
Software and systems engineering — Work product reviews

Ingénierie du logiciel et des systèmes — Revue des produits de travail

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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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.

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

Introduction

The purpose of this document is to provide an International Standard that defines work product reviews, such as inspections, reviews and walkthroughs that can be used at any stage of the software and systems life cycle. It can be used to review any system or software work product. This document defines a generic process for work product reviews that can be configured based on the purpose of the review and the constraints of the reviewing organization. The intent is to describe a generic process that can be applied both efficiently and effectively by any organization to any work product.

The main objectives of reviews are to detect issues, to evaluate alternatives, to improve organizational and personal processes, and to improve work products. When applied early in the life cycle, reviews are typically shown to reduce the amount of unnecessary rework on a project. The work product review techniques presented in this document can be used at various stages of the generic review process to identify defects and evaluate the quality of the work product.

Review documents that are produced during work product reviews are defined in [Annex A](#).

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Software and systems engineering — Work product reviews

1 Scope

This document establishes a generic framework for work product reviews that can be referenced and used by all organizations involved in the management, development, test and maintenance of systems and software. It contains a generic process, activities, tasks, review techniques and documentation templates that are applied during the review of a work product. A work product is any artefact produced by a process. This document defines work product reviews that can be used during any phase of the life cycle of any work product. This document is intended for, but not limited to, project managers, development managers, quality managers, test managers, business analysts, developers, testers, customers and all those involved in the development, testing and maintenance of systems and software.

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/IEEE 24765, *Systems and software engineering — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC/IEEE 24765 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

ad hoc reviewing

unstructured independent review technique

3.2

author check

informal review performed by the author of the work product

3.3

buddy check

informal review performed independently by a colleague of the author

3.4

checklist-based reviewing

review technique guided by a list of questions or required attributes

3.5

formal review

form of review that follows a defined process with formal documented output

3.6

informal review

form of review that does not follow a defined process and has no formal documented output

3.7
informal group review

informal review performed by three or more persons

3.8
inspection

formal review of a work product to identify issues, which uses defined team roles and measurement to improve the review process

EXAMPLE Fagan Inspections^[7] are a specific type of inspection and code inspections are used to review program source code.

3.9
issue

observation that deviates from expectations

EXAMPLE Potential defect, improvement or point needing clarification.

3.10
milestone review

formal review of a work product and supporting evidence used to determine its acceptability for use in the next stage of development or for delivery

Note 1 to entry: The requirement for this form of review is normally specified in the project plan.

3.11
page-by-page reviewing

technique where reviewers review a work product in a sequential order

3.12
pair review

informal review of a work product performed by two suitably qualified people other than the author working together

3.13
peer desk check

informal review where the author and a colleague walk through a work product

3.14
peer review

review of work products performed by others qualified to do the same work

3.15
perspective-based reading

form of role-based reviewing that uses checklists and involves the creation of prototype deliverables to check the completeness and other quality characteristics of the work product

3.16
role-based reviewing

technique where reviewers review a work product from the perspective of different stakeholder roles

EXAMPLE Typical stakeholder roles include specific user types, such as work product maintainer, tester and developer.

3.17
scenario-based reviewing

technique where the review is guided by determining the ability of the work product to address specific scenarios

3.18**technical review**

formal peer review of a work product by a team of technically-qualified personnel that examines the suitability of the work product for its intended use and identifies discrepancies from specifications and standards

Note 1 to entry: Technical review may also provide recommendations of alternatives and examination of various alternatives.

3.19**walkthrough**

formal review in which an author leads members of the review through a work product, and the participants ask questions and make comments about possible issues

3.20**work product**

artefact produced by a process

EXAMPLE Project plan, requirements specification, design documentation, source code, test plan, test meeting minutes, schedules, budgets, and incident reports.

Note 1 to entry: A subset of the work products can be baselined to be used as the basis of further work and some will form the set of project deliverables.

4 Conformance**4.1 Intended usage**

The normative requirements in this document are contained in [Clause 6](#) and [Annex A](#). It is recognized that particular projects or organizations may not need to use all of the techniques defined by this document. Therefore, implementation of this document typically involves selecting a set of techniques suitable for the project or organization. There are two ways that an organization or individual can claim conformance to the provisions of this document. The organization or individual shall assert whether full or tailored conformance to this document is claimed.

4.2 Full conformance

Full conformance is achieved by demonstrating that all of the requirements (i.e. "shall" statements) of the work product review process defined in [Clause 6](#) and the review documentation annex of this document have been satisfied.

4.3 Tailored conformance

When this document is used as a basis for establishing a review process that does not qualify for full conformance, the subset of activities for which tailored conformance is claimed, is recorded. Tailored conformance is achieved by demonstrating that all of the requirements (i.e. "shall" statements) for the recorded subset of activities have been satisfied.

Where tailoring occurs, justification shall be provided (either directly or by reference), whenever an activity defined in [Clause 6](#) of this document is not followed. All tailoring decisions shall be recorded with their rationale, including the consideration of any applicable risks. Tailoring decisions shall be agreed by the relevant stakeholders.

5 Work product reviews

5.1 Overview

Work product reviews are performed on many projects, typically as a means of contributing to the early detection of defects, so that these defects can be removed as early as possible thus reducing unnecessary rework. In practice, reviews are performed for a variety of purposes in addition to defect detection (examples are listed in [C.1.2.1](#)).

Reviews can be classified in a number of ways. In this document, reviews are classified as either formal or informal. Many review techniques can be used over the course of a review, such as role-based reviewing for individual review and checklist-based reviewing during a review meeting.

The generic process for conducting work product reviews (defined in [Clause 6](#)) includes a number of selectable attributes (including review techniques). This allows users to configure their specific review type according to their unique situation. These attributes are described in detail in [Annex C](#). This configuration of the generic process allows users to define reviews that suit their purpose while still conforming to their constraints in the most effective and efficient manner, rather than forcing them to choose a specific named review type that they cannot practically use in full.

Historically in the literature a number of distinct review types have been defined but some differ only in the extent to which a particular attribute is emphasized (these types are listed in [5.3](#) and the mapping between the characteristics and review types is provided in [Annex D](#)). For example, some believe the difference between inspection and technical review simply to be that inspection requires process improvement.

5.2 Review attributes

The following is a list of review attributes that can be used to define the review to be performed. [Annex C](#) provides more detail on each of the attributes.

