



DPC: 19/30379729 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

DRAFT INTERNATIONAL STANDARD

ISO/IEC DIS 23396

ISO/IEC JTC 1/SC 7

Secretariat: **BIS**

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2019-09-11

Systems and software engineering — Capabilities of review tools

ICS: 35.080

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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
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Email: copyright@iso.org
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Foreword

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

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

Introduction

It is widely recognized that almost all software development organizations need to improve the quality of software at an appropriate cost and review is one important means. Applying reviews early in the lifecycle is known to reduce the amount of unnecessary rework in regular projects. This is because problem detection in upstream requires less cost than detection of problems by performing tests in downstream processes. By conducting the review in this way, it is possible to detect problems early, evaluate alternatives, improve organizational and personal processes, and improve work outcomes. ISO/IEC 20246:2017 specifies a standard process for work product reviews.

In situations where the number of items pointed out in the review exceeds 1000, support tools are indispensable to cope with these problems without fail. Indeed, many “review tools” are provided. For example, there is a relatively simple one that allows you to add reminders as if posted it using the macro function of document creation. On the other hand, there are tools to support the progress management of the entire project, assuming that dozens of reviewers point out in the large-scale development and monitor the status of the review implementation status and pointed out matters, respectively. From such a wide range of review tools, it is required to choose a review support tool suitable for the situation of the project.

In large organizations, it is very important to select appropriate tools from among various kinds of review tools. It is essential that the selected tool has a high degree of fairness and is evaluated according to public standards and selected. For this purpose, the standard ISO/IEC 20741 on the process of evaluation and selection of software engineering tools was published in 2017. However, this ISO/IEC 20741 does not prescribe standard capabilities specific to reviews because it is generalized without depending on a specific tool field.

This document aims to define the capabilities of review support tools and to select the appropriate tool in combination with the standard ISO/IEC 20741 for tool evaluation and selection (see [Annex E](#)). The review support tool assumed in this document supports the entire process specified in ISO/IEC 20246. For example, capabilities which support personal activities such as viewing and pointing out deliverables are necessary, and capabilities which support group activities such as reporting of situations are necessary (see [Annex D](#)). It is assumed that the check work itself such as the source code check defined in the ISO/IEC 30130 test tool is not included, and it is assumed that humans are checking.

Systems and software engineering — Capabilities of review tools

1 Scope

This document specifies the capabilities of a tool to support review work.

The evaluation and selection of the review tools are performed in accordance with ISO/IEC 20741 which defines the general evaluation selection process and evaluation characteristics. This document gives a standard of capabilities specific to review tools in the process. By using these two standards together, it is possible to derive objective and reasonable results of the evaluation and selection of review tools.

The review work is based on the process, activities, and tasks defined in ISO/IEC 20246. It is also assumed that the review targets are defined in ISO/IEC 20246. The review work in this document is assumed not to be performed by a 3rd party, but within a project.

The review tool capabilities specified in this document harmonize with the review process defined in ISO/IEC 20246. The standard does not include automated process, activities or tasks for conducting reviews such as automated source code checkers defined in ISO/IEC 30130.

Issues which are identified in the review are recorded and managed by the tool, but defects found in tests and issues found in general except for reviews are out of the scope.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 20741:2017, *Systems and software engineering — Guideline for the evaluation and selection of software engineering tools*

ISO/IEC 20246:2017, *Software and systems engineering — Work product reviews*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 20246 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 entity

data concept that may have attributes and relationships to other entities

[SOURCE: ISO/TR 25100:2012]

3.2 review entity

entity which appears in review process

3.3

review folder

entity for binding one or more related reviews, including a list of the reviews and information common to the reviews

Note 1 to entry: The information common to the reviews can include information on members who can participate in or organize the reviews, and information on the classification given to the issues identified during the reviews.

4 Object Model for Review Tools

4.1 Overview of the object model

The overall structure of object model of review consists of the following elements:

- Review Process; a set of processes defined by ISO/IEC 20246,
- Review Entity; a set that represents identifiable information which appears in Review Process and described as a class in the object model, and
- Review Tool; a tool supports to create, refer, update and delete Review Entity.

