
**Information technology — Process
assessment —**

Part 5:

**An exemplar software life cycle process
assessment model**

iTeh STANDARD PREVIEW
Technologies de l'information — Évaluation des procédés —

(standards.iteh.ai)
*Partie 5: Un exemple de modèle d'évaluation des procédés du cycle de
vie d'un logiciel*

ISO/IEC 15504-5:2012

<https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012>

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC 15504-5:2012](https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012)

<https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012>



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2012

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	vi
Introduction.....	viii
1 Scope.....	1
2 Normative references.....	2
3 Terms and definitions	2
4 Overview of the exemplar Process Assessment Model	2
4.1 Introduction.....	2
4.2 Structure of the exemplar Process Assessment Model	3
4.2.1 Processes.....	4
4.2.2 Process dimension.....	9
4.2.3 Capability dimension	9
4.3 Assessment Indicators	10
4.3.1 Process Capability Indicators	12
4.3.2 Process Performance Indicators	13
4.4 Measuring process capability.....	13
5 The process dimension and process performance indicators (level 1)	15
5.1 Agreement Processes group (AGR)	16
5.1.1 AGR.1 Acquisition Process	16
5.1.2 AGR.1A Acquisition preparation (subprocess).....	17
5.1.3 AGR.1B Supplier selection (subprocess)	18
5.1.4 AGR.1C Agreement monitoring (subprocess)	19
5.1.5 AGR.1D Acquirer acceptance (subprocess).....	20
5.1.6 AGR.2 Supply.....	21
5.1.7 AGR.2A Supplier tendering (subprocess)	23
5.1.8 AGR.2B Contract agreement (subprocess)	24
5.1.9 AGR.2C Product/service delivery and support (subprocess).....	25
5.1.10 AGR.3 Contract change management.....	27
5.2 Organizational Project-Enabling Processes group (ORG).....	28
5.2.1 ORG.1 Life cycle model management.....	28
5.2.2 ORG.1A Process establishment (subprocess).....	29
5.2.3 ORG.1B Process assessment (subprocess)	31
5.2.4 ORG.1C Process improvement (subprocess)	32
5.2.5 ORG.2 Infrastructure management.....	34
5.2.6 ORG.3 Project portfolio management	35
5.2.7 ORG.4 Human resource management.....	36
5.2.8 ORG.4A Skill development (subprocess)	38
5.2.9 ORG.4B Skill acquisition and provision (subprocess).....	39
5.2.10 ORG.4C Knowledge management (subprocess)	40
5.2.11 ORG.5 Quality management.....	41
5.2.12 ORG.6 Organizational alignment	43
5.2.13 ORG.7 Organization management.....	44
5.3 Project Processes group (PRO).....	46
5.3.1 PRO.1 Project planning.....	46
5.3.2 PRO.2 Project assessment and control	47
5.3.3 PRO.3 Decision management	49
5.3.4 PRO.4 Risk management.....	50
5.3.5 PRO.5 Configuration management.....	51
5.3.6 PRO.6 Information Management.....	53
5.3.7 PRO.7 Measurement.....	54
5.4 Technical Processes group (ENG)	55

