remaining comments from ballot Draft 7 – Add tables and diagrams for better comprehension.

1 Scope

1.1 Purpose

This document describes the relationships among the existing ISO/IEC systems and software engineering standards as well as those to be completed within the next few years. The document also provides a useful planning tool for the future standardization as part of the business-driven review processes within ISO/IEC JTC1/SC7.

1.2 Field of application

This document is intended for two primary audiences:

- Developers of SC7 standards who wish to understand how proposed efforts might relate to existing standards;
- Users of SC7 standards who desire a better understanding of the overall collection.

2 References

The following normative documents contain provisions which, through reference in this text constitute provisions of this plan. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this plan are encouraged to investigate the possibility of applying the most recent editions of the normative documents listed below. Members of IEC and ISO maintain registers of currently valid international Standards.

3 SC7 Terms of Reference

The SC7 terms of reference are standardization of processes, supporting tools and supporting technologies for the engineering of software products and systems.

Note: These processes, tools and technologies are within the scope of the JTC1 Terms of Reference and exclude specific tools and technologies that have been assigned by JTC1 to other of its SC's.

4 SC7 standards framework

The purpose of this framework is to provide a scheme to organise and relate SC7 standards and related documents for planning, delivery, coordination, and presentation purposes. All types of SC7 documents are considered, including standards, technical reports, and work-in-progress.

A framework consists of one or more modeling views. Many views are possible, each with their own strengths and weaknesses.

Three modeling views will be used in this document:

- Standard Domain classification

- Standard Nature Classification
- Tools and Methodological Classification

4.1 Standard Domain classification

The domain classification view is derived from ISO9000:2000 and provides information on the main domain of use of a standard. It is composed of a set of columns, each being a domain of use.

As a standard can be used in different cases, the same standard can appear in different columns.

The different domains of use are:

- Management responsibility: standards related to management commitment, customer focus, quality policy, planning, responsibility, authority & communication and management review.
- Resource management: standards; standards related to provision of resources, human resources, infrastructure and work environment.
- Product Realization: standards related to planning of product realization, customer-related processes, design and development, purchasing, production and service provision and control of monitoring and measuring devices.
- Measurement, analysis, and Improvement; standards related to monitoring and measurement, control of non-conforming products, analysis of data and improvement.

4.2 Standard Nature classification

In addition, standards can be classified by their normative nature. The normative nature of the standards can be described in five categories:

- Vocabulary: documents providing vocabulary for the collection
- Reference models: documents providing organizing information for the collection
- Principle standards: key umbrella standards providing principles that are detailed by element standards
- Element standards: standards with detailed conformance requirements
- Guides and supplements: documents providing guidance on how principle or element standards may be applied in specific situation.

4.3 Tools and methodological classification

This classification shows the different standards that are related to the tools, techniques and methods used by systems or software engineering.

For historical reasons, the majority of existing standards are dedicated to software.

4.4 SC7 Standards

Table 1 shows relevant SC7 standards by domain and nature classification.

Table 2 shows relevant SC7 standards related to tools, techniques and methods.

Table 3 shows all of the SC7 standards and how they are related.

Note: All SC7 are not at the same level of maturity: some are published, some are still in progress and some have reached the end of their life.

	Management Responsibility	Resource Management	Product Realization	Measurement, analysis, and Improvement
Vocabulary			12182	
Reference models				
Principle Standards	12207 15288	12207 15288	12207 15288	12207 15288 9126-1 14143-1 14598-1 15504-1/9 (TR) 15939
Element Standards	15846 16085 16326	19770	12119 14764 15026 15910 18018	14143-2 9126-2/3/4 14598-2/3/4/5/6 14756 15504-2/3 (TR) 19761 20926 20968 25000
Guides and Supplements	15271 9000-3 19760 9294	15271 9000-3 19760 15504-6 15910 19759	15271 9000-3 19760 3535 6592 9127 14759 15289 18019	15271 9000-3 19760 9126-30 14143-3/4/5 15504-3/4/5/7/8 (TR) 18019 24570