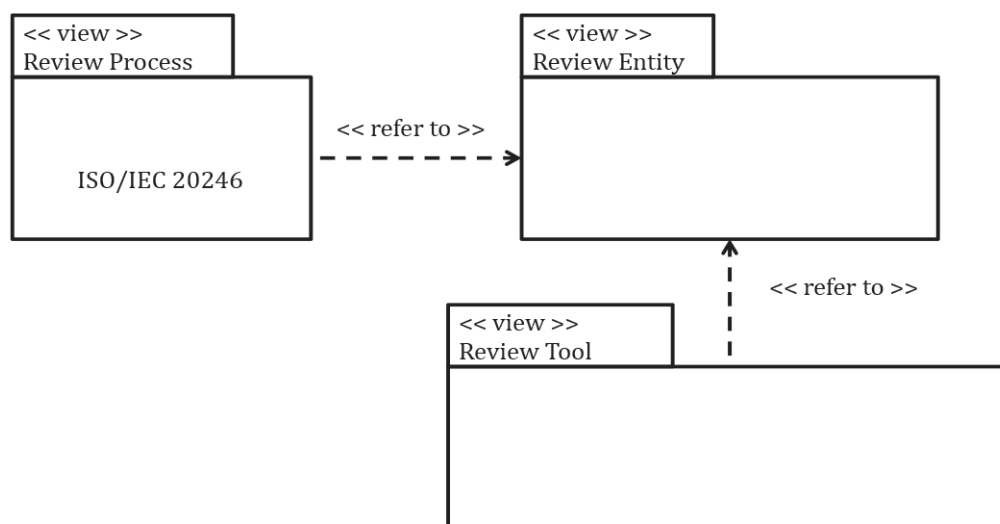


Figure 1 — Overall structure of object model of review

The object model diagrams, [Figure 1](#) to [Figure 3](#), are described using UML 2 (ISO/IEC 19505-2:2012, Information technology – Object Management Group Unified Modelling Language (OMG UML) – Part 2: Superstructure).

An object model for review tools could be identified to define tool capabilities by its input, process, and output.

4.2 Object model of review entities

ReviewFolder in this object model (hereinafter referred as ReviewFolder) stands for a review folder.

Review in this object model (hereinafter referred as Review) is an entity representing a single review in which all information such as a list of work products to be reviewed, a list of participants, and a list of issues identified during the review is recorded.

WorkProduct in this object model (hereinafter referred as WorkProduct) is an entity representing a work product which defined in ISO/IEC 20246.

Member in this object model (hereinafter referred as Member) is an entity representing a member who participates in or organizes the review. It represents all roles defined in ISO/IEC 20246 such as author, review leader, and reviewer.

A single review is usually carried out on one or more WorkProduct by participants selected from Member.-

IssueByReview in this object model (hereinafter referred as IssueByReview) is an entity representing an issue which is identified in the review. However, defects which are found in tests or problems which are found in general except for reviews are not included in IssueByReview.

NOTE 1 Issue is defined in ISO/IEC 20246.

PlaceOfIssueByReview in this object model (hereinafter referred as PlaceOfIssueByReview) is an entity representing a place where the issue is identified.

NOTE 2 There are two reasons why detection place of issues are set as independent entities on the model. The first reason is that the relationship between WorkProduct and IssueByReview is n to n. That is, the same IssueByReview may be given to more than one PlaceOfIssueByReview, and multiple IssueByReview may be given to the same PlaceOfIssueByReview. The second reason is that the capability to support the discovery of the issue detection place is decisively important on the tool.

WorkProduct are usually supplied to reviews via external configuration management tools. Also, IssueByReview may provide information to external analytical tools.

