ISO/IEC JTC1/SC7 N1884

1998-04-14

Doc. Type   Product Plan

Title   Product Plan for ISO/IEC Software Engineering Standards - 1997.

Source   JTC1/SC7 BPG

Project

Status   Draft

References

Action ID   FYI or ACT

Due Date

Mailing Date   1998-04-14

Distribution   SC7_AG, JTC1 Sec.

Medium   Encoded Acrobat

No. of Pages   43

Note   To be discussed at the plenary meeting.

Product plan for ISO/IEC Software Engineering Standards - 1997

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

_____

Second Edition

Product plan for
ISO/IEC Software Engineering Standards -1997

Contents
_____

___

Foreword

___

Software has become the most effective technology for incorporating new features in a range of products, both in the mass consumer market and in specialty fields. Increasingly, software engineering practices are in demand in a number of new areas, replacing hardware oriented practices.

Software engineering will increasingly need to adopt life cycle costing techniques in order to justify the increased emphasis on improved, and at times more formalized, software engineering practices. A long product life cycle will demand high availability and a fundamental design that accommodates changing features over the life of a product.

To meet the needs of the software engineering field in the coming years, a combination of several factors will be required, including: better trained people, new and innovative technical solutions, improved processes, better tools, and a synergistic relationship of the above. Standards for processes, tools, and data play a role in meeting those needs. The focus of this plan is to baseline current and short term standards in the ISO/IEC domain to provide awareness and visibility of their existence. By baselining ISO/IEC software engineering standards, a strategy for future development of standards to meet the needs of user organization is being derived.

1   Scope

1.1 Purpose

This document provides a description and relationships of the existing ISO/IEC software engineering standards and those to be completed within the next two years. The plan additionally forms a key planning document 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 applicable to all organizations providing products and/or services, either for profit or not-for-profit.

It is intended for information only. It is not intended for contractual purposes.

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 where 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.

ISO 8402: *Quality management and quality assurance; vocabulary.*

ISO 2382/1: *Data Processing - Vocabulary - Section 01: Fundamental Terms.*

ISO/IEC 2382-20: *Information Technology - Vocabulary; Part 20: System Development.*

3   Definitions

For the purposes of this plan, the terms and definitions of ISO 2382 (1, 20) and ISO 8402 apply, together with the following particular terms and definitions:

3.1   **acquirer**: an organization that acquires or procures a system, software product or software service from a supplier; and may be one of the following: buyer, customer, owner, user or purchaser.

3.2   **assessment**: An action of applying specific documented assessment criteria to a specific software module, package, or product for the purpose of determining acceptance or release of the software module, package or product.

3.3   **atomic subcharacteristic**: The highest level evaluation categories are called characteristics. Characteristics are usually subdivided into subcharacteristics. Many subcharacteristics may be further subdivided into lower level subcharacteristics. At the lowest level, when no further subdivision is appropriate, the subcharacteristics are referred to as atomic subcharacteristics.

3.4   **CASE tool**: A software product that can assist software engineers by providing automated support for software life cycle activities as defined in ISO/IEC 12207.

3.5   **characteristic**: An aspect of a product by which it can be described and evaluated. A characteristic may be refined into multiple levels of subcharacteristics that bear on its ability to satisfy state or implied needs.

3.6   **configuration diagram**: Graphical representation of the physical structure of computer systems such as the physical equipment and the connection cables.

3.7   **consumer**: The organization or person who buys the software package.

3.8   **consumer software package**: A software product designed and sold to carry out identified functions; the software and its associated documentation are packaged for sale as a unit.

3.9   **control field**: The field comprising one or more input variables whose change in value, or lack of change, between successive logical records affect the flow of control through the main procedure.

3.10   **control part**: Instructions that determine the manner in which the procedure parts are to be executed. It can consist of a directive and a set of conditions. The control part then activates or de-activates the procedure part(s) depending on the nature of the directive and the values of the conditions. If there is neither directive nor condition, control is called implicit.

3.11   **data processing system**: One or more computers, peripheral equipment, and software that perform data processing. (ISO 2382-1)

3.12   **decision table**: A table of all contingencies that are to be considered in the description of a problem together with the action to be taken. (ISO 2382-1)

3.13   **document**: A uniquely identified unit of information for human use, such as a report, specification, manual, or book.

3.14   **documentation**: A collection of one or more related documents.

3.15   **end user**: The person who uses the software package.

3.16   **environment**: The configuration(s) of hardware and software in which the software operates.

3.17   **evaluation**: A systematic determination of the extent to which an entity meets its specified criteria.

3.18   **features**: Identified properties of a software product which can be related to the quality characteristics.

3.19   **firmware**: The combination of a hardware device and computer instructions or computer data that reside as read-only software not he hardware device. The software cannot be readily modified under program control.

3.20   **flow of control**: A path the execution sequence may take through a program. An abstraction of all the control flows can be represented by a control flow diagram.

3.21   **flowchart**: Graphical representation of the definition, analysis, or method of solution of a problem in which symbols are used to represent operations, data, flow, equipment, etc.

3.22   **function**: The implementation of an algorithm in the program with which the user of the program can perform part or all of a work task.

3.23   **functional size measurement**: Measurement of the size of software by quantifying the functional user requirements manifested by the software.

3.24   **information processing system**: One or more data processing systems and devices, such as office and communication equipment that perform information processing. (ISO/IEC DIS 2382-1.2, 1992)

3.25　**input routine**: Those activities required to obtain the logical record, if any, to be processed next.

3.26　**level:** Where a logical record contains more that one control field element they are assumed to have a hierarchical relationship with one another, indicating a logical grouping. The position in the hierarchy is termed a level and is indicated by means of a level number.

3.27　**level of performance**: The degree to which the needs are satisfied, represented by a specific set of values for the quality characteristics.