Table 1 – SC7 Standards by domain and nature classification

ODP Systems Specification	Modeling	Tools and environment	Legacy
10746	8807	14102	5806
13235	15437	14471	5807
14750	15909	14568	6593
14752	19501	15940	8631
14753		18018	8790
14769	CDIF		11411
14771	15474		
15414	15475		
15935	15476		
19500			

Table 2 – Standards related to tools and methodologies

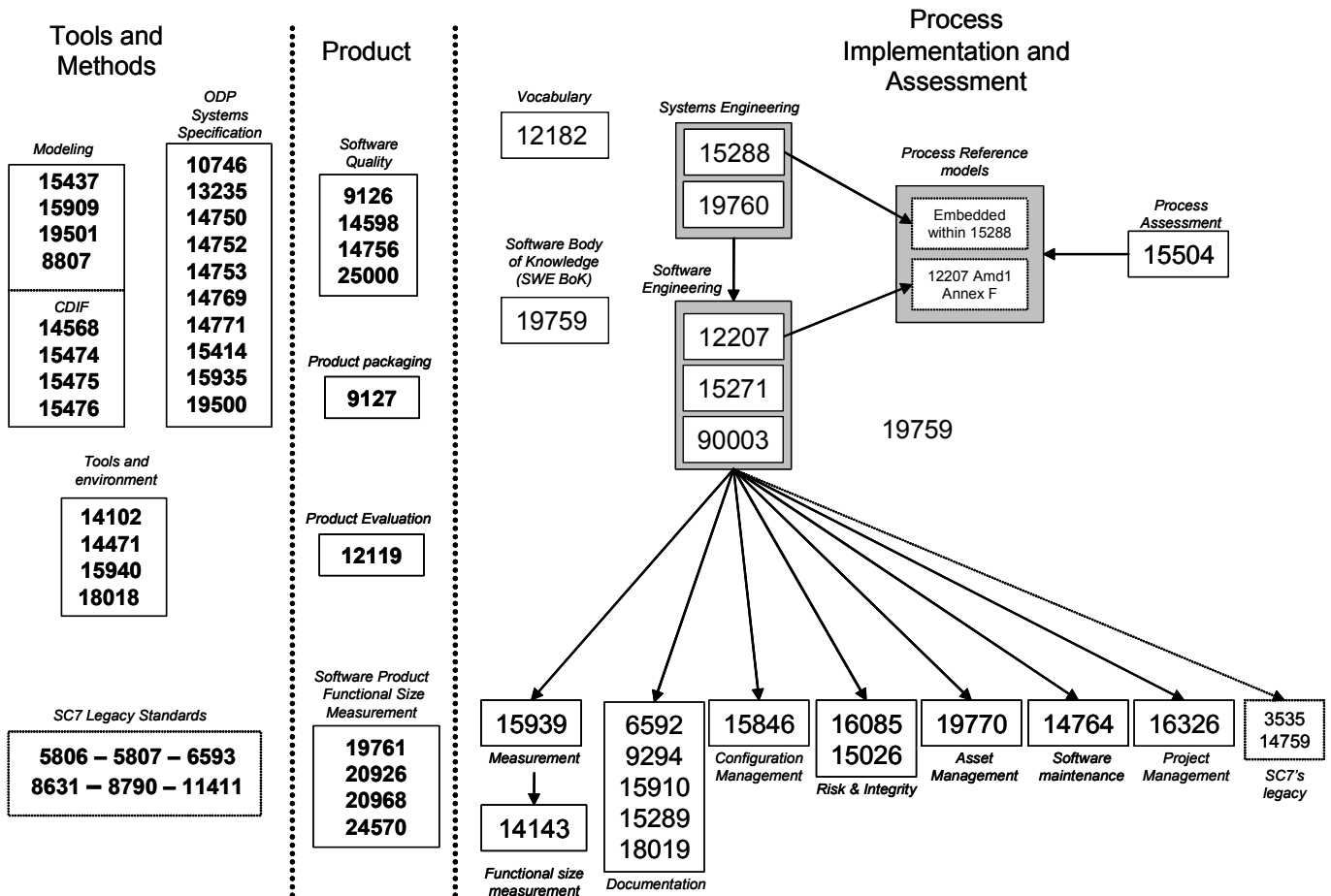


Table 3 - Relationships between the different SC7 standard

5 ANNEXE A - SC7 Standard list

ISO 3535:1977	Forms design sheet and layout chart
ISO 5806:1984	Information processing -- Specification of single-hit decision tables
ISO 5807:1985	Information processing -- Documentation symbols and conventions for data, program and system flowcharts, program network charts and system resources charts
ISO/IEC 6592:2000	Information technology -- Guidelines for the documentation of computer-based application systems
ISO 6593:1985	Information processing -- Program flow for processing sequential files in terms of record groups
ISO/IEC 8631:1989	Information technology -- Program constructs and conventions for their representation
ISO 8790:1987	Information processing systems -- Computer system configuration diagram symbols and conventions
ISO 8807:1989	Information processing systems -- Open Systems Interconnection -- LOTOS -- A formal description technique based on the temporal ordering of observational behaviour
ISO/IEC 9126-1:2001	Software engineering -- Product quality -- Part 1: Quality model
ISO/IEC PRF TR 9126-2	Software engineering -- Product quality -- Part 2: External metrics