- Purpose (see [C.1.2.1](#));
- Roles (see [C.1.2.2](#));
- Individual review techniques (see [C.1.2.3](#));
- Optional activities (see [C.1.2.4](#));
- Number of reviewers (see [C.1.2.5](#));
- Planned number of reviews (see [C.1.2.6](#));
- Formal reporting (see [C.1.2.7](#));
- Training required (see [C.1.2.8](#));
- Review improvement (see [C.1.2.9](#));
- Entry and exit criteria (see [C.1.2.10](#)).

[Annex F](#) provides guidelines on the selection of review attributes for different work product types and work product formats.

5.3 Review types

The following is a list of review types commonly referenced in the literature^[13] and found in IEEE 1028. [Annex E](#) describes the alignment of the activities defined in this document with the procedures of

IEEE 1028-2008. [Annex D](#) provides more detail on each of the types and maps the relevant attributes from [5.2](#) to the different review types.

- Author check;
- Buddy check;
- Informal group review;
- Inspection;
- Milestone review;
- Pair review;
- Peer desk check;
- Technical review;
- Walkthrough.

[Annex G](#) provides examples of how each review type can be used within specific software/systems development life cycle models. Users of this document are not restricted to using the above review types. They can also use hybrid types based on selected attributes applied to the generic review process according to their needs.

6 Work product review process

6.1 Overview

The Work Product Review Process comprises activities for the review of work products (see [Figure 1](#)).

The process shown in [Figure 1](#) is not always performed on “complete” work products, but can be performed on parts of work products, and in this situation these activities will typically be invoked a number of times to complete the review for a complete work product. Thus, the process shown in [Figure 1](#) can be applied more than once on a single work product.

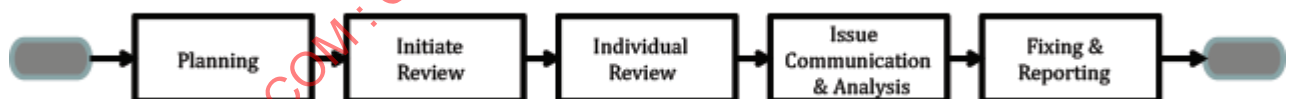


Figure 1 — Work Product Review Process

6.2 Purpose

The purpose of the Work Product Review Process is to provide a structured but flexible framework from which review processes (both formal and informal) may be tailored for specific contexts and purposes.

6.3 Outcomes

As a result of the successful implementation of the Work Product Review Process:

- a) defects/issues in the work product are identified;
- b) quality characteristics of the work product are evaluated;

NOTE A list of quality characteristics can be found in the ISO/IEC 25000 series of standards.

- c) reviewers have gained knowledge about the work product;
- d) consensus on decisions made has been reached;
- e) new ideas have been generated;
- f) updates to the work product are made;
- g) participants have identified potential improvements in their working practices.

6.4 Activities and tasks

The person(s) responsible for the work product review shall implement the following activities and tasks in accordance with applicable organization policies and procedures with respect to the Work Product Review Process.

6.4.1 Planning

This activity consists of the following tasks:

- a) The scope of the review, which comprises the purpose, the work product to be reviewed, quality characteristics to be evaluated, areas to focus on, exit criteria, supporting information such as standards, effort and the timeframes for the review, shall be defined.

NOTE 1 The work product to be reviewed can be part of a larger work product.

EXAMPLE 1 Areas to focus on can be specific features, non-functional attributes or selected pages.

- b) The review characteristics shall be identified and agreed.

EXAMPLE 2 Review characteristics can include review activities, roles, effort, individual review techniques and checklists.

NOTE 2 The responsibility for identifying and agreeing the review characteristics usually involves roles such as the review leader, management and reviews coordinator as defined in [C.1.2.2](#).

- c) The review participants, along with their expected roles, shall be identified and agreed.

6.4.2 Initiate review

This activity consists of the following tasks:

- a) Required review materials shall be distributed to review participants.

EXAMPLE Review materials can include, but are not limited to, the work product, checklists, review guidelines and the baseline specification.

- b) The review leader shall communicate the scope and characteristics of the review to the review participants.
- c) The review leader shall communicate the roles, responsibilities and focus to each review participant.
- d) The author (or a suitably qualified person) may describe the work product under review.

NOTE 1 Tasks b), c), and d) can be performed at an overview meeting.

NOTE 2 The decision to hold an overview meeting typically depends on factors such as whether the reviewers:

- have previously participated in or been trained in formal reviews;
- know and understand the review process to be used;

- understand its objectives (e.g. documenting issues versus proposing resolutions);
 - are familiar with the concept of assigned roles, the requirements of their specific roles, the classification system for issues and the forms and tools (see [Annex I](#)) to be used in the process;
 - require additional background information about the work product or its context.
- e) Training for reviewers may be arranged.

6.4.3 Individual review

This activity consists of the following tasks:

- a) Each reviewer shall perform a review to identify issues with the work product.

NOTE 1 Issues will typically be documented in an Issue Log (as described in [A.2](#)) and will be classified in terms of severity.

NOTE 2 Issues can be supported by proposed changes.

6.4.4 Issue communication and analysis

This activity consists of the following tasks:

- a) Identified issues shall be communicated.

NOTE 1 If a review meeting is held, then issues can be voiced at the meeting or can be sent for collation and prioritization prior to the meeting.

NOTE 2 If a review meeting is not held, then issues are typically sent to the individual performing the analysis.

- b) Previously identified issues, and any new issues identified during this activity, shall be analysed to assign them a status based on the subsequent action to be taken on them.

EXAMPLE 1 Typical examples of issue status are “rejected”, “issue to be noted but no action” and “issue to be addressed”.

- c) Issues shall be assigned to an appropriate individual or team based on their status.

NOTE 3 In an informal review the assignment and status of an issue do not need to be documented.

EXAMPLE 2 This can include the assignment of issues to work product authors or individuals (or teams) external to the review (where an issue relates to supporting documentation, such as an organization-wide standard).

- d) The quality characteristics of the work product under review shall be evaluated and, along with other relevant criteria, used to make the review decision.

EXAMPLE 3 Relevant criteria used to make the review decision can include the time or budget available.

EXAMPLE 4 Review decision outcomes typically include whether the reviewed work product will be “used as is”, “updated based on the identified issues and used”, “reworked and re-reviewed” or “discarded”. In the event that the review decision is to discard the work product, then the status of all issues would need to be suitably updated.