3.28　**life cycle model**: A framework containing the processes, activities, and tasks involved in the development, operation, and maintenance of a software product, spanning the life of the system from the definition of its requirements to the termination of its use.

3.29　**logical record**: The set of data which is processed in a single iteration of the main procedure.

3.30　**maintenance**: That part of system maintenance which is concerned with modifying a software package.

3.31　**manufacturer**: The organization that develops the software package.

3.32　**measurement**: The action of applying a software quality metric to a specific software product.

3.33　**package documentation**: The product description and the user documentation.

3.34　**procedure**: Synonym for subroutine.

3.35　**procedure part**: One or more operations to be performed or may be null.

3.36　**process**: Set of interrelated resources and activities which transform inputs into outputs. (ISO 8402)

3.37　**process assessment**: An evaluation of an organization's software processes against a process model .

3.38　**product description**: A document stating properties of a software package, with the main purpose of helping potential buyers in the evaluation of the suitability for themselves of the product before purchasing it.

3.39　**program**: A syntactic unit that conforms to the rules of a particular programming language composed of declarations and statements or instructions needed to solve a certain, function, task, or problem. (ISO 2382-1)

3.40　**program construct**: A combination of set of one or more procedure parts and a control part which may be implicit.

3.41　**requirements document**: A document t containing any combination of recommendations, requirements or regulations to be met by a software package.

3.42　**qualification requirement**: A set of criteria or conditions that have to be met in order to qualify a software product as complying with its specifications and being ready for use in its target environment.

3.43　**qualification testing**: Testing, conducted by the developer and witnessed by the acquirer (as appropriate), to demonstrate that a software product meets its specifications and is ready for use in its target environment.

3.44　**rating**: The action of a mapping the measured value to the appropriate rating level. Used to determine the rating level associated with the software for a specific quality characteristic.

3.45　**rating level**: A range of values on a scale to allow software to be classified (rated) in accordance with the state or implied needs. Appropriate rating levels may be associated with the

different views of quality i.e., Users, Managers, or Developers. These levels are called rating levels.

3.46   **software**: Intellectual creation comprising the programs, rules, and associated data which when loaded into the program execution area of a computer, enables that computer to operate.

3.47   **software engineering**: The form of engineering that applies the principles of computer science, information technology, mathematics, and the application domain toward achieving cost-effective solutions to practical problems through software.

3.48   **software integrity**: ensuring the containment of risk or confining risk exposure in software.

3.49   **software package**: A complete and documented set of programs supplied to several users for a generic application or function. Some software packages are alterable for a specific application. (ISO 2382-15)

3.50   **software product**: The set of computer programs, procedures, and possibly associated documentation and data.

3.52   **software quality characteristic**: A set of attributes of a software product by which its quality is described and evaluated. A software quality characteristic may be refined into multiple levels of sub-characteristics.

3.53   **software quality metric**: A quantitative scale and method, which can be used to determine the value a feature for a specific software product.

3.54   **software support**: The act of maintaining the software and its associated documentation in a functional state.

3.55   **statement of work**: A document used by the acquirer as the means to describe and specify the tasks to be performed under the contract.

3.56   **system**: An integrated composite that consists of one or more of the processes, hardware, software facilities, and people, that provides a capability to satisfy a stated need or objective.

3.57   **supplier**: An organization that enters into a contract with an acquirer for the supply of a system, software product, or software service under the terms of the contract. The term "supplier" is synonymous with contractor, producer, seller, or vendor.

3.58   **state**: A unique value that represents the stage of progress of software in execution. The value can be a name, a number or both. This value is also called a state identifier.

3.59   **subroutine**: A subprogram that does not return a value, except as part of the parameter mechanism.

3.60   **test case**: A documented instruction for the tester that specifies how a function or combination of functions shall or should be tested. A test case includes detailed information on the following issues: the test objective, the functions to be tested, the testing environment and other conditions (configuration details and preparatory work), the test data, the procedure, and the expect behaviour of the system.

3.61   **test coverage**: The extent to which an objective and feasible test can be designed to determine whether a requirement is met.

3.62   **transition**: An action that changes value of the state to another one or the same one according to a condition. The transition is triggered by events.

3.63   **user documentation**: The complete set of documents, available in printed or non-printed form, is provided for an application of the product and also is an integral part of the product.

4   Overview of SC7

4.1 SC7 Mission

To facilitate world trade and promote consumer confidence in the products, services and technologies of software engineering by providing international standards that reflect best practice, protect the public from adverse effects, and meet the needs of the worldwide community of software clients, practitioners, educators and suppliers.

4.2 SC7 Long-term goals

To achieve the SC7 mission the goals are:

- SC7 will be **the** international committee for software engineering standards.
- The SC7 set of standards will be the standards of choice for the practicing software engineer.
- SC7 standards development cycle will be three years or less.

4.3 SC7 History

This section provides the essential background information leading to the development of this Strategic Policy Statement.

A brief history is included to highlight the events of SC7 since its inception. The objective is to indicate the evolution of SC7 activities in view of changing users' needs and the increase emphasis on harmonization of standards.

Important SC7 dates/events (some examples)

1987 - Formation of the SC7
1990 - Business Plan published
1991 - Name changed to Software Engineering
1994 - The concept of product plan was proposed to SC7
1995 - Published ISO 12207 Software Life Cycle Process to provide guidance for Software
        Engineering program management
1996 – Published first edition of the SC7 Product Plan

4.4 SC7 standards framework

The purpose of the framework is to provide a scheme to organise and relate SC7 standards for planning, delivery, coordination and presentation purposes. The framework is organised around two concepts: programme approach and layering of standards.

