
**Systems and software engineering —
Software Engineering Environment
Services**

*Ingénierie du logiciel et des systèmes — Services d'environnement en
ingénierie du logiciel*



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Contents

Page

Foreword	vi
Introduction.....	vii
1 Scope	1
2 Terms and definitions	1
3 Abbreviated terms	3
4 Reference Model for SEE services	3
4.1 Categories of SEE services	3
4.2 Structure of service description	3
4.3 Reference model.....	3
5 Software engineering services	5
5.1 Overview.....	5
5.2 Software requirements engineering service.....	6
5.3 Software reverse engineering service.....	6
5.4 Software re-engineering service.....	7
5.5 Software prototyping service.....	7
5.6 Software modelling service.....	7
5.7 Software simulation service.....	8
5.8 Software design service	8
5.9 Software component based software generation service.....	8
5.10 Software source code generation service	9
5.11 Software compilation service.....	9
5.12 Software debugging service	9
5.13 Software static/dynamic analysis service.....	10
5.14 Software testing service	10
5.15 Software verification service.....	11
5.16 Software integration service	11
5.17 Software domain engineering service (Software reuse)	11
5.18 Software reuse asset management service (Software reuse)	12
5.19 Software reuse program management service (Software reuse).....	12
6 Systems engineering services.....	13
6.1 Overview.....	13
6.2 System solution orientation service.....	13
6.3 System Operational scenarios service	14
6.4 System modelling service	14
6.5 System architectural design service	15
6.6 System Requirements engineering service.....	15
6.7 System Re-engineering service	15
6.8 System Simulation service.....	16
6.9 System Integration service.....	16
6.10 System testing service.....	16
6.11 System test synthesis & report service	17
6.12 System work product verification service	17
7 System engineering techniques services.....	18
7.1 Overview.....	18
7.2 Value analysis service	18
7.3 Trade-off analysis.....	18
7.4 Effectiveness analysis	19
7.5 Technology maturity analysis.....	19

8	Technical management services	20
8.1	Overview	20
8.2	Configuration management service.....	20
8.3	Change management service	20
8.4	SEE repository management service	21
8.5	Reuse management service	21
8.6	Measurement and analysis service.....	21
8.7	Quality assurance service	22
8.8	Audit service	22
8.9	Traceability service	22
8.10	Documentation service	23
8.11	Review service support.....	23
9	Project management services	24
9.1	Overview	24
9.2	Project strategy service	24
9.3	Project planning service	24
9.4	Project estimation service	25
9.5	Project risk management service.....	25
9.6	Project monitoring and scheduling service.....	25
9.7	Project evaluation service	26
9.8	Decision management service	26
9.9	Information management service	27
10	Process management services	27
10.1	Overview	27
10.2	Process definition service	28
10.3	Process library service	28
10.4	Process initiation service	28
10.5	Process usage service	29
10.6	Process monitoring service.....	29
10.7	Process improvement support service	29
10.8	Process documentation service.....	30
11	SEE support services	30
11.1	Overview	30
11.2	SEE common support service.....	30
11.3	SEE publishing service	31
11.4	SEE cooperative work support service	31
11.5	SEE user communication support service	31
11.6	SEE administration service	32
11.7	SEE policy enforcement service	32
11.8	SEE data/information mining service	32
11.9	SEE data retrieve/storage service.....	33
11.10	SEE data/information exchange service	33
11.11	SEE enabling support service	33
12	SEE infrastructure services	34
12.1	Overview	34
12.2	SEE infrastructure management service	34
12.3	SEE information sharing service	35
12.4	SEE repository service.....	35
12.5	SEE operating system service	35
Annex A (informative) Exemplary automated support for the SEE services		37
Annex B (informative) Services mapped on to ISO/IEC 12207 activities		46
Annex C (informative) Services mapped on to ISO/IEC 15288 activities		52
Annex D (informative) Exemplary categories relationship for the SEE Services		57
Annex E (informative) Application of this International Standard		58

Annex F (informative) Traceability between ISO 15940:2006 and “ISO-15940 for Systems and Software engineering”	59
Bibliography	63

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 15940 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

This second edition cancels and replaces the first edition (ISO/IEC 15940:2006), which has been technically revised.

Introduction

Software engineering environments, or “SEEs” refer to a collection of services, partially or fully automated by software tools, that are used to support the execution of human activities in systems and software engineering.

These activities are usually carried out within a software or system development/maintenance project, and cover such areas as the specification, development, re-engineering or maintenance of systems.

ISO/IEC 12207 describes in a comprehensive manner all of the processes, activities and tasks performed during the software life cycle.

The term “Software Engineering Environment” may cover several situations; from the mere juxtaposition of a few tools running on the same operating system, to the fully integrated environment, able to handle, monitor, and even control all the data, processes, and activities in the systems and software engineering life cycle. A SEE provides support to human activities through a series of services that describe the capabilities of the environment. The software process supported by a SEE becomes an assisted or automated software process. This International Standard describes SEE services and relates them to ISO/IEC 12207:2008 in a manner applicable to a range of organizations. In defining a life cycle process for an organization, the user needs to find the appropriate level of automation provided by a software engineering environment. This may result in establishing a new SEE or improving an existing one.

Through the automation of activities, either partially or fully, the SEE provides benefits to an organization through reduced cost (higher productivity), improved management and from the higher product quality that can result. For example, the automation of repetitive activities such as the execution of test cases provides not only productivity gains, but can also help to ensure completeness and consistency in the testing activities

This International Standard defines the SEE services conceptually in a reference model that can be adapted to any SEEs to automate one or more software and system engineering activities.

For a user interested in a specific process, this International Standard describes the relationship between given systems and software engineering processes, the software engineering services, and the corresponding exemplary software engineering tools.

The suite of SEE services described supports the process definitions in ISO/IEC 12207. The purpose is to define a set of SEE Services that are compatible with ISO/IEC 12207:2008, and that can be used either as a general reference, or to define an automated software and system process.

Systems and software engineering — Software Engineering Environment Services

1 Scope

This International Standard provides a description of SEE services that supports all of the software and system life cycle processes defined in ISO/IEC 12207.

The services are intended as a complete set and can be used in any systems and software engineering development or support organization where there is a need to select one or more SEE services. Such an organization may or may not have systems and software projects that use the ISO/IEC 12207 process framework.

A reference model for SEE Services is provided within this International Standard. This reference model has been produced starting from References [8] and [9]. This International Standard was produced using material originally published by the Software engineering Institute (Carnegie Mellon University, USA), NIST and ECMA, which finally resulted in a joint effort from ECMA and NIST indicating a broad consensus at the time of publication. In addition to this background process, structure from ISO/IEC 12207:2008 has been used as a baseline.

SEE Services for System Engineering and Software Reuse have been added to the revision of this International Standard. The list of changes between the previous version (ISO/IEC 15940:2006) and this version is given in Annex F.