NOTE 4 Tasks in this activity can be performed by an individual (such as the author of the work product under review), a reviewer, a number of reviewers, or they can be performed as part of a review meeting.

6.4.5 Fixing and reporting

This activity consists of the following tasks:

- a) Incident reports for those issues that require changes to artefacts other than the work product shall be created and communicated to the assigned person or team.

EXAMPLE 1 If the work product under review is a design specification, then incident reports on supporting documentation, such as the requirements specification and organizational design standards, can be raised.

- b) Issues with a status of requiring a change to the work product shall be actioned.

NOTE 1 This task is normally performed by the author of the work product.

EXAMPLE 2 This task can include further analysis of an issue, implementation of a solution, or a decision not to change the work product.

- c) The completion of review actions on the work product shall be confirmed; otherwise their status shall be updated.

NOTE 2 In an informal review the change of status does not need to be documented.

NOTE 3 Review actions or changes to status can require agreement of the comment originator.

- d) The reviewed work product shall be accepted when the review decision outcome has been satisfied.

NOTE 4 When the review decision outcome has not been satisfied, steps b) and c) will normally be repeated.

NOTE 5 Depending on the level of risk, a meeting of relevant stakeholders might be held to determine the outcome of the review.

- e) The results of the review shall be reported.

6.5 Information items

As a result of carrying out this process, the following information items shall be produced:

- a) Issue Log (see [A.2](#));
- b) Incident Report (see [A.3](#));
- c) Review Report (see [A.4](#)).

NOTE 1 Formal documentation (Issue Log, Incident Reports and Review Report) is not always required and verbal reports can be produced in some situations. Formal documentation is rarely required for the following review types: informal group reviews, author check, buddy check, pair review and peer desk check.

NOTE 2 Issue descriptions or a reference to the Issue Log are typically included in the Review Report.

7 Review techniques

7.1 Overview

This document defines a number of review techniques associated with the various activities that were defined in the generic review process that was described in [Clause 6](#), including techniques for individual reviewing ([7.2](#)) and issue analysis ([7.3](#)).

7.2 Individual reviewing techniques

7.2.1 Overview

The techniques associated with the “Individual Reviewing” activity in [6.4.3](#) are used to identify issues (which might be defects) in the work product under review.

7.2.2 Ad hoc reviewing

Ad hoc reviewing is a very common approach to issue detection by reviewers; it is completely unstructured. Each reviewer is expected to find as many defects as possible of any type, but are provided with little or no guidance on how this task should be performed. Reviewers often read the work product sequentially, on a page-by-page basis, identifying and documenting issues, as they encounter them in the work product. This approach is highly dependent on reviewer skills and often leads to the same issues being identified by different reviewers.

7.2.3 Checklist-based reviewing

Checklist-based reviewing is a systematic approach to identifying issues that is based on checklists. If different reviewers are assigned different checklists, then this provides wider coverage overall and helps prevent the duplication inherent in the ad hoc approach. One disadvantage of using checklists is that some reviewers limit themselves to only considering the checklist entries and ignore other potential issues with the work product under review. Care should be taken to make reviewers aware that they have a wider responsibility than simply following the checklist.

Typically, review checklists take the form of a set of questions based on potential defects, which may be derived from experience within the project, the organization or across the industry as a whole. Checklists should be specific to the type of work product under review. A checklist for a requirements document will be different to one for a design document or a test plan, and may be specific to the methodology used to develop the work product (e.g. there may be different checklist questions for requirements in the form of plain text to those in the form of use cases or user stories). Checklists may also be specific to the application domain of the work product (e.g. a checklist for a banking work product may be based on banking regulations while a checklist for an avionics work product would be based on avionics standards).

Typical problems with checklists are that they are too long and never change. The ideal checklist should be constrained to about 10 entries and regularly updated; as entries become stale and find fewer issues (hopefully because the authors have learned and improved) then they should be replaced with newer entries reflecting issues missed in the recent past. It is possible to enhance the checklist-based approach by using risk information to ensure that those defects that have the highest impact on the business and have the highest probability of occurring are included in the checklists and so are explicitly looked for during the reviews.

7.2.4 Scenario-based reviewing

With scenario-based reviewing, reviewers are provided with structured guidelines on how to read through the work product under review. Where requirements, designs or tests are documented in a suitable format (e.g. use cases) then a scenario-based approach supports reviewers in performing “dry runs” on the work product based on expected usage of the work product. Another form of scenario-based reviewing is based on detecting specific defect types (as with checklist-based reviewing), this is also known as defect-based reading. When used to identify specific defect types, these scenarios provide reviewers with structured reading guidelines on how to identify different fault types, which are more detailed than simple checklist entries.

There is a danger that if this form of review is used in isolation, and thus is constrained to the documented scenarios, other defects that are not specifically targeted by the scenarios will be missed, such as defects of omission, where required functionality is not included in the work product under review.

As with the checklist-based approach, it is possible to enhance the scenario-based approach with risk information to ensure that the most important scenarios to the business and the most frequently used scenarios are reviewed in more depth.

7.2.5 Perspective-based reading (PBR)

According to available research^[17], the most generally effective and efficient form of defect detection for formal reviews is perspective-based reading. In perspective-based reading, reviewers take on different stakeholder viewpoints and review the work product from that stakeholder's viewpoint. The idea is that if all stakeholders are happy with a work product and believe it can be used from their viewpoint then it should be of high quality. Using separate stakeholder viewpoints means that each reviewer can check the work product from their stakeholder's view in more depth with less duplication of effort between reviewers.

Typical stakeholder viewpoints used in PBR are:

- business analyst;
- business owner;
- designer;
- maintainer;
- marketing;
- operations;
- programmer;
- regulator;
- tester;
- user.

It is important that the correct balance of viewpoints is included in the review. For instance, if reviewing a requirements document, then the user, designer and tester viewpoints would normally be the most important to cover. If a system is being built within a highly regulated area, then the regulator viewpoint should be included. If the system is to be long-lived, then the maintainer viewpoint becomes more important.

Not all reviewers can easily take on a new role and so PBR scenarios are used to make this approach easier to use. These scenarios comprise three parts:

- The first part describes the stakeholder view that the reviewer should take during the review.
- The second part describes the high-level product that the stakeholder would be expected to develop from the work product under review (e.g. a tester may be expected to develop an acceptance test plan based on the requirements specification). In PBR the reviewer is often expected to create a first draft of this product to “test” whether it is possible to create it from the information provided in the work product under review (these first drafts can form the basis of subsequent development and testing).
- The third part of the PBR scenario typically comprises a checklist of questions specific to the high-level product developed in the second part.