5.4.1	ENG.1 Stakeholder requirements definition	55
5.4.2	ENG.2 System requirements analysis	57
5.4.3	ENG.3 System architectural design	58
5.4.4	ENG.4 Software implementation	60
5.4.5	ENG.5 System integration.....	61
5.4.6	ENG.6 System qualification testing	63
5.4.7	ENG.7 Software installation.....	64
5.4.8	ENG.8 Software acceptance support.....	65
5.4.9	ENG.9 Software operation	66
5.4.10	ENG.9A Operational use (subprocess)	67
5.4.11	ENG.9B Customer support (subprocess)	68
5.4.12	ENG.10 Software maintenance.....	69
5.4.13	ENG.11 Software disposal	71
5.5	Software Implementation Processes group (DEV).....	72
5.5.1	DEV.1 Software requirements analysis	72
5.5.2	DEV.2 Software architectural design.....	74
5.5.3	DEV.3 Software detailed design	75
5.5.4	DEV.4 Software construction	76
5.5.5	DEV.5 Software integration.....	77
5.5.6	DEV.6 Software qualification testing	79
5.6	Software Support Processes group (SUP).....	80
5.6.1	SUP.1 Software documentation management.....	80
5.6.2	SUP.2 Software configuration management.....	81
5.6.3	SUP.3 Software quality assurance.....	83
5.6.4	SUP.4 Software verification	84
5.6.5	SUP.5 Software validation	86
5.6.6	SUP.6 Software review	87
5.6.7	SUP.7 Software audit.....	88
5.6.8	SUP.8 Software problem resolution.....	90
5.7	Software Reuse Processes group (REU)	91
5.7.1	REU.1 Domain engineering.....	91
5.7.2	REU.2 Reuse asset management.....	93
5.7.3	REU.3 Reuse program management.....	94
6	Process capability indicators (level 1 to 5).....	96
6.1	Level 1: Performed process.....	96
6.1.1	PA 1.1 Process performance attribute.	96
6.2	Level 2: Managed process	96
6.2.1	PA 2.1 Performance management attribute	97
6.2.2	PA 2.2 Work product management attribute.....	99
6.3	Level 3: Established process	101
6.3.1	PA 3.1 Process definition attribute	101
6.3.2	PA 3.2 Process deployment attribute	103
6.4	Level 4: Predictable process	105
6.4.1	PA 4.1 Process measurement attribute.....	105
6.4.2	PA 4.2 Process control attribute	108
6.5	Level 5: Optimizing process	109
6.5.1	PA 5.1 Process innovation attribute	109
6.5.2	PA 5.2 Process optimization attribute	112
6.6	Related Processes for Process Attributes.....	113
Annex A	(informative) Conformity of the exemplar Process Assessment Model	115
A.1	Introduction	115
A.2	Requirements for Process Assessment Models (from ISO/IEC 15504-2).....	115
A.2.1	Introduction	115
A.2.2	Process Assessment Model scope.....	115
A.2.3	Process Assessment Model elements and indicators.....	116
A.2.4	Mapping Process Assessment Models to Process Reference Models.....	116
A.2.5	Expression of assessment results.....	119
Annex B	(informative) Work product characteristics	120

ITC STANDARD PREVIEW
 (standards.iteh.ai)
 ISO/IEC 15504-5:2012
<https://standards.iteh.ai/catalog/standards/sist/677667f-085a-435a-bca7-8921802c127/iso-iec-15504-5-2012>

B.1	Generic Work products	121
B.2	Generic and specific work products	126
Annex C	(informative) Adaptation of the assessment model	183
C.1	Assessment indicators identification	183
C.1.1	Base practices	183
C.1.2	Generic practices	184
C.2	Adaptation of the exemplar process assessment model	185
C.2.1	Adding to or removing processes from the process dimension	185
C.2.2	Identifying process performance indicators for a new process	185
Annex D	(informative) Supplementary process definitions	187
D.1	Supplementary processes	187
D.1.1	QNT.1 Quantitative process improvement	187
D.1.2	QNT.2 Quantitative performance management	190
D.1.3	SUP.9 Software change request management	192
D.1.4	AGR.2D Product release (subprocess)	193
D.1.5	AGR.2E Product/service acceptance support (subprocess)	194
	Bibliography	196

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC 15504-5:2012](https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012)

<https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012>

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 15504-5 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 15504-5:2006), which has been revised as follows:

- Clause 2 has been modified by updating the reference to ISO/IEC 12207;
ISO/IEC 15504-5:2012
- Clauses 4 and 5 have been replaced with new text,
<https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012>
- 6.6 has been replaced with new text;
- B.2 has been replaced with new text;
- a new Annex D – Supplementary process definitions has been added;
- the Bibliography has been updated to reflect current versions of works referenced.