ISO/IEC TR 9126-3	Software engineering -- Product quality -- Part 2: Internal metrics
ISO/IEC DTR 9126-4	Software engineering -- Product quality -- Part 2: Quality in use metrics
ISO 9127:1988	Information processing systems -- User documentation and cover information for consumer software packages
ISO/IEC CD 9127	Software engineering -- User documentation and cover information for consumer software packages
ISO/IEC TR 9294:1990	Information technology -- Guidelines for the management of software documentation
ISO/IEC CD TR 9294	Information technology -- Guidelines for the management of software documentation
ISO/IEC 10746-1:1998	Information technology -- Open Distributed Processing -- Reference model: Overview
ISO/IEC 10746-2:1996	Information technology -- Open Distributed Processing -- Reference Model: Foundations
ISO/IEC 10746-3:1996	Information technology -- Open Distributed Processing -- Reference Model: Architecture
ISO/IEC 10746-4:1998	Information technology -- Open Distributed Processing -- Reference Model: Architectural semantics
ISO/IEC 10746-4:1998/Amd 1:2001	Computational formalization
ISO/IEC 11411:1995	Information technology -- Representation for human communication of state transition of software
ISO/IEC 12119:1994	Information technology -- Software packages -- Quality requirements and testing
ISO/IEC CD 12119	Software Engineering -- Software product evaluation -- Requirements for quality of Commercial Off The Shelf software product (COTS) and instructions for testing
ISO/IEC TR 12182:1998	Information technology -- Categorization of software