PBR scenarios are specific to the type of work product under review (e.g. a designer PBR scenario for a requirements specification), but once created should be updated as appropriate to keep them useful (e.g. updating questions in the third part) and reused as needed.

7.2.6 Role-based reviewing

Role-based reviewing is a review technique in which the reviewer evaluates the work product from the perspective of various stakeholder roles, which may be different from their day-to-day role. The roles will be similar to the stakeholder viewpoints used in perspective-based reading (see 7.2.5) and thus the same principles apply.

7.3 Issue analysis techniques

7.3.1 Overview

The techniques associated with the “Issue Communication and Analysis” activity in 6.4.4 are used to analyse raised issues either by an individual or in the context of a review meeting.

7.3.2 Individual analysis

Individual analysis is usually performed on the outputs generated during the “Individual Review” activity in 6.4.3. Initially the issues are gathered from the independent reviewers, and collated and prioritized based on their severity. The issues are analysed to determine appropriate actions to be performed to address them. The result of this analysis is communicated back to the individual who raised the issue.

NOTE 1 This approach is especially useful for distributed teams as an alternative to review meetings.

NOTE 2 If there are sufficient issues of high enough severity, a review meeting can be called.

NOTE 3 This technique is normally performed by the author.

7.3.3 Review meeting techniques

7.3.3.1 Overview

The techniques associated with Review Meetings (which can take place as part of the “Issue communication and analysis” activity in 6.4.4) describe various ways for a group of reviewers to consider previously-raised issues, identify new issues, analyse issues and sometimes decide on how to address these issues depending on the review type.

7.3.3.2 Page-by-page reviewing

Page-by-page reviewing is a review technique in which the participants review the work product in a sequential order, considering previously-identified issues and identifying additional issues, as they encounter them in the work product.

7.3.3.3 Checklist-based reviewing

Checklist-based reviewing is a review technique in which the participants review the work product using a checklist to focus the review on specific aspects of the work product.

7.3.3.4 Role-based reviewing

Role-based reviewing is a review technique in which the participants review the work product from the perspective of various stakeholder roles, which may be different from their day-to-day role.

NOTE Reviewers will often have also used a role-based approach taking on the same stakeholder role to identify issues during individual reviewing.

7.3.3.5 Scenario-based reviewing

Where work products (e.g. requirements, designs or tests) are documented in a suitable format (e.g. use cases), then a scenario-based approach to defect detection may be the most appropriate. With this approach, the reviewers perform “dry runs” on the work product to check whether the correct functionality is described and typical error conditions are handled suitably. There is a danger that scenario-based reviewing is constrained to documented scenarios and so misses defects of omission, where required functionality is not included in the work product under review.

As with the checklist-based approach, it is possible to enhance the scenario-based approach with risk information to ensure that the most important scenarios to the business and the most frequently-used scenarios are reviewed in more depth.

The walkthrough is an example of a review type that is based on the scenario-based reviewing technique, where the author leads the reviewers through the work product content. The attributes of walkthroughs are defined in [Annex D](#).

7.3.4 Group decision making

When the group needs to make decisions, if the best-qualified group members can be identified, then getting them to make group decisions will normally be the most effective approach (giving equal weight to all reviewers' input will normally result in worse decisions).

NOTE When identifying the best-qualified members, different criteria will apply depending on the work product type and purpose of the review.

Annex A (normative)

Review documentation

A.1 Overview

This annex describes the information that shall be included in the Issue Log, Incident Report and Review Report, but use of the nomenclature provided here for the specific records is not mandatory and other terms may be used. In practice, these do not have to be published as single documents, but may be made available in electronic form or may be divided into separate documents or combined with other documents.

Where informal reviews are performed, formal documentation as defined in this annex is not required.

[Table A.1](#) summarizes the normative requirements for these clauses for the information that is unique to each document. Examples of each of these document types are provided in [Annex B](#).

Table A.1 — Summary of normative requirements for the review documentation

Information items (ISO/IEC 20246)	Normative requirement
A.2 Issue Log	
i) Unique identifier	Shall
ii) Date and time	Shall
iii) Description	Shall
iv) Severity	Shall
v) Issue status	Shall
vi) Issue assignment	Shall
vii) Issue resolution	May
A.3 Incident Report	
i) Timing information	Shall
ii) Originator	Shall
iii) Context	Shall
iv) Description of the incident	Shall
v) Severity	Shall
vi) Priority	Shall
vii) Risk	Shall
viii) Status of the incident	Shall
A.4 Review Report	
i) Work product description	Shall
ii) Participants	Should
iii) Summary of review findings	Shall
iv) Review metrics	May
v) Work product appraisal	Shall

A.2 Issue Log

A.2.1 Overview

The Issue Log contains a list of issues identified during individual review.

A.2.2 Document specific information

A.2.2.1 Overview

This information identifies the document and describes its origins and history.

EXAMPLE The information can be placed on an early page in a document, or in a central place if the contents are kept in electronic form, e.g. in a database.

A.2.2.2 Unique identification of document

Uniquely identifies a version of the document.

EXAMPLE The unique identifier can include the title of the document, the date of issue, version, and/or document status (e.g. draft, reviewed, corrected, final).

A.2.2.3 Issuing organization

Specifies the organization responsible for preparing and releasing the document. It may also include the author(s) and the tester(s) if these are not the same.

A.2.2.4 Approval authority

Identifies the designated person(s) who has/have the responsibility for reviewing and signing off on the document (possibly electronically). It may also include the reviewers and pertinent managers.

A.2.2.5 Change history

Includes a log of all of the changes that have occurred to the document since its inception.

EXAMPLE 1 This can include a list including the present version of the document and any predecessor documents containing the unique identification of each document, description of document changes with respect to the previous document in the list, reason for changes, and the name and role of the person making the changes.

EXAMPLE 2 Reasons for changes can include audit comments, team review, and system changes, and person making the change can be document author, project manager, or system owner.

A.2.3 Introduction

Provides explanatory information about the context and structure of the document.

A.2.3.1 Scope

Identifies the extent of the coverage of the subject area by the document, and describes any inclusions, exclusions, assumptions and/or limitations.