The programme approach considers the SC7 standards as an organised collection. The collection is organised into four components or elements which are: (1) customer, (2) process, (3) product, and (4) technology. Each of the four elements will be instantiated into a project within a specific organisational situation. The element "customer" includes users, purchasers, and the general public. The element "process" is a set of interrelated activities, which transform inputs into outputs. The element "product" is a result of process. It may be any tangible artifact, e.g. deliverable, file, document, data item or information item. The element "technology" is an object, capability or resource that facilitates the execution of a process. Figure 1 portrays the elements and their relationships.
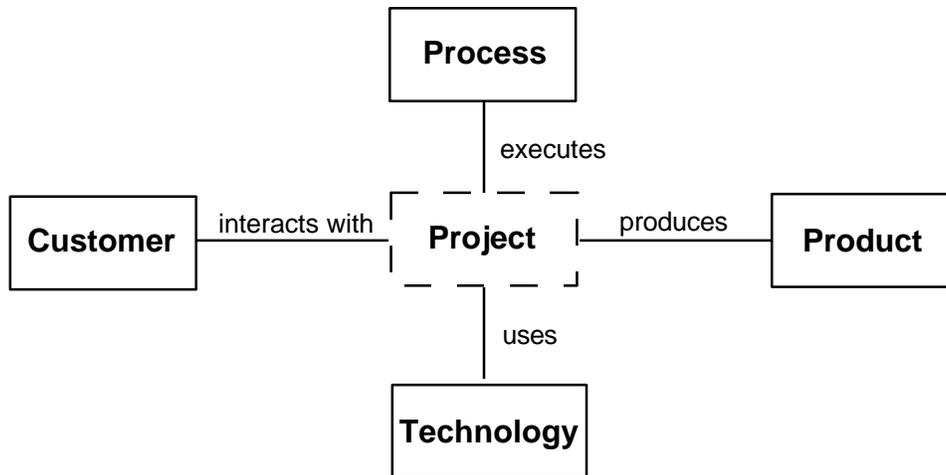
Figure 1   Software Programme Elements

The purpose of the layered approach is to relate a tiered manner the role of a standard or technical report. Three layers are identified: (1) policy level standard, (2) programme element standard, and (3) application guide. A policy level standard establishes the context of the software engineering programme. A programme element standard establishes a prescriptive basis for each programme element. An application guide provides insight and direction on how to implement a programme element standard. Figure 2 illustrates the layered approach.

	Level	Definition	Example
1	Policy-level standard	Defines generic principles which apply to all lower level standards	ISO 9000
2	Programme element standard	Defines requirements which apply to a programme element	ISO 9001 ISO/IEC 12207
3	Application guide	Provide guidance on how to implement programme element including how to apply related standards	IS 6592 IS 9126

Figure 2   Layered Approach to SC7 Standards

5 SC7 product offering for 1998

5.1 SC7 product listing - 1998

Number   Title

IS 5806   Information processing - Single hit decision logic table (1984), 14 p.

Specifies the format of single-hit decision tables and relevant definitions, together with recommended conventions for preparation and use.

IS 5807   Information processing - Documentation symbols and conventions for data, program, system flowcharts, program network charts and resource charts (1985) 25 p.

Specifies symbols to be used in information processing documentation and gives guidance on the conventions for their use.

IS 6592   Information processing - Guidelines for the documentation of computer-based application systems (1985), 17 p.

Establishes guidelines for the documentation of computer-based application systems. It also contains checklists with the aim of supporting effective activities throughout the system life cycle.

IS 6593   Information processing - Program flow for processing sequential files in terms of record groups (1985), 6 p.

Describes two alternative procedures for any program that is required to process sequential fields that have been logically organized in terms of groups of records.

IS 8631   Information technology - Program constructs and conventions for their representation (1989) 7 p.

Defines the nature of program constructs, describes how constructs can be combined, specifies a set of constructs, and allows for subsets of the defined constructs.

IS 8790   Information processing systems - Computer system configuration diagram symbols and conventions (1987), 14 p.

Establishes graphical symbols and their conventions for use in configuration diagrams for computer systems, including automatic data processing systems.

IS 9126   Information technology - Software product evaluation - Quality characteristics and guidelines for their use (1991), 13 p.

Defines six characteristics that describe, with minimal overlap, software quality. These characteristics provide a baseline for further refinement and description of software quality. Guidelines describe the use of quality characteristics for the evaluation of software quality.

IS 9127   Information processing systems - User documentation and cover information for consumer software packages (1988), 7 p.

Describes for consumer software packages the information needed to install and run the software and the information on the external wrapping to allow prospective purchasers to decide on the applicability of the software for their requirements.

TR 9294   Information technology - Guidelines for the management of software documentation (1990), 7 p.

Specifies guidelines on the management of software documentation to those managers responsible for the production of software or software-based products.

IS 11411   Information technology -- Representation for human communication of state transition software (1995), 13 p.

Defines the nature of state transition of software, defines the notation of state transition elements, and specifies a set of state transition elements.

IS 12207   Information technology - Software life cycle processes (1995), 55 p.

Establishes a common framework for software life cycle processes, with well-defined terminology, that can be referenced by industry. It contains processes, activities, and tasks that are to be applied during the acquisition of a system that contains software, a stand-alone software product, and software service and during the supply, development, operation, and maintenance of software products.

IS 12119   Information technology - Software packages - Quality requirements and testing (1994), 16 p.

Establishes requirements for software packages and provides instructions on how to test a software package against the requirements.

IS 14102   Information technology – Guide for evaluation and selection of CASE tools, (1995), 52 p.

Provides guidance on identifying organizational requirements for CASE tools, guidance on mapping those requirements to CASE tool characteristics, and process for selecting the most appropriate CASE tool from several tools, based on measurements of the defined characteristics.