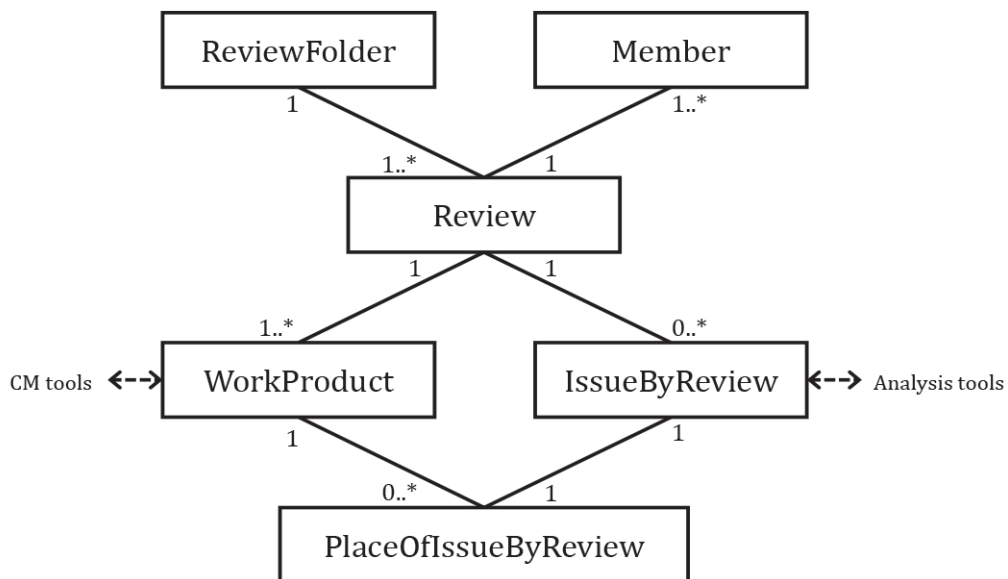


Figure 2 — Entities of review

The relationship between the entities described here and the activities defined in ISO/IEC 20246 is shown in [Annex B](#).

4.3 Category of capabilities for review tools

On the object model of the review entity, capabilities are categorized into groups according to the group of entities to be handled (see [Figure 3](#)).

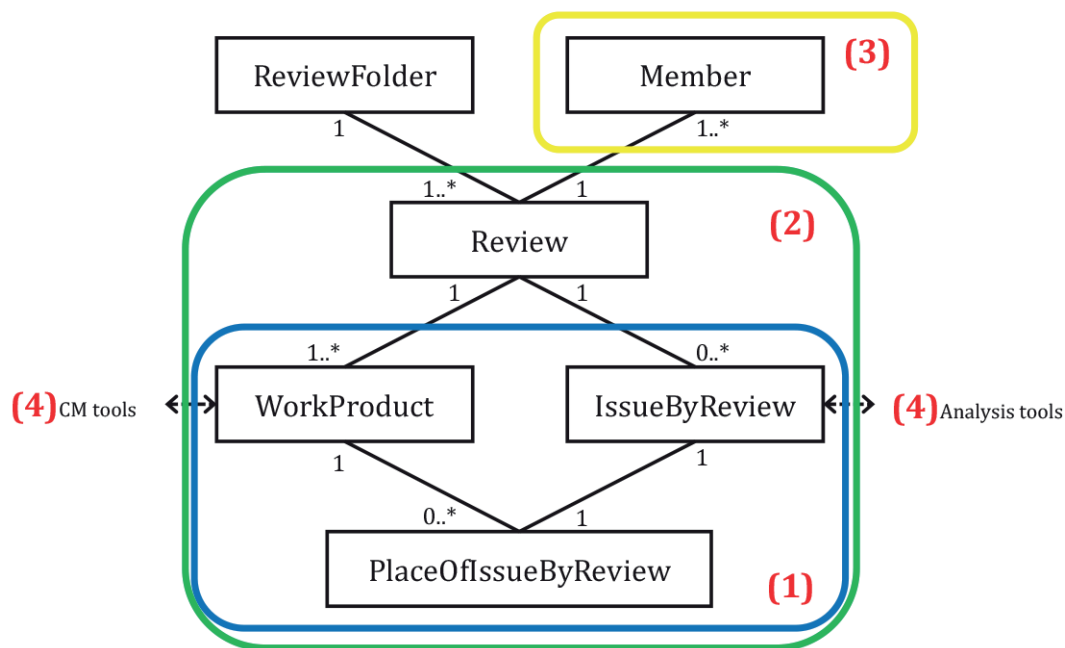


Figure 3 — Category of capabilities

1) IssueByReview management

It is a set of capabilities of managing individual IssueByReview identified during the review of a specific WorkProduct, and generates and updates IssueByReview Entity. At the same time, accompanying pointing PlaceOfIssueByReview are also generated and updated.

This category is required for individual review and issue communication and analysis, such as supporting the easy detection of issues, recording of issues, recording of the status of issues, communication of issues, and recording of solutions. Furthermore, it is important that the records can be used for monitoring the status of each issue and analysing the progress of review as a whole.

2) Review metrics collection and report output

It is a set of capabilities to collect and compile information related to review metrics related to a single review and capabilities to create a review report. Review rate, reviewer progress rate, and reviewer completion criteria are also managed by this entity.

For projects where the number of tasks is four digits, it is not realistic to manually manage them, and error is easily mixed, so support by tools is indispensable.

3) Human communication support

It is a set of capabilities to support communication between review organizers, review participants, review participants, such as messaging, chat, and mail distribution of review holding information.

Usually, since multiple reviewers conduct individual reviews at different places, it is important to support communication suitable for review in order to avoid duplication of problems and promote new discoveries by problems detected by others.

4) Linkage with other tools

It is a set of capabilities to import / export the information of each Entity.