A.2.3.2 References

Lists referenced documents and identifies repositories for system, software, and test information. The references may be separated into “external” references that are imposed from outside the organization and “internal” references that are imposed from within the organization.

A.2.3.3 Glossary

Provides a lexicon for the terms, abbreviated terms and acronyms, if any, used in the document.

NOTE This section can be an annex, or it can refer to another document providing a general glossary. All or part of the glossary and/or acronym list can be online, as a separate testing specific glossary or incorporated in a larger organizational glossary (including more terms than just those that are testing related).

A.2.4 Issues

A.2.4.1 Overview

Lists the significant issues identified during the performance of the review. The information recorded about an issue typically increases as the review progresses and more detail about the issue becomes available. For instance, “issue status” and “issue assignment” are typically recorded during the “Issue communication and analysis” activity (see [6.4.4](#)), while the remaining information is typically recorded before this, during the “Individual review” activity (see [6.4.3](#)).

The information for each issue recorded in the Issue Log includes:

A.2.4.2 Unique identifier

Defines the sequential number of the entry in the Issue Log.

A.2.4.3 Date and time

Defines the date and time when the issue was identified.

A.2.4.4 Description

Describes the issue. This may include a reference to the context of the review, such as the scenario, role or checklist entry being used.

NOTE The issue description can include the proposed solution.

A.2.4.5 Severity

Indicates, from the reviewer’s point of view, the depth and breadth of the impact this issue will have on the artefact. This may include an estimate of the time and effort required to fix the associated defect.

NOTE 1 The artefact can be the work product under review or supporting documentation, such as an organization-wide standard.

NOTE 2 The issue severity can be used to list the issues in the Issue Log in order of priority for being addressed.

A.2.4.6 Issue status

Indicates the status of the issue, which is typically assigned during the “Issue communication and analysis” activity (see [6.4.4](#)).

EXAMPLE Typical examples of issue status are “rejected”, “issue to be noted but no action”, “issue to be addressed” and “issue updated due to analysis”.

A.2.4.7 Issue assignment

Indicates who has been assigned responsibility for addressing the issue.

EXAMPLE This would typically be the author for an issue related to the work product under review, or can be a team external to the review, where an issue relates to supporting documentation, such as an organization-wide standard.

A.2.4.8 Issue resolution

Optionally describes the proposed resolution of the issue, where this is not immediately apparent.

NOTE This can be required if more detailed analysis of the issue indicates that a previously agreed review action is found to be inappropriate or insufficient.

A.3 Incident Report

A.3.1 Overview

An incident is reported when an issue cannot be actioned within the current review process or when an issue is identified in an artefact other than the work product under review.

The incident reports may be documented in lists or in tables in a document or using a tool, e.g. a database or a dedicated bug-tracking tool.

The format of an incident report may be defined elsewhere in an organization, for example as part of the Incident Management Process, in which case that definition should be used.

An Incident Report in this context documents an incident recognized during reviewing.

NOTE 1 Incidents can occur, and be reported, in other contexts, e.g. during dynamic testing.

NOTE 2 The information given here is only the information needed when an incident report is first raised. More information can be added to the incident report as it passes through the wider incident management process.

A.3.2 Document specific information

A.3.2.1 Overview

This information identifies the document and describes its origins and history.

EXAMPLE The information can be placed on an early page in a document, or in a central place if the contents are kept in electronic form, e.g. in a database.

A.3.2.2 Unique identification of document

Uniquely identifies a version of the document.

EXAMPLE The unique identifier can include the title of the document, the date of issue, version, and/or document status (e.g. draft, reviewed, corrected, final).

A.3.2.3 Issuing organization

Specifies the organization responsible for preparing and releasing the document. It may also include the author(s).

A.3.2.4 Approval authority

Identifies the designated person(s) who have the responsibility for reviewing and signing off on the document (possibly electronically). It may also include the reviewers and pertinent managers.

A.3.2.5 Change history

Includes a log of all of the changes that have occurred to the document since its inception.

EXAMPLE 1 This can include a list including the present version of the document and any predecessor documents containing the unique identification of each document, description of document changes with respect to the previous document in the list, reason for changes, and the name and role of the person making the changes.

EXAMPLE 2 Reasons for changes can include audit comments, team review, and system changes, and person making the change can be document author, project manager, or system owner.

A.3.3 Introduction

Provides explanatory information about the context and structure of the document:

A.3.3.1 Scope

Identifies the extent of the coverage of the subject area by the document, and describes any inclusions, exclusions, assumptions and/or limitations.

A.3.3.2 References

Lists referenced documents and identifies repositories for system, software, and test information. The references may be separated into “external” references that are imposed from outside the organization and “internal” references that are imposed from within the organization.

A.3.3.3 Glossary

Provides a lexicon for the terms, abbreviated terms and acronyms, if any, used in the document.

NOTE This section can be an annex, or it can refer to another document providing a general glossary. All or part of the glossary and/or acronym list can be online, as a separate testing specific glossary or incorporated in a larger organizational glossary (including more terms than just those that are testing related).

A.3.4 Incident details

The information describing the incident, when it is first recognized and reported, includes:

A.3.4.1 Timing information

Records the date (and possibly the time) when the incident was first observed.

A.3.4.2 Originator

Specifies the names and titles of the individuals who identified the incident.

A.3.4.3 Context

Identifies the context in which the incident was observed.

EXAMPLE This can include:

- the work product (including its unique identifier) in which the incident was observed. In a review context, the item will usually be the work product under review, but it might be a supporting specification or standard;
- the review activity or task being performed when the incident was observed;
- any relevant information about the review activity considered significant by the reviewer, such as the specific individual review technique or checklist being used.

A.3.4.4 Description of the incident

Provides a detailed description of the incident.

Related information and observations that may help to isolate and correct the cause of the incident may be included.

The description may also reference where additional evidence or supporting information can be found to aid in diagnosis of the incident.

A.3.4.5 Severity

Indicates (from the originator's point of view) the depth and breadth of the impact this incident will have on technical and business issues. This may include an estimate of the time and effort required to fix the associated defect.

A.3.4.6 Priority

Provides an evaluation of the urgency for the fix. Most organizations have from three to five categories.

A.3.4.7 Risk

Provides information on the introduction of new risks or changes to the status of existing risks, where applicable.

A.3.4.8 Status of the incident

Identifies the current status of the incident, which will be "Open" or similar when the incident is first raised.