ISO/IEC 15504 consists of the following parts, under the general title *Information technology — Process assessment*:

- *Part 1: Concepts and vocabulary*
- *Part 2: Performing an assessment*
- *Part 3: Guidance on performing an assessment*
- *Part 4: Guidance on use for process improvement and process capability determination*
- *Part 5: An exemplar software life cycle process assessment model*
- *Part 6: An exemplar system life cycle process assessment model* [Technical Report]
- *Part 7: Assessment of organizational maturity* [Technical Report]

- *Part 9: Target process profiles* [Technical Specification]
- *Part 10: Safety extension* [Technical Specification]

The following part is under preparation:

- *Part 8: An exemplar process assessment model for IT service management* [Technical Report]

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC 15504-5:2012](https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012)

<https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012>

Introduction

An integral part of conducting an assessment is to use a Process Assessment Model constructed for that purpose, related to a Process Reference Model and conformant with the requirements defined in ISO/IEC 15504-2. ISO/IEC 15504-2 provides a framework for process assessment and sets out the minimum requirements for performing an assessment in order to ensure consistency and repeatability of the ratings.

A Process Reference Model cannot be used alone as the basis for conducting consistent and reliable assessments of process capability since the level of detail is not sufficient. Therefore:

- the descriptions of process purpose and process outcomes provided by the Process Reference Model need to be supported with a comprehensive set of indicators of process performance; and
- the capability levels and process attributes defined in ISO/IEC 15504-2 and its associated rating scale need to be supported with a set of indicators of process capability.

Used in this way, in conjunction with a documented process, consistent and repeatable ratings of process capability will be possible.

The ISO/IEC 15504-5 exemplar Process Assessment Model contains a set of indicators to be considered when interpreting the intent of the Process Reference Model. These indicators may also be used when implementing a process improvement program or to help evaluate and select an assessment model, method, methodology or tools.

The Process Reference Model defined in ISO/IEC 12207:2008 has been used as the basis for the ISO/IEC 15504-5 exemplar software life cycle Process Assessment Model.

As an exemplar, this Process Assessment Model embodies the core characteristics that could be expected of any Process Assessment Model consistent with ISO/IEC 15504-2. Nevertheless, use of this Process Assessment Model is not required to meet the requirements of ISO/IEC 15504; any other Process Assessment Models meeting the requirements of ISO/IEC 15504-2 may be used in a conformant assessment.

Information technology — Process assessment —

Part 5:

An exemplar software life cycle process assessment model

1 Scope

This part of ISO/IEC 15504 provides an example of a Process Assessment Model for use in performing a conformant assessment in accordance with the requirements of ISO/IEC 15504-2.

This part of ISO/IEC 15504 is structured as follows.

- Clause 4 provides a detailed description of the structure and key components of the Process Assessment Model, which includes two dimensions: a process dimension and a capability dimension; assessment indicators are introduced in this clause.
- Clause 5 addresses the process dimension. It uses process definitions from ISO/IEC 12207:2008 to identify a Process Reference Model. The processes of the Process Reference Model are described in the Process Assessment Model in terms of purpose and outcomes and are grouped in three process categories. The Process Assessment Model expands the Process Reference Model process definitions by including a set of process performance indicators called base practices for each process. The Process Assessment Model also defines a second set of indicators of process performance by associating work products with each process. Annex B is also linked directly to Clause 5 as it defines the work product characteristics. <https://standards.iteh.ai/catalog/standards/sist/677fa67f-085a-435a-bca7-e8821802c127/iso-iec-15504-5-2012>
- Clause 6 addresses the capability dimension. It duplicates the definitions of the capability levels and process attributes from ISO/IEC 15504-2, and expands each of the nine attributes through the inclusion of a set of generic practices. These generic practices belong to a set of indicators of process capability, in association with generic resource indicators, and generic work product indicators.
- Annex A provides a statement of conformance of the Process Assessment Model to the requirements defined in ISO/IEC 15504-2.
- Annex B provides selected characteristics for typical work products to assist the assessor in evaluating the capability level of processes.
- Annex C contains style guides for defining base practices, work products and generic practices for adjusting the Process Assessment Model, and guidance explaining how to expand or adapt the model.
- Annex D presents some processes supplementary to the Process Assessment Model.