IS 14143-1 Information technology - Software measurement - definition of functional size measurement, Part 1: Definition of concepts, 12p.

This standard defines the fundamental concept s of functional size measurement and describes the general principles for applying such a measurement. The document does not provide detailed rules on how to measure software functional size of software using a particular method.

IS 14568   Information technology - DXL: Diagram of eXchange Language for tree-structured charts (1997), 23p.

This standard specifies the semantics and syntax of DXL. DXL is a language for exchanging tree-structured charts among CASE tools.

5.2   SC7 Product Roadmap – 1998

The numbers for new or revised standards are in bold.

Documentation

IS 6592   Information processing - Guidelines for the documentation of computer-based application systems

TR 9294   Information technology - Guidelines for the management of software documentation

Life Cycle Processes

IS 12207   Information technology - Software life cycle processes

Notation

IS 5806   Information processing - Single hit decision logic tables

IS 5807   Information processing - Documentation symbols and conventions for data, program, and system flowcharts, program network charts and resource charts

IS 6593   Information processing - Program flow for processing sequential files in terms of record groups

IS 8631   Information technology - Program constructs and conventions for their representation

IS 8790   Information processing systems - Computer system configuration diagram symbols and conventions

IS 11411   Information technology - Representation for human communication of state transition software

IS 14568 Information technology - DXL: Diagram of eXchange Language for tree-structured charts

Software Packages

IS 9127   Information processing systems - User documentation and cover information for consumer software packages

IS 12119   Information technology - Software packages - Quality requirements and testing

Software Measurement

IS 14143-1 Information technology - Software measurement - Definition of function size measurement

Software Product Evaluation

IS 9126   Information technology - Software product evaluation - Quality characteristics and guidelines for their use

CASE Tools

IS 14102   Information technology - Guide for evaluation and selection of CASE tools

6.   SC7 planned products for 2000

6.1   Additions to SC7 product listings – 2000

Number	Title
6592	Information technology - Guidelines for documentation of software systems (Revised)
9126-1	Information technology - Software quality characteristics and metrics – Part 1: Quality characteristics and subcharacteristics
9126-2	Information technology - Software quality characteristics and metrics – Part 2: External metrics
12182	Information technology - Categorization of software
14399	Information technology - Standards relevant to ISO/IEC JTC1/SC7 - Software engineering
14471	Information Technology –Guidelines for the adoption of CASE tools
14598-1	Information technology - Software product evaluation – Part 1: General overview
14598-2	Information technology - Software product evaluation – Part 2: Planning and Management
14598-4	Information technology - Software product evaluation – Part 4: Process for acquirers
14598-5	Information technology - Software product evaluation – Part 5: Process for evaluators
14756	Information technology - Measurement and rating of performance of computer-based software systems
14764	Information technology – Software maintenance
15026	Information technology – Software integrity - System and software integrity levels

15271	Information technology – Guide to ISO/IEC 12207
15474-1	Information technology - Software engineering data definition and interchange - Part 1: Overview
15474-2	Information technology - Software engineering data definition and interchange - Part 2: Framework for modeling and extensibility
15475-1	Information technology - Software engineering data definition and interchange - Part 1: Transfer format general rules for syntaxes and encodings
15475-2	Information technology - Software engineering data definition and interchange - Part 2: Transfer format syntax SYNTAX1
15475-3	Information technology - Software engineering data definition and interchange - Part 3: Transfer format encoding ENCODING1
15476-1	Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 1: Foundation subject area
15476-2	Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 2: Common subject area
15476-3	Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 3: Data definition subject area
15476-4	Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 4: Data modeling subject area
15476-5	Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 5: Data flow model subject area
15504-1	Information technology - Software process assessment - Part 1: Concepts and introductory guide
15504-2	Information technology - Software process assessment - Part 2: A reference model for processes and process capability.
15504-3	Information technology - Part 3: Software process assessment - : Performing an assessment.
15504-4	Information technology - Software process assessment - Part 4: Guide to performing assessments
15504-5	Information technology - Software process assessment – Part 5: An assessment model and indicator guide
15504-6	Information technology - Software process assessment – Part 6: Guide to qualification of assessors
15504-7	Information technology - Software process assessment - Part 7: Guide for use in process improvement
15504-8	Information technology - Software process assessment - Part 8: Guide for use in determining supplier process capability
15504-9	Information technology - Software process assessment – Part 9: Vocabulary
15846	Information technology –Configuration management for software
15910	Information technology – Software user documentation process

6.2 SC7 product roadmap - 2000

The numbers for new or revised standards are in bold font.

Documentation

IS 6592 Information processing - Guidelines for the documentation of computer-based application systems (Revised)

IS 9294   Information technology - Guidelines for the management of software documentation

IS 15910   Information technology – Software user documentation process

Life Cycle Processes

IS 12207   Information technology - Software life cycle processes

IS 14764   Information technology – Software maintenance

TR 15271   Information technology – Guide to ISO/IEC 12207

TR 15846   Information technology - Configuration management for software

Notation

IS 5806   Information processing - Single hit decision logic tables

IS 5807   Information processing - Documentation symbols and conventions for data, program, and system flowcharts, program network charts and resource charts

IS 6593   Information processing - Program flow for processing sequential files in terms of record groups

IS 8631   Information technology - Program constructs and conventions for their representation

IS 8790   Information processing systems - Computer system configuration diagram symbols and conventions

IS 11411   Information technology - Representation for human communication of state transition software

IS 14568   Information technology - DXL: Diagram exchange language for tree-structured charts

Software Engineering Data Definition and Interchange

IS 15474-1   Information technology - Software engineering data definition and interchange - Part 1: Overview

IS 15474-2   Information technology - Software engineering data definition and interchange - Part 2: Framework for modeling and extensibility