ISO/IEC 12207:1995	Information technology -- Software life cycle processes
ISO/IEC 12207:1995/Amd 1:2002	Amendment to 12207
ISO/IEC 13235-1:1998	Information technology -- Open Distributed Processing -- Trading function: Specification
ISO/IEC 13235-3:1998	Information technology -- Open Distributed Processing -- Trading Function -- Part 3: Provision of Trading Function using OSI Directory service
ISO/IEC 14102:1995	Information technology -- Guideline for the evaluation and selection of CASE tools
ISO/IEC AWI 14143-1:1998	Information technology -- Software measurement -- Functional size measurement -- Part 1: Definition of concepts
ISO/IEC 14143-2:2002	Information technology -- Software measurement -- Functional size measurement -- Part 2: Conformity evaluation of software size measurement methods to ISO/IEC 14143-1:1998
ISO/IEC TR 14143-3:2003	Information technology -- Software measurement -- Functional size measurement -- Part 3: Verification of functional size measurement methods
ISO/IEC TR 14143-4:2002	Information technology -- Software measurement -- Functional size measurement -- Part 4: Reference model
ISO/IEC TR 14143-5	Information technology - Software measurement - Functional size measurement -- Part 5: Determination of Functional Domains for Use with Functional Size Measurement
ISO/IEC TR 14471:1999	Information technology -- Software engineering -- Guidelines for the adoption of CASE tools
ISO/IEC 14568:1997	Information technology -- DXL: Diagram eXchange Language for tree-structured charts
ISO/IEC 14598-1:1999	Information technology -- Software product evaluation -- Part 1: General overview
ISO/IEC 14598-2:2000	Software engineering -- Product evaluation -- Part 2: Planning and management
ISO/IEC 14598-3:2000	Software engineering -- Product evaluation -- Part 3: Process for developers
ISO/IEC 14598-4:1999	Software engineering -- Product evaluation -- Part 4: Process for acquirers
ISO/IEC 14598-5:1998	Information technology -- Software product evaluation -- Part 5: Process for evaluators
ISO/IEC 14598-6:2001	Software engineering -- Product evaluation -- Part 6: Documentation of evaluation modules
ISO/IEC 14750:1999	Information technology -- Open Distributed Processing -- Interface Definition Language
ISO/IEC 14752:2000	Information technology -- Open Distributed Processing -- Protocol support for computational interactions
ISO/IEC 14753:1999	Information technology -- Open Distributed Processing -- Interface references and binding
ISO/IEC 14756:1999	Information technology -- Measurement and rating of performance of computer-based software systems
ISO/IEC TR 14759:1999	Software engineering -- Mock up and prototype -- A categorization of software mock up and prototype models and their use
ISO/IEC 14764:1999	Information technology -- Software maintenance

ISO/IEC 14769:2001	Information technology -- Open Distributed Processing -- Type Repository Function
ISO/IEC 14771:1999	Information technology -- Open Distributed Processing -- Naming framework
ISO/IEC 15026:1998	Information technology -- System and software integrity levels
ISO/IEC TR 15271:1998	Information technology -- Guide for ISO/IEC 12207 (Software Life Cycle Processes)
ISO/IEC 15288:2002	Systems engineering -- System life cycle processes
ISO/IEC 15289	Guide for the Application of ISO/IEC 12207 to the documentation process
ISO/IEC 15414:2002	Information technology -- Open distributed processing -- Reference model -- Enterprise language
ISO/IEC 15414:2002 FDAmd 1	Amendment to 15414
ISO/IEC 15437:2001	Information technology -- Enhancements to LOTOS (E-LOTOS)
ISO/IEC 15474-1:2002	Information technology -- CDIF framework -- Part 1: Overview
ISO/IEC 15474-2:2002	Information technology -- CDIF framework -- Part 2: Modelling and extensibility
ISO/IEC 15475-1:2002	Information technology -- CDIF transfer format -- Part 1: General rules for syntaxes and encodings
ISO/IEC 15475-2:2002	Information technology -- CDIF transfer format -- Part 2: Syntax SYNTAX.1
ISO/IEC 15475-3:2002	Information technology -- CDIF transfer format -- Part 3: Encoding ENCODING.1
ISO/IEC 15476-1:2002	Information technology -- CDIF semantic metamodel -- Part 1: Foundation
ISO/IEC 15476-2:2002	Information technology -- CDIF semantic metamodel -- Part 2: Common
ISO/IEC TR 15504-1:1998	Information technology -- Software process assessment -- Part 1: Concepts and introductory guide
ISO/IEC TR 15504-2:1998	Information technology -- Software process assessment -- Part 2: A reference model for processes and process capability
ISO/IEC TR 15504-3:1998	Information technology -- Software process assessment -- Part 3: Performing an assessment
ISO/IEC TR 15504-4:1998	Information technology -- Software process assessment -- Part 4: Guide to performing assessments
ISO/IEC TR 15504-5:1999	Information technology -- Software Process Assessment -- Part 5: An assessment model and indicator guidance
ISO/IEC TR 15504-6:1998	Information technology -- Software process assessment -- Part 6: Guide to competency of assessors
ISO/IEC TR 15504-7:1998	Information technology -- Software process assessment -- Part 7: Guide for use in process improvement
ISO/IEC TR 15504-8:1998	Information technology -- Software process assessment -- Part 8: Guide for use in determining supplier process capability
ISO/IEC TR 15504-9:1998	Information technology -- Software process assessment -- Part 9: Vocabulary
ISO/IEC CD 15504-1	Information Technology -- Process Assessment -- Part 1: Concepts and vocabulary
ISO/IEC IS 15504-2	Software engineering -- Process assessment -- Part 2: Performing an assessment