NOTE Copyright release for the Exemplar Process Assessment Model: Users of this part of ISO/IEC 15504 may freely reproduce the detailed descriptions contained in the exemplar assessment model as part of any tool or other material to support the performance of process assessments, so that it can be used for its intended purpose.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 12207:2008, *Systems and software engineering — Software life cycle processes*

ISO/IEC 15504-1:2004, *Information technology — Process assessment — Part 1: Concepts and vocabulary*

ISO/IEC 15504-2:2003, *Information technology — Process assessment — Part 2: Performing an assessment*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 15504-1 apply.

4 Overview of the exemplar Process Assessment Model

4.1 Introduction

This part of ISO/IEC 15504 provides an exemplar Process Assessment Model that includes examples of assessment indicators.

A Process Assessment Model comprises a set of indicators of process performance and process capability. The indicators are used as a basis for collecting the objective evidence that enables an assessor to assign ratings. The set of indicators included in this part of ISO/IEC 15504 is not intended to be an all-inclusive set nor is it intended to be applicable in its entirety. Subsets that are appropriate to the context and scope of the assessment should be selected, and possibly augmented with additional indicators (see Annex C).

Any Process Assessment Model meeting the requirements defined in ISO/IEC 15504-2 concerning models for process assessment may be used for assessment. Different models and methods may be needed to address differing business needs. The assessment model in this part of ISO/IEC 15504 is provided as an exemplar of a model meeting all the requirements expressed in ISO/IEC 15504-2.

The Process Reference Model defined in ISO/IEC 12207:2008 and associated with the process attributes defined in ISO/IEC 15504-2, establish a Process Assessment Model used as a common basis for performing assessments of software engineering process capability, allowing for the reporting of results using a common rating scale.

The Process Assessment Model is a two-dimensional model of process capability. In one dimension, the process dimension, the processes are defined and classified into process categories. In the other dimension, the capability dimension, a set of process attributes grouped into capability levels is defined. The process attributes provide the measurable characteristics of process capability.

Figure 1 shows the relationship between the general structure of the Process Assessment Model, ISO/IEC 15504-2 and ISO/IEC 12207:2008.

The Process Reference Model and the capability dimension defined in ISO/IEC 15504-2 cannot be used alone as the basis for conducting reliable and consistent assessments of process capability since the level of detail provided is not sufficient. The descriptions of process purpose and outcomes in the Process Reference Model, and the process attribute definitions in ISO/IEC 15504-2, need to be supported with a comprehensive set of indicators of process performance and process capability that are used for assessment performance.

The exemplar Process Assessment Model defined in this part of ISO/IEC 15504 is conformant with the ISO/IEC 15504-2 requirements for a Process Assessment Model, and can be used as the basis for conducting an assessment of software engineering process capability.

In order to meet the requirements of ISO/IEC 15504-2, a documented process supporting other requirements of ISO/IEC 15504-2 is also required. This need may be met, for example, by the adoption of a supporting method for conducting assessments.