IS 15475-1   Information technology - Software engineering data definition and interchange - Part 1: Transfer format general rules for syntaxes and encodings

IS 15475-2   Information technology - Software engineering data definition and interchange - Part 2: Transfer format syntax SYNTAX1

IS 15475-3   Information technology - Software engineering data definition and interchange - Part 3: Transfer format encoding ENCODING1

IS 15476-1   Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 1: Foundation subject area

IS 15476-2   Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 2: Common subject area

IS 15476-3   Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 3: Data definition subject area

IS 15476-4   Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 4: Data modeling subject area

IS 15476-5   Information technology - Software engineering data definition and interchange - Integrated metamodel - Part 5: Data flow model subject area

Software Measurement

IS 14143-1 Information technology - Software measurement - Definition of function size measurement

Software Packages

TR 9127   Information processing systems - User documentation and cover information for consumer software packages

IS 12119   Information technology - Software packages - Quality requirements and testing

Software Product Evaluation

IS 9126   Information technology - Software product evaluation - Quality characteristics and guidelines for their use   (superceded)

IS 9126-1   Information technology - Software quality characteristics and metrics - Part 1: Quality characteristics and subcharacteristics

TR 9126-2   Information technology - Software quality characteristics and metrics - Part 2: External metrics

IS 14598-1   Information technology - Software product evaluation – Part 1: General overview

IS 14598-2   Information technology - Software product evaluation – Part 2: Planning and Management

IS 14598-4   Information technology - Software product evaluation – Part 4: Process for acquirers

IS 14598-5   Information technology - Software product evaluation - Part 5: Process for evaluator

CASE Tools

IS 14402   Information technology - Guidelines for evaluation and selection of CASE tools

TR 14471   Information technology - Guidelines for the adoption of CASE tools

Software Process Assessment

TR 15504-1 Information technology - Software process assessment - Part 1: Concepts and introductory guide

TR 15504-2 Information technology - Software process assessment - Part 2: A reference model for processes and process capability

TR 15504-3 Information technology - Software process assessment – Part 3: Performing an assessment

TR 15504-4 Information technology - Software process assessment - Part 4: Guide to performing assessments

TR 15504-5 Information technology - Software process assessment – Part 5: An assessment model and indicator guidance

TR 15504-6 Information technology - Software process assessment – Part 6: Guide to qualification of assessors

TR 15504-7 Information technology - Software process assessment - Part 7: Guide for use in process improvement

TR 15504-8 Information technology - Software process assessment - Part 8: Guide for use in determining supplier process capability

TR 15504-9 Information technology - Software process assessment - Part 9: Vocabulary

Software Integrity

    IS 15026   Information technology - Software integrity - System and software integrity levels

Software System Performance

    IS 14756   Information technology - Measurement and rating of performance of computer-based software systems

Miscellaneous

    TR 12182   Information technology - Categorization of software

    TR 14399   Information technology - Standards relevant to ISO/IEC JTC1/SC7 - Software engineering

Annex A - Descriptions of existing SC7 standards and technical reports

IS 5806   Information processing - Single hit decision logic table (1984)

Scope. Format of single-hit decision tables and the relevant definitions, together with recommended conventions for preparation and use.

Field of Application. Documentation of computer-based information systems.

Key terms. decision table, information system.

Table of Contents

IS 5807   Information processing - Documentation symbols and conventions for data, program, and system flowcharts, program network charts and resource charts (1985)

Scope. Documentation symbols and conventions.

Field of Application. Documentation of information processing.

Key terms. flowchart, information system.

Table of Contents

1   Scope and field of application
2   References
3   Definitions
4.   Data flowchart
5.   Program flowchart
6.   System flowchart
7.   Program network chart
8.   System resources chart
9.   Symbols
10.   Conventions
11   Consolidated table of symbols

Annexes

A.   Example of data flowchart
B.   Example of program flowchart
C.   Example of system flowchart
D.   Example of program network chart
E.   Example of system resources chart

IS 6592   Information processing - Guidelines for the documentation of computer-based application systems (1985)

Scope. Guidelines for the preparation of documentation throughout the system life cycle.

Field of Application. Preparation of documentation for computer-based application systems

Key terms. documentation, computer-based application systems.

Table of Contents

1   Scope and field of application
2   Principles of documentation
3   Feasibility study
4   System design study
5   System design and development
6   System support
7   System implementation
8   Post implementation reviews
9   Management of documents

Annexes

A   Program documentation guidelines
B   Data documentation guidelines
C   Human procedure of documentation guidelines

IS 6593   Information processing - Program flow for processing sequential files in terms of record groups (1985)

Scope. Procedure for processing in a computer program sequential files which have been logically organized in terms of groups of records.

Field of Application. Computer programs.

Key terms. control field, logical record, input routine, level, procedure.

Table of Contents

IS 8631   Information technology - Program constructs and conventions for their representation (1989)

Scope. Defines the nature of program constructs, indicates the manner in which constructs can be combined, provides specifications for a set of constructs, and permits the definition of a variety of subsets of the defined constructs.

Field of Application. Flow of control within procedure oriented algorithms.

Key terms. algorithm, flow of control, program construct.

Table of Contents

**IS 8790   Information processing systems- Computer system configuration diagram
symbols and conventions** (1987)

Scope. Establishes graphical symbols and their conventions for use in configuration diagrams for computer systems, including automatic data processing systems.

Field of Application. Major hardware units of a computer system configuration.

Key terms. configuration diagram.

Table of Contents

1   Scope
2   Field of application
3   Configuration diagram symbols
3.1   Physical unit or its enclosure
3.2   Connection line
4   Conventions
4.1   Symbol shape
4.2   Connection lines
4.3   Identification of symbols
4.4   Representation of multiple units in a single enclosure
4.5   Proper use of symbols
4.6   Representation of a selection unit
4.7   Representation of future installations
4.8   Repetitive representation of the same units
4.9   Overlaid representation of different units
4.10   Representation of omission
5   Consolidated table of symbols

**IS 9126   Information technology -- Software product evaluation -- Quality characteristics
and guidelines for their use (1991)**

Scope. Software characteristics and associated quality evaluation process model.