ISO/IEC FDIS 15504-3	Information technology -- Process assessment -- Part 3: Guidance on performing an assessment
ISO/IEC FDIS 15504-4	Software Engineering -- Process Assessment -- Part 4: Guidance on use for Process Improvement and Process Capability Determination
ISO/IEC CD 15504-5	Information technology -- Process Assessment -- Part 5: An exemplar Process Assessment Model
ISO/IEC TR 15846:1998	Information technology -- Software life cycle processes -- Configuration Management
ISO/IEC FCD 15909	Information technology -- High Level Petri Net Standard -- Concepts, Definitions and Graphical Notation
ISO/IEC CD 15935	Information technology -- Open Distributed Processing -- Quality of service
ISO/IEC 15910:1999	Information technology -- Software user documentation process
ISO/IEC 15939:2002	Software engineering -- Software measurement process
ISO/IEC 15940	Information Technology -- Environment services
ISO/IEC DIS 16085	Information technology -- Software life cycle processes -- Risk management
ISO/IEC TR 16326:1999	Software engineering -- Guide for the application of ISO/IEC 12207 to project management
ISO/IEC AWI 18018	Information technology -- Software Engineering - Configuration Management Tool Requirements
ISO/IEC FCD 18019	Software and system engineering -- Guidelines for the design and preparation of user documentation for application software
ISO/IEC 19500-2:2003	Information technology -- Open Distributed Processing -- Part 2: General Inter-ORB Protocol (GIOP)/Internet Inter-ORB Protocol (IIOP)
ISO/IEC 19501	Information Technology - Unified Modeling Language (UML)
ISO/IEC CD TR 19759	Software Engineering -- Body of Knowledge (SWEBOK))
ISO/IEC DTR 19760	Systems engineering -- A Guide for the application ISO/IEC 15288 (System life cycle processes)
ISO/IEC 19761:2003	Software engineering -- COSMIC-FFP -- A functional size measurement method
ISO/IEC WD 19770	Information technology -- Software Asset Management Process
ISO/IEC AWI 19793	Information technology -- Open Distributed Processing -- Use of UML for ODP Viewpoint Specifications.
ISO/IEC 20926:2003	Software engineering -- Function point counting practices manual
ISO/IEC 20968:2002	Software engineering -- Mk II Function Point Analysis -- Counting Practices Manual
ISO/IEC 24570	Software engineering -- Definitions and counting guidelines for the application of Function Point Analysis
ISO/IEC CD 25000	Software Engineering -- Software Product Quality Requirements and Evaluation (SQuaRE) -- Guide to SQuaRE
ISO/IEC CD 25020	Software and System Engineering -- Software quality requirements and evaluation (SQuaRE) -- Quality measurement -- Measurement reference model and guide
ISO/IEC CD 25021	Software and System Engineering -- Software Product Quality Requirements and Evaluation (SQuaRE) -- Measurement Primitives
ISO/IEC CD 25030	Software engineering -- Software quality requirements and evaluation (SQuaRE) -- Quality requirements
61720	Tools and Techniques for Achieving Confidence in Software (transfer

ISO/IEC FCD 90003	from TC56) Software and system engineering -- Guidelines for the application of ISO 9001:2000 to computer software
ISO/IEC 16085	Risk Management
ISO/IEC 19770	Information Technology – Software Asset Management Process

Table 4 – List of SC7 Standards