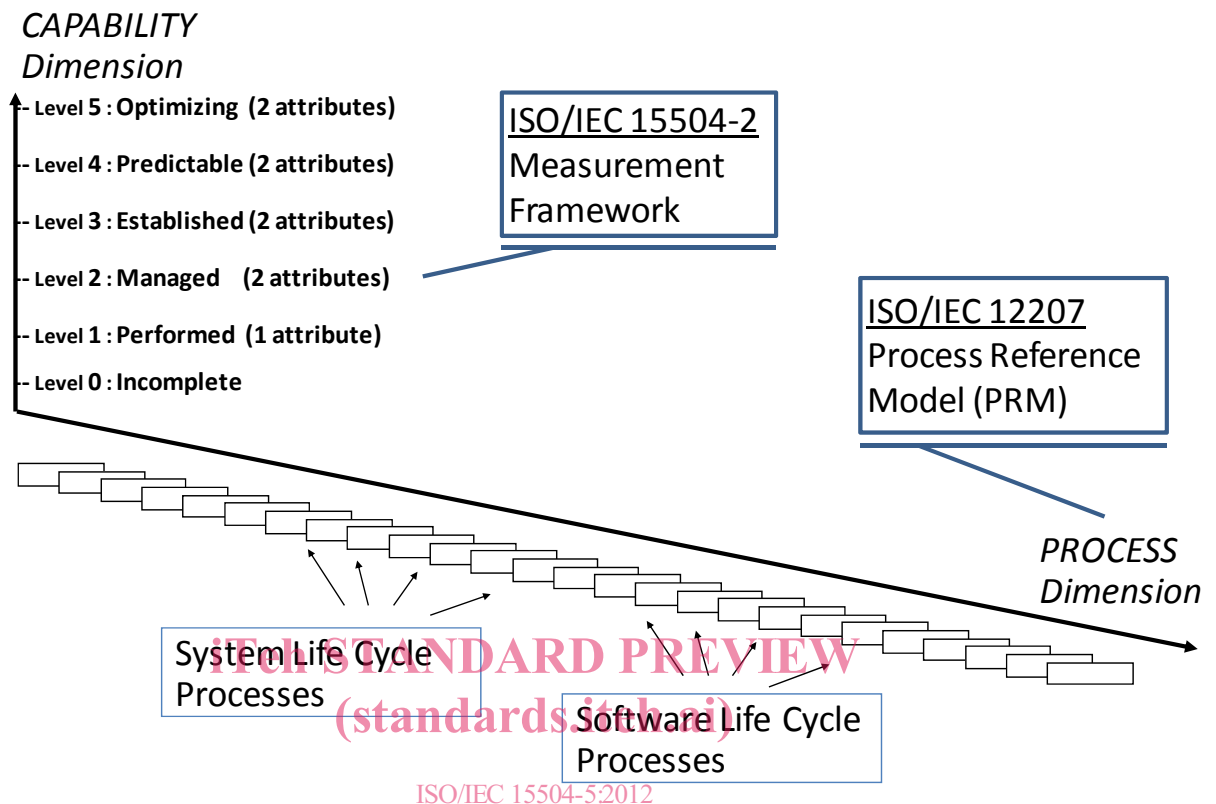


Figure 1 — Relationship between the Process Assessment Model and its inputs

4.2 Structure of the exemplar Process Assessment Model

This clause describes the detailed structure of the Process Assessment Model and its key components.

This Process Assessment Model expands upon the Process Reference Model by adding the definition and use of assessment indicators. Assessment indicators comprise indicators of process performance and process capability and are defined to support an assessor's judgment of the performance and capability of an implemented process.

Clause 5, together with its associated Annex B, describes the components of the process dimension, and clause 6 describes the components of the capability dimension. Annex A provides a demonstration of conformity that meets the requirements of ISO/IEC 15504-2.

ISO/IEC 15504-2 requires that processes included in a Process Reference Model satisfy the following:

"The fundamental elements of a Process Reference Model are the set of descriptions of the processes within the scope of the model. These process descriptions shall meet the following requirements:

- a) *A process shall be described in terms of its Purpose and Outcomes.*
- b) *In any description the set of process outcomes shall be necessary and sufficient to achieve the purpose of the process.*
- c) *Process descriptions shall be such that no aspects of the measurement framework as described in clause 5 of this International Standard beyond level 1 are contained or implied."*

As processes are derived directly from ISO/IEC 12207:2008, these requirements are satisfied.