EXAMPLE A common sequence for incidents as they progress through their life cycles would be: "Open", "Approved for resolution", "Assigned for resolution", "Fixed", "Retested with the fix confirmed" and "Closed". Other possible status values can be "Rejected" or "Withdrawn".

A.4 Review Report

A.4.1 Overview

The Review Report provides a summary of the review performed.

A.4.2 Document specific information

A.4.2.1 Overview

This information identifies the document and describes its origins and history.

EXAMPLE The information can be placed on an early page in a document, or in a central place if the contents are kept in electronic form, e.g. in a database.

A.4.2.2 Unique identification of document

Uniquely identifies a version of the document.

EXAMPLE The unique identifier can include the title of the document, the date of issue, version, and/or document status (e.g. draft, reviewed, corrected, final).

A.4.2.3 Issuing organization

Specifies the organization responsible for preparing and releasing the document. It may also include the author(s).

A.4.2.4 Approval authority

Identifies the designated person(s) who have the responsibility for reviewing and signing off on the document (possibly electronically). It may also include the reviewers and pertinent managers.

A.4.2.5 Change history

Includes a log of all of the changes that have occurred to the document since its inception.

EXAMPLE 1 This can include a list including the present version of the document and any predecessor documents containing the unique identification of each document, description of document changes with respect to the previous document in the list, reason for changes, and the name and role of the person making the changes.

EXAMPLE 2 Reasons for changes can include audit comments, team review, and system changes. And person making the change can be document author, project manager or system owner.

A.4.2.6 Introduction

Provides explanatory information about the context and structure of the document:

A.4.2.6.1 Scope

Describes the coverage of the work product by the review, as well as any inclusions, exclusions, assumptions and/or limitations.

A.4.2.6.2 References

Lists referenced documents and identifies repositories for system, software, and test information. The references may be separated into “external” references that are imposed from outside the organization and “internal” references that are imposed from within the organization.

A.4.2.6.3 Glossary

Provides a lexicon for the terms, abbreviated terms and acronyms, if any, used in the document.

NOTE This section can be an annex, or it can refer to another document providing a general glossary. All or part of the glossary and/or acronym list can be online, as a separate testing specific glossary or incorporated in a larger organizational glossary (including more terms than just those that are testing related).

A.4.3 Review report details

The information describing the review includes:

A.4.3.1 Work product description

Provides a description of the work product reviewed.

NOTE This description can simply be a reference to the reviewed work product.

A.4.3.2 Participants

Lists the participants involved in the review process by name and role.

A.4.3.3 Summary of review findings

Provides a summary of the findings gathered during the review.

EXAMPLE 1 The summary can include issues found, issues corrected, process improvement recommendations and overall outcome.

EXAMPLE 2 The summary can include a copy of the Issue Log (see [A.2](#)) or a reference to the Issue Log.

EXAMPLE 3 The summary can include a list of any incidents reported (see [A.3](#)).

A.4.3.4 Review metrics

Provide metrics collected during the review process.

EXAMPLE A summary of the meeting duration, total effort, rework effort, number of issues raised, number of critical defects, and estimated savings in downstream effort or cost.

NOTE [Annex H](#) describes commonly used review metrics to support defect detection and process improvement.

A.4.3.5 Work product appraisal

Indicates whether the reviewed work product will be used as is, requires further updates before being used, will be reworked and re-reviewed, or will be discarded.

Annex B (informative)

Review documentation examples

B.1 Overview

This annex provides an overview of a typical document flow associated with the generic review process and contains examples of the three review documents for both informal and formal reviews.

B.2 Document flow

[Figure B.1](#) shows an example document flow (as shown by the bold black arrows) for the generic review process. Issues are identified during the “Individual review” activity (see [6.4.3](#)), at which time a description and severity are recorded for each issue in the Issue Log. Issues in the Issue Log are analysed during the “Issue communication and analysis” activity (see [6.4.4](#)) and their status (e.g. “issue to be addressed”) and their assignment (e.g. to the work product author) are decided, and these details are also recorded alongside the issue descriptions in the Issue Log. As part of the “Fixing and Reporting” activity, Incident Reports for those issues that require changes to artefacts other than the work product are created and communicated to the relevant people. At the end of the “Fixing and Reporting” activity a Review Report is produced that describes what was done and the results of the review. Typically, this Review Report references both the Issue Log and any Incident Reports created as part of the review (as shown by the dotted arrows).