Field of Application. Acquisition, development, use, support, maintenance, or audit of software.

Key terms. assessment, features, firmware, level of performance, rating, rating level, software quality characteristics, software quality metric.

Table of Contents

1   Scope
2   Normative references
3   Definitions
4   Software quality characteristics
4.1   Functionality
4.2   Reliability
4.3   Usability
4.4   Efficiency
4.5   Maintainability
4.6   Portability
5   Guidelines for use of quality characteristics
5.1   Usage
5.2   Views of software quality
5.3   Evaluation process model
Annexes
A   Quality subcharacteristics
B   History of the work

TR 9127 Information processing systems - User documentation and cover information for consumer software packages (1988)

Scope. Describes user documentation and cover information supplied with consumer software packages: user documentation and cover information.

Field of Application. Software packages sold off-the-shelf to consumers for business, scientific, education and home use.

Key terms. consumer software package, consumer, end user, environment. manufacturer, software support, supplier.

Table of Contents

IS 9294   Information technology - Guidelines for the management of software documentation (1990)

Scope. Guidance on the policies, standards, procedures, resources and plans which managers must concern themselves with in order to manage software documentation effectively.

Field of Application. Software development, operation and maintenance.

Key terms. document, documentation, software product.

Table of Contents

IS 11411 Information technology -- Representation for human communication of state transition of software (1994)

Scope. Notations and conventions for definition of state transitions for interactive software, communication software or language/commands

Field of Application. Development, communication or review of software.

Key terms. state, transition.

Table of Contents

IS 12119 Information technology - Software packages - Quality requirements and testing
(1994)

Scope. Establishes requirements for software packages (quality requirements) and instructions on how to test a software package against these requirements (instructions for testing, in particular for third party testing.).

Field of Application. Software packages.

Key terms. function, maintenance, package documentation, product description, test case, user documentation

Table of Contents

IS 12207 Information technology -- Software life cycle processes (1995)

Scope. Processes, activities, and tasks that are to be applied during acquisition, development, operation, or maintenance software products.

Field of Application. Organizations involved in the two party agreements; an organization needing a process checklist.

Key terms. life cycle model, qualification requirement, qualification testing, software product, statement of work, system, test coverage.

Table of Contents

IS 14102 Information technology -- Guidelines for evaluation and selection of CASE tools
         (1995)

Scope. Establishes processes and activities to applied during the evaluation of CASE tools and selecting the most appropriate from several candidates.

Field of Application. Organizations involved in the choosing CASE tools to support their software life cycle processes.

Key terms. atomic subcharacteristic, CASE tool, characteristic, rating, rating level.

Table of Contents

14143-1   Information technology - Software measurement - Definition of functional size measurement, Part 1: Definition of concepts (1997)

Scope: Defines the fundamental concepts of functional size measurement (FSM) and describes the general principles for applying an FSM Method.

Field of Application: For persons associated with the acquisition, development, use, support, maintenance and audit of software.

Key terms: software measurement, functional size measurement, concepts

Table of Contents

1.   Scope
2.   Normative references
3.   Definitions
4.   Abbreviations
5.   Characteristics and requirements
5.1   Characteristics
5.2   Requirements
6.   Process for applying an fsm method
7.   Labeling conventions
Annex
 A   (informative) Uses of FSM

IS 14568   Information technology - DXL: Diagram exchange language for tree-structured charts (1997)

Scope: Specifies the semantics and syntax of DXL

Field of Application: During development in the exchange of ISO/IEC 8631 compliant tree structured charts, exchanging program flowcharts defined in ISO/IEC 5807, and for describing procedure oriented algorithms.

Key terms: DXL, program flowcharts, tree-structured charts

Table of Contents

1   Scope
2.   Normative reference
3.   Definitions and acronyms
4.   Notation of DXL syntax
5.   Definition of DXL
Annexes
A   Examples of DXL descriptions
B   Correspondence between DXL syntax and program constructs of ISO/IEC 8631
C   Position of DXL

Annex B - Descriptions of proposed SC7 standards and technical reports

6592   Information technology - Guidelines for the documentation of software systems

Scope: Provides guidelines for the documentation of information systems

Table of Contents

1   Scope

2   Field of application

3   References

4   Definitions

5   Use of this standard

6   Documentation method

Annex   Example of a documentation profile

9126-1   Information technology - Software quality characteristics and metrics – Part 1: Quality characteristics and subcharacteristics

Scope: Defines a quality model which categories software quality into six characteristics, which are further sub-divided into sub-characteristics.

Table of Contents
1   Scope
2   Conformance
3   Normative references
4   Terms and definitions
5   Quality relationships
6   Metrics
7   Software quality characteristics
8   Quality in use
Annexes
A   Definitions from other standards
B   History of the work

9126-2   Information technology - Software quality characteristics and metrics – Part 2: External metrics

Scope. Describes the external metrics for measuring attributes of the six quality characteristics defined in ISO/IEC 9126-1. It includes a basic set of data elements commonly used for composing metrics.

1   Scope
2   Normative references
3   Definitions
4   External metrics – General intent of this document
5   Recommended external metrics
Annexes
A   Technique for specifying quality requirements and goals for quality improvement
B   Representations for detection of quality problems
C   Evaluation representation of the external metrics
D   Quality in use metrics
E   Bibliography
F   Definitions

12182   Information technology - Categorization of software

Scope. Categories of software (including relevant development products and data) that are produced by software engineering processes.