The Process Assessment Model includes processes, which are grouped in two process categories, similar to the process categories defined in ISO/IEC 12207:2008, which are:

- the System life cycle processes category; and
- the Software life cycle processes category.

Within a process category, processes are grouped at a second level according to the type of activity they address: the processes included in the same group contribute to a complementary area. These groups are defined in order to help assessors in defining the assessment scope in term of process selection.

4.2.1 Processes

Figure 2 lists the processes from ISO/IEC 12207:2008 that are included in the process dimension of the exemplar Process Assessment Model, and show their classification (for the purpose of this Process Assessment Model) into Process Categories and Process Groups.

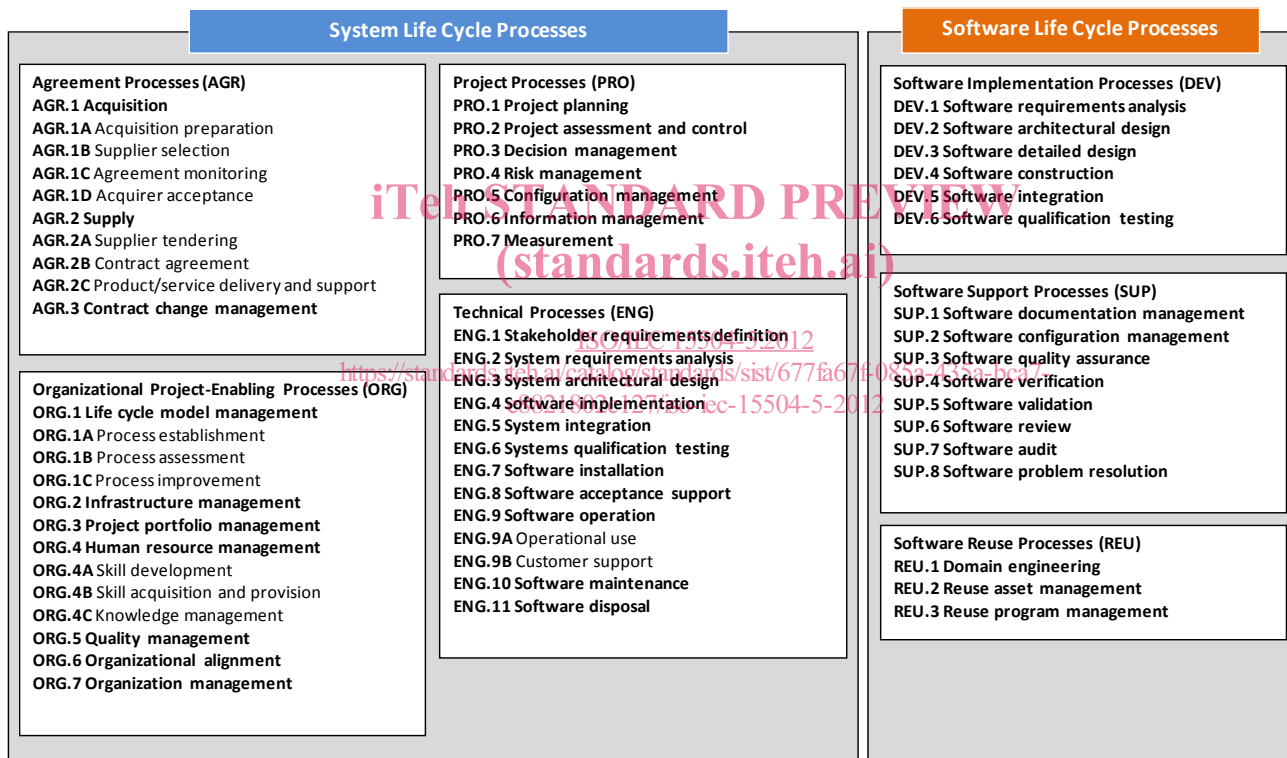


Figure 2 — Process Categories and Process Groups

The description of each Process Group includes a characterization of the processes it contains, followed by a list of the processes. Each process belonging to a Group is identified with a Process Identifier [ID] consisting of the Group abbreviated name and a sequential number of the process in that Group.