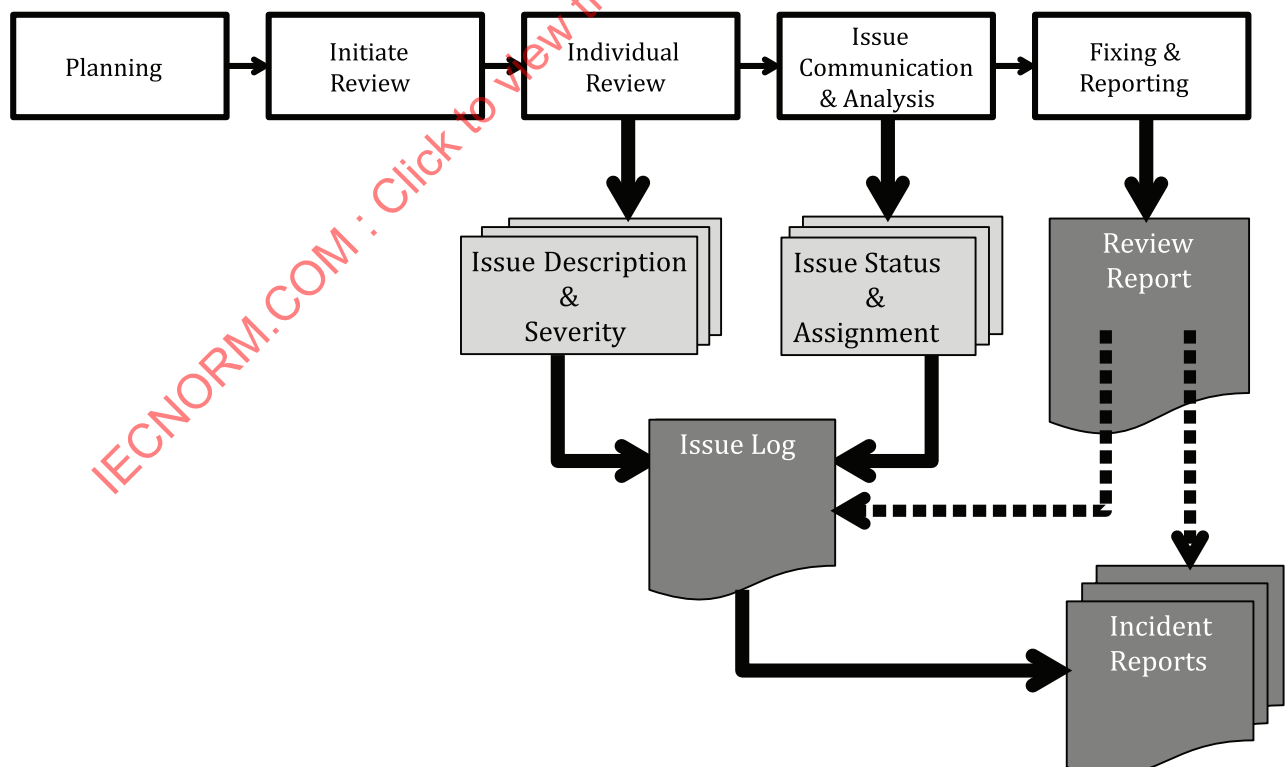


Figure B.1 — Example Review Document Flow

B.3 Example documentation

B.3.1 Overview

It should be noted that the following are examples only, and many variations are possible and likely. The example documentation is based around two example projects:

Big Corporation is a large publication organization producing magazines and books. The Corporation has an internal IT department, which is responsible for all the IT products that are in use by the organization to supporting their business. Projects are run by a single agile team, so there are no projects performed using traditional development methods. The organization has several years of experience working in this way, and finds that it works really well with their needs for new and enhanced IT systems to support the business.

The project featured in this example is the development of a new web-based subscription system allowing people to become subscribers and allowing existing subscribers to change their personal information and order new or extended subscriptions.

Tiny Ltd is a small company that produces advanced analysis equipment for the farming industry. Some of their products are critical, in the sense that wrong analysis results could cause wrong doses of fertilizer (either too much or too little) to be applied to crops. The organization is hence required to produce the equipment according to a specific standard that states requirements concerning production and quality assurance of certain documents and traceability between work product elements.

The project featured in this example is the technical specification of a product called UV/TIT-14 33a. It is an apparatus to measure fertilizer elements and their concentration in earth samples. The apparatus has a user interface working on a PC with a wireless connection to the measuring system.

Not all of the example documents include the sections for Document Specific Information or Introduction; this is because this information is company-specific and the examples focus on the review contents of the documents.

The examples might not be internally consistent; each section is to be regarded as an independent example of the information related to the topic (heading).

The examples are not necessarily complete. Where paragraphs have been left out this is marked by three vertical dots, like this:

.
. .
.

Omitted text is identified with an ellipsis, like this "...".

B.3.2 Example Issue Log — Big Corporation

[Figure B.2](#) is an example of an Issue Log used in Big Corporation. Here the issues are simply highlighted on the user interface design.

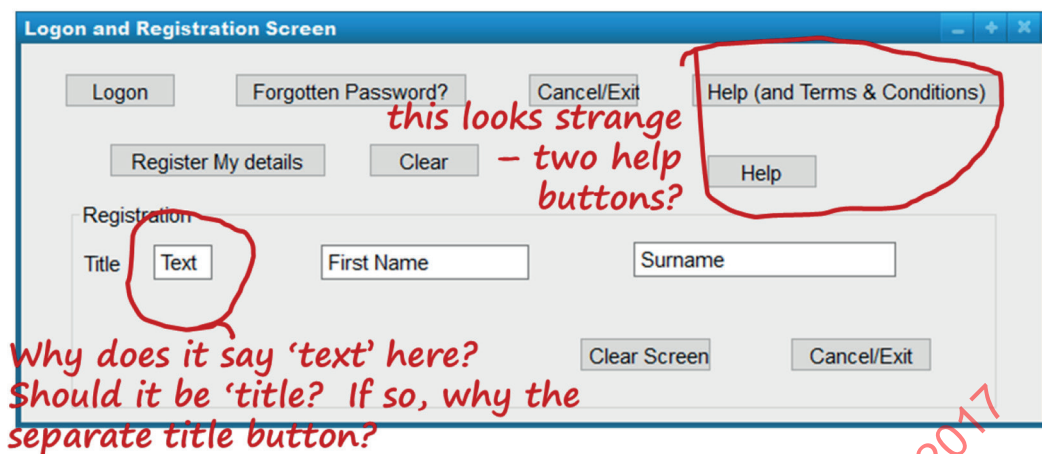


Figure B.2 — Example Issue Log for Big Corporation

B.3.3 Example Issue Log — Tiny Ltd

Table B.1 is an example of an Issue Log used in Tiny Ltd. This is an Issue Log created by an individual reviewer (Jean Kettles) as part of their “Individual Review” of the System Requirements Specification. The fields for “Status” and “Assigned to” will be completed when the issues are analyzed during the “Issue communication and analysis” activity (see 6.4.4).

Table B.1 — Example Issue Log for Tiny Ltd

Issue Log				
Technical Review for System Requirements Specification for UV/TIT-14 33a v1.0				
Issues Found by	Jean Kettles	Date	14th Mar 2015	
ID	Description	Severity	Status	Assigned to
1	The specified maximum number of elements that can be found cannot be handled by the specified concentration algorithm	H	TBD	TBD
2	The results from the concentration algorithm are only required to be displayed to one decimal point — the user spec requires 3 decimal points.	L	TBD	TBD
3	The document revision history is incomplete.	L	TBD	TBD
4	The system specification fails to implement the configuration requirement (3.4.5.12) in the user requirement.	H	TBD	TBD
...				

B.3.4 Example Incident Report — Big Corporation

Table B.2 is an example of an Incident Report used in Big Corporation. Incident Reports are generally only created where an issue cannot be handled by the agile team within the current iteration or when it applies to a product or document external to the agile team.