Table of Contents

1   Scope and field of application
2   Normative References
3   Definitions
4   Notations
5   Concept of categorization of software
6   Scheme of categorization
7   Application of the scheme

14598-1 Information technology - Software product evaluation – Part 1: General overview

Scope: Provides an overview of the other parts and explains the relationship between ISO/IEC 14598 and the quality model in ISO/IEC 9126.

Table of Contents

14598-2 Information technology - Software product evaluation - – Part 2: Planning and Management

Scope: Provides requirements, recommendations and guidelines for a supporting function responsible for the management of software product evaluation and for technologies necessary for software product evaluation.

Table of Contents

Annex

14598-4   Information technology - Software product evaluation - Part 4: Process for acquirers

Scope: Provides guidelines for clarifying quality requirements and for implementing and analyzing software quality measures. This standard focuses on the selection and reporting of those indicators that are useful to predict end product quality by measuring the quality of intermediate products. It also focuses on measuring end product quality.

Table of Contents

1   Scope

2   Normative references

3   Terms and Definitions

4   Evaluation concepts

5   Conformance

6   Evaluation process requirements

Annex

A   Definitions from other standards

Bibliography

14598-5   Information technology - Software product evaluation - Part 5: Process for evaluator

Scope: Provides requirements and recommendations for the practical implementation of software product evaluation when several parties need to understand, accept and trust evaluation results.

Table of Contents

1   Scope

2   Normative references

3   Definitions

4   Evaluation concepts

5   Conformance

6   Evaluation process requirements

Annex

A   Template evaluation report
B   Levels of evaluation
C   Software product components
D   Interaction between requestor and evaluator
E   Evaluation contract
F   Bibliography

14756   Information technology - Measurement and rating of performance of computer-based software systems

Scope: Defines how user oriented performance of computer-based software systems may be measured and rated.

Table of Contents

14764   Information technology - Software maintenance

Scope: Provides the framework within which generic and specific software maintenance plans may be executed, evaluated, and tailored to the scope and magnitude of given software products.

Table of Contents

15026   Information technology - Software integrity - System and software integrity levels

Scope: Establishes requirements for the determination of system and software integrity levels for software products and systems that use software.

Table of Contents

15271   Information technology - Guide to ISO/IEC 12207

Scope: Provides guidance on the application of the International Standard ISO/IEC 12207 *Software life cycle processes*.

Table of Contents

1   Scope

2   Basic concepts behind the standard

3   Implementing the standard

4   Application on projects

5   Application in organizations

6   Application in a system life cycle

Annex

A   Quality processes and evaluation requirements

B   Process output categorization

C   Life cycles

D   Examples of tailoring

15474-1   Information technology - Software engineering data definition and interchange - Overview and framework: Part 1: Overview

Scope: Describes the architecture of the Software Engineering Data Definition and Interchange family of standards and provides an overview of the family of standards.

Table of Contents

1   Scope

2   Introduction

3   SEDDI overview and architecture

4   SEDDI family of standards overview

15474-2   Information technology - Software engineering data definition and interchange - Overview and Framework - Part 2: Framework for modeling and extensibility

Scope: Defines the SEDDI Meta-meta-model and the modeling concepts used throughout the SEDDI and the extensibility mechanism.

Table of Contents

1   Scope
2   Introduction
3   Meta-meta-model concepts
4   Meta-model extensibility
5   Exporter responsibilities
6   Importer responsibilities
7   Meta-meta-model overview
8   Meta-meta-model definitions

15475-1   Information technology - Software engineering data definition and interchange - Transfer format - Part 1: General rules for syntaxes and encoding

Scope: Defines how SEDDI supports multiple exchange Syntaxes and Encodings, and describes how SEDDI meta-models are concretely represented during a transfer.

Table of Contents

1   Scope

2   Introduction

3   Concepts and definitions

4   General structure of the SEDDI transfer

5   Transfer envelope formal grammar

15475-2   Information technology - Software engineering data definition and interchange - Transfer format - Part 2: Syntax SYNTAX1

Scope: Defines the SEDDI transfer format syntax, SYNTAX1.
Table of Contents
1   Scope
2   Introduction
3   Concepts and definitions
4   Syntax sections and structures in the SEDDI transfer
5   Syntax formal grammar

15475-3   Information technology - Software engineering data definition and interchange - Transfer format - Part 3: Encoding ENCODING1

Scope: Describes the SEDDI transfer format encoding, ENCODING1
Table of Contents
1   Scope
2   Introduction
3   Concepts and definitions
4   Encoding structures and keywords in the SEDDI transfer
5   Encoding formal grammar

15476-1   Information technology - Software engineering data definition and interchange - Integrated meta-model - Part 1: Foundation subject area

Scope. Defines the foundation subject area of the integrated meta-model. This subject area contains meta-objects that are used as the basis of the other subject area standards, and also meta-relationships and meta-attributes that are applicable to all meta-objects.

Table of Contents

1   Scope and field of application
2   References
3   Definitions
4   Notations and conventions
5   Structure of subject area definition
6   Subject area overview
7   Subject area detailed definitions
8   Notes and tables

15476-2   Information technology - Software engineering data definition and interchange - Integrated meta-model - Part 2: Common subject area

Scope. Defines the common subject area of the integrated meta-model. This subject area contains meta-objects that are used as the basis of the other subject area standards, and also meta-relationships and meta-attributes that are applicable to all meta-objects.

Table of Contents

1   Scope
2   Introduction
3   Structure of subject area definition
4.   Subject area overview
5.   Subject area detailed definitions
6.   Referenced Meta object definitions

15476-3   Information technology - Software engineering data definition and interchange - Integrated meta-model - Part 3: Data definition subject area

Scope. Defines the data definition subject area of the integrated meta-model. This subject area provides support for describing data objects and provides a data typing scheme. It allows for simple and complex structures, array and pointer qualification and domain specification.