The Process Categories and Process Groups are described in more detail below.

4.2.1.1 System Life Cycle Processes Category

The **System Life Cycle Processes** consist of processes that serve primary parties during the life cycle of a system or software product. A primary party initiates or performs the development, operation, or maintenance of products. These primary parties are the acquirer, the supplier, the developer, the operator, and the maintainer of products.

The System Life Cycle Processes Category contains the following four groups of processes:

- the Agreement Processes group;;
- the Organizational Project-Enabling Processes group;
- the Project Processes group;
- the Technical Processes group.

The **Agreement Processes** (AGR) define the activities necessary to establish an agreement between two organizations. If the Acquisition Process is invoked, it provides the means for conducting business with a supplier of products that are supplied for use as an operational system, of services in support of an operational system, or of elements of a system being developed by a project. If the Supply Process is invoked, it provides the means for conducting a project in which the result is a product or service that is delivered to the acquirer. [ISO/IEC 12207:2008]

This group includes the processes listed in Table 1.

NOTE: A supplier may also act as a customer when acquiring a product and/or service from another supplier.

Table 1 — System Life Cycle Processes - Agreement Processes

Process Identification	Process name	Source
AGR.1	Acquisition	ISO/IEC 12207:2008, 6.1.1
AGR.1A	Acquisition preparation (subprocess)	ISO/IEC 12207:2008, B.3.1.1
AGR.1B	Supplier selection (subprocess)	ISO/IEC 12207:2008, B.3.1.2
AGR.1C	Agreement monitoring (subprocess)	ISO/IEC 12207:2008, B.3.1.3
AGR.1D	Acquirer acceptance (subprocess)	ISO/IEC 12207:2008, B.3.1.4
AGR.2	Supply	ISO/IEC 12207:2008, 6.1.2
AGR.2A	Supplier tendering (subprocess)	ISO/IEC 12207:2008, B.3.2.1
AGR.2B	Contract agreement (subprocess)	ISO/IEC 12207:2008, B.3.2.2
AGR.2C	Product/service delivery and support (subprocess)	ISO/IEC 12207:2008, B.3.2.3
AGR.3	Contract change management	ISO/IEC 12207:2008, F.3

The **Organizational Project-Enabling Processes** (ORG) manage the organization's capability to acquire and supply products or services through the initiation, support and control of projects. They provide resources and infrastructure necessary to support projects and ensure the satisfaction of organizational objectives and established agreements. They are not intended to be a comprehensive set of business processes that enable management of the organization's business. [ISO/IEC 12207:2008]

This group includes the processes listed in Table 2.

Table 2 — System Life Cycle Processes - Organizational Project-Enabling Processes

Process Identification	Process name	Source
ORG.1	Life cycle model management	ISO/IEC 12207:2008, 6.2.1
ORG.1A	Process establishment (subprocess)	ISO/IEC 12207:2008, B.3.3.1
ORG.1B	Process assessment (subprocess)	ISO/IEC 12207:2008, B.3.3.2
ORG.1C	Process improvement (subprocess)	ISO/IEC 12207:2008, B.3.3.3
ORG.2	Infrastructure management	ISO/IEC 12207:2008, 6.2.2
ORG.3	Project portfolio management	ISO/IEC 12207:2008, 6.2.3
ORG.4	Human resource management	ISO/IEC 12207:2008, 6.2.4
ORG.4A	Skill development (subprocess)	ISO/IEC 12207:2008, B.3.4.1
ORG.4B	Skill acquisition and provision (subprocess)	ISO/IEC 12207:2008, B.3.4.2
ORG.4C	Knowledge management (subprocess)	ISO/IEC 12207:2008, B.3.4.3
ORG.5	Quality management	ISO/IEC 12207:2008, 6.2.5
ORG.6	Organizational alignment	ISO/IEC 12207:2008, F.1
ORG.7	Organization management	ISO/IEC 12207:2008, F.2

(standards.iteh.ai)

There are two categories of the **Project Processes** (PRO). The Project Management Processes are used to plan, execute, assess and control the progress of a project. The Project Support Processes support specialized management objectives. [ISO/IEC 12207:2008]

The Project Management Processes (PRO.1 and PRO.2) are used to establish and evolve project plans, to assess actual achievement and progress against the plans and to control execution of the project through to fulfilment. Individual Project Management Processes may be invoked at any time in the life cycle and at any level in a hierarchy of projects, as required by project plans or unforeseen events. The Project Management Processes are applied with a level of rigor and formality that depends on the risk and complexity of the project.

The Project Support Processes (PRO.3, PRO.4, PRO.5, PRO.6 and PRO.7) provide a specific focused set of tasks for performing a specialized management objective. They are all evident in the management of any undertaking, ranging from a complete organization down to a single life cycle process and its tasks.

This group includes the processes listed in Table 3.

Table 3 — System Life Cycle Processes - Project Processes

Process Identification	Process name	Source
PRO.1	Project planning	ISO/IEC 12207:2008, 6.3.1
PRO.2	Project assessment and control	ISO/IEC 12207:2008, 6.3.2
PRO.3	Decision management	ISO/IEC 12207:2008, 6.3.3
PRO.4	Risk management	ISO/IEC 12207:2008, 6.3.4
PRO.5	Configuration management	ISO/IEC 12207:2008, 6.3.5
PRO.6	Information management	ISO/IEC 12207:2008, 6.3.6
PRO.7	Measurement	ISO/IEC 12207:2008, 6.3.7

The **Technical Processes** (ENG) are used to define the requirements for a system, to transform the requirements into an effective product, to permit consistent reproduction of the product where necessary, to use the product, to provide the required services, to sustain the provision of those services and to dispose of the product when it is retired from service.

The Technical Processes define the activities that enable organizational and project functions to optimize the benefits and reduce the risks that arise from technical decisions and actions. These activities enable products and services to possess the timeliness and availability, the cost effectiveness, and the functionality, reliability, maintainability, producibility, usability and other qualities required by acquiring and supplying organizations.

They also enable products and services to conform to the expectations or legislated requirements of society, including health, safety, security and environmental factors. [ISO/IEC 12207:2008]

This group includes the processes listed in Table 4.

Table 4 — System Life Cycle Processes - Technical Processes

Process Identification	Process name	Source
ENG.1	Stakeholder requirements definition	ISO/IEC 12207:2008, 6.4.1
ENG.2	System requirements analysis	ISO/IEC 12207:2008, 6.4.2
ENG.3	System architectural design	ISO/IEC 12207:2008, 6.4.3
ENG.4	Software implementation	ISO/IEC 12207:2008, 7.1.1
ENG.5	System integration	ISO/IEC 12207:2008, 6.4.5
ENG.6	Systems qualification testing	ISO/IEC 12207:2008, 6.4.6
ENG.7	Software installation	ISO/IEC 12207:2008, 6.4.7
ENG.8	Software acceptance support	ISO/IEC 12207:2008, 6.4.8
ENG.9	Software operation	ISO/IEC 12207:2008, 6.4.9
ENG.9A	Operational use (subprocess)	ISO/IEC 12207:2008, B.3.5.1
ENG.9B	Customer support (subprocess)	ISO/IEC 12207:2008, B.3.5.2
ENG.10	Software maintenance	ISO/IEC 12207:2008, 6.4.10
ENG.11	Software disposal	ISO/IEC 12207:2008, 6.4.11

4.2.1.2 Software Life Cycle Processes Category

The **Software Life Cycle Processes** consist of software specific processes that serve the stakeholders during the life cycle of a software product.

The Software Life Cycle Processes Category contains the following three groups of processes:

- the Software Implementation Processes group;
- the Software Support Processes group;
- the Software Reuse Processes group.