Table of Contents

1   Scope
2   Introduction
3   Structure of subject area definition
4.   Subject area overview
5.   Subject area detailed definitions
6.   Referenced Meta object definitions

15476-4   Information technology - Software engineering data definition and interchange - Integrated meta-model - Part 4: Data modeling subject area

Scope. Defines the data modeling subject area of the integrated meta-model. This subject area addresses the major forms of entity-relationship-attribute modeling and logical database design. The subject area technique is technique independent but offers broad coverage, striving for a superset of the concepts represented in the various techniques.

Table of Contents

1   Scope
2   Introduction
3   Structure of subject area definition
4.   Subject area overview
5.   Subject area detailed definitions
6.   Referenced Meta object definitions

15476-5   Information technology - Software engineering data definition and interchange - Integrated meta-model: Part 5: Data flow subject area

Scope. Defines the data flow subject area of the integrated meta-model. This subject area provides support for interchanging the semantic information found in existing data flow and some function modeling techniques. It covers the semantics associated with processes or functions, flows, stores, and external agents. This subject area does not cover the physical process modeling found in structured design techniques.

Table of Contents

1   Scope
2   Introduction
3   Structure of subject area definition
4.   Subject area overview
5.   Subject area detailed definitions
6.   Referenced Meta object definitions

15504-1   Information technology - Software process assessment - Part 1: Concepts and introductory guide

Scope: Provides overall information on the concepts of software process assessment and its use in process improvement and process capability determination.

Table of Contents

1   Scope
2   Normative references
3   Definitions
4   Overview
5   Conformance

15504-2   Information technology - Software process assessment - Part 2: A reference model for processes and process capability

Scope: Defines, at a high level, the fundamental objectives that are essential to good software engineering.

Table of Contents

1   Scope

2   Normative references

3   Definitions

4   Structure of the reference model

5   The process dimension

6   The capability dimension

7   Compatibility with the reference model

Annex
A   Mapping of ISO/IEC 12207 to the reference model
B   Process and process attribute tables
B   Style guide for defining processes

15504-3   Information technology - Software process assessment – Part 3: Performing an assessment

Scope: Defines the minimum set of requirements to ensure that the outputs of an assessment are objective, impartial, consistent, repeatable and representative of the processes assessed, and defines the circumstances under which assessment results are compatible.

Table of Contents

1   Scope

2   Normative references

3   Definitions

4   Requirements

15504-4   Information technology - Software process assessment - Part 4: Guide to performing assessments

Scope: Provides guidance on meeting the requirements for performing an assessment in part 3.

Table of Contents

1   Scope

2   Normative references

3   Definitions

4   Overview of process assessment

5   Selection and use of a compatible model

6   Selection and use of a method

7   Selection and use of instruments and tools

Annex

A   Guidance on indicators

B   Guidance on selection and use of instruments and tools

15504-5   Information technology - Software process assessment - Part 5: An assessment model and indicator guidance

Scope: Defines an example assessment model compatible with the reference model in Part 2. It also interprets the intent of the reference model.

Table of Contents
1   Scope
2   Normative references
3   Definitions
4   Overview of the assessment model
5   The process dimension
6   Capability dimension
7   Compatibility with the reference model
Annex A   Processes and associated work products
Annex B   Indicators of process capability
Annex C   Work products and their characteristics
Annex D   Style guide for defining base practices
Annex E   Style guide for defining management practices
Annex F   References

15504-6   Information technology - Software process assessment - Part 6: Guide to qualification of assessors

Scope: Defines the initial and ongoing qualification of assessors and provides guidance for the preparation and qualification of assessors to perform software process assessments.

Table of Contents

1   Scope

2   Normative references

3   Definitions

4   An overview of the assessor and qualification

5   Assessor competence

6   Validation of education, training and experience

Annex

A   Training record
B   Record of experience
C   Record of participation
D   Assessment log
E   Professional activities log
F   Mechanism for demonstrating competence
G   Mechanism for validating education, training and experience
H   List of Acronyms

15504-7   Information technology - Software process assessment - Part 7: Guide for use in process improvement

Scope: Provides guidance on using software process assessment as part of a framework and method for performing software process improvement in a continuous cycle.

Table of Contents

1   Scope
2   Normative references
3   Definitions
4   Overview of process improvement
5   Guidelines for process improvement
6   Cultural issues
7   Management

Annex

A   The application of process measurement framework
B   The application of the improvement methodology
C   Mapping to ISO 9004-4

15504-8   Information technology - Software process assessment - Part 8: Guide for use in determining supplier process capability

Scope: Describes how to utilize process assessment for the purpose of process capability determination.

Table of Contents

1   Scope

2   Normative references

3   Definitions

4   Introduction to process capability determination

5   Conducting a process capability determination

15504-9   Information technology - Software process assessment - Part 9: Vocabulary

Scope: Defines the terms used throughout 15504.

Table of Contents

1   Scope

2   Normative references

3   Definitions

4   Classified definitions

15846   Information technology - Configuration management for software

Scope: Defines the requirements for the software configuration management (SCM) Process.

Table of Contents

1   Scope

2   Normative references

3   Definitions

4   SCM process implementation

5   Software configuration identification

6   Software configuration management

7   Software configuration status accounting

8   Software configuration evaluation

9   Software release management and delivery

10   Interface control

Annex

A   A. MAPPING OF CLAUSES BETWEEN ISO/IEC 15846, ISO/IEC 12207 AND ISO 10007
[INFORMATIVE]

B   BIBLIOGRAPY

15910 Information technology – Software user documentation process

Scope: Defines

Table of Contents

1   Scope

2   Normative references

3   Definitions