Table B.2 — Example Incident Report for Big Corporation

Incident Registration Form	
Number	Iteration 10 — Team QQQ #31
Short Title	Payment Protocol Missing Leading Identifier
Product/Document	ACME Web Payment System Protocol Definition (External — ACME Payments Ltd)

Table B.2 (continued)

Status = Open			
Registration created by	Mike Nelson	Date	1/11/15
Severity	High	Priority	Low
Comprehensive description	The protocol definition for payment messages fails to specify that all incoming payment messages must be preceded by %%INC%%, when the default is for payment message to be outgoing.		
Context	Informal Group Review — Team QQQ members on 1/11/15		

B.3.5 Example Incident Report — Tiny Ltd

[Table B.3](#) is an example of an Incident Report used in Tiny Ltd.

Table B.3 — Example Incident Report for Tiny Ltd

Incident Report			
Number	Tiny_Review_00233		
Short title	Field Test Duration Field Too Short		
Work product	User Requirements Specification for UV/TIT-14 33a		
Version (n.m)	1.0		
Status = Open			
Report created by	Amir Khan	Date and time	14th Mar 11.30 am
Issue observed by	Amir Khan	Date and time	17th Mar 11.00 am
Comprehensive description	The user requirement specifies that the input text field for field test duration should be limited to 5 characters, but field tests can exceed 99 hours and so 6 characters are needed.		
Observed during	Walk-through / Review / Inspection / Code and Build / Test / Use		
Observed in	Requirement / Design / Implementation / Test / Operation		
Symptom	Oper. system crash / Program hang-up / Program crash / Input / Output / Total product failure / System error / Other: User requirement specifies an incorrect field length — as this is the basis for the contract and scheduled payments it needs to be recognized and corrected by the customer.		
User impact	High / Medium / Low		
User urgency	Urgent / High / Medium / Low / None		

B.3.6 Example Review Report — Big Corporation

[Table B.4](#) is the Review Report of an Informal Group Review conducted on a prototype new user registration screen.

Table B.4 — Example Review Report for Big Corporation

• Work product description: New user registration screen • Participants: Three experienced reviewers who have worked on similar projects before this. • Summary of review findings: There were 7 issues discovered by the reviewers (as can be seen on the scanned marked-up copy of the prototype ...). • Work product appraisal: A recommendation to address all 7 issues was provided to the user interface design team.
--

NOTE This information can be presented in many different formats, e.g. email or verbally.

B.3.7 Example Review Report — Tiny Ltd

[Table B.5](#) is the Review Report for the technical review of the System Requirements Specification V 0.9 (for UV/TIT-14 33a).

Table B.5 — Example Review Report for Tiny Ltd

Review Report — Technical Review — Sys Reqs Specn V 0.9

Report date: 22 Mar 2015

Reviewed Document: System Requirements Specification V 0.9 for UV/TIT-14 33a

Baseline Document: User Requirements Specification v 2.3 for UV/TIT-14 33 series

Participants: Review Leader and Facilitator: Frank Spencer, Author and Scribe: Betty Fisher, Technical Lead: Tom Jones, Reviewers: Glyn Lewis and Ronnie Wisdom.

Review metrics:

The reviewers reported that they spent an average of 4.7 hours in individual preparation for the review. The review meeting (attended by all participants) lasted 110 min.

Summary of Review:

99 issues were recorded in the Issue Log. Five were rejected leaving 94, of which all but two were associated with the work product under review. For a description of the issues, see UV/TIT-14_33a Sys Reqs Specn Tech Review Incident Log v1.1.

Two high severity defects were identified, 23 medium severity defects and 67 low severity defects were identified and agreed for the System Requirements Specification (total of 92 issues/defects).

Two incident reports were raised on the User Requirements Specification that was the basis for the System Requirements Specification (see issues 47 and 69). Incident Reports are available in the Tiny Co Bug Tracking System. Identifiers: UV/TIT-14_33a_DR1717 and UV/TIT-14_33a_DR1718.

Review Result:

Consensus was achieved that the document may be issued for use by the design team after the issues with the System Requirements Specification have been addressed by the author and confirmed as completed by the Review Leader.

End Review Report

Annex C **(informative)**

Review attributes

C.1 Attributes of work product reviews

C.1.1 Overview

This annex provides a description of the different attributes/characteristics of reviews that can be applied to a review.

C.1.2 Review attributes

C.1.2.1 Purpose

The purpose of the Work Product Review includes, but is not limited to one or more of the following:

- detect issues (e.g. defects);
- evaluate quality and build confidence in the work product;
- educate reviewers;
- gain consensus;
- generate new ideas;
- motivate and enable authors to improve;
- reduce time, cost and risks of software development.

C.1.2.2 Roles

Reviews involve a variety of different stakeholders who may take on a number of different roles (not all the roles are used in all review types).

- Author — creates and fixes the work product under review.
- Customer — provides their unique viewpoint.
- Facilitator — ensures effective running of review meetings; often called a Moderator.
- Management — decides what is to be reviewed and provides resources such as staff and time for the review; typically the project or programme manager.
- Reader — prepares for and reads aloud (often paraphrasing) from the work product during the review meeting, focusing the review meeting participants on particular aspects of the work product under review.
- Recorder/Scribe — collates and prioritizes issues identified during the individual review activity and records information, such as review decisions and new issues found, at the review meeting.
- Review leader — takes overall responsibility for the review such as deciding who will be involved and organizing when and where it will take place.

- Reviewer — identifies issues in the work product. A reviewer may be a Subject Matter Expert, someone working on the project or any other stakeholder with an interest in the work product.
- Reviews coordinator — takes overall responsibility for the application of reviews within an organization, including preparation of a reviews infrastructure, management of review processes, analysis of review results over time, and coordination of Review leader activities.
- Technical lead — provides input of a technical nature and decides if a technical review has met its objectives.

The mapping of roles to review types can be found in [Annex D](#).

NOTE 1 In Inspections, the roles of Review Leader and Facilitator are combined and are typically called an Inspection Leader.

NOTE 2 For different review types, some roles are mandatory, some are optional, and others cannot be held alongside other roles (see [Table D.1](#)).

C.1.2.3 Individual review techniques

These techniques, which are used by individuals to identify issues, will typically find the majority of the issues, and so are fundamental to the success of the review process. These techniques are defined in [7.2](#).

C.1.2.4 Optional activities

Not all parts of the work product review process described in [Clause 6](#) are necessary for all types of review. [Table D.1](#) identifies which parts are mandatory and which may be considered optional for each review type. The optional parts include:

- individual review;
- review meeting.

C.1.2.5 Number of reviewers

The number of reviewers actively participating in the review should be carefully considered to ensure optimal performance. How performance is interpreted will depend on the purposes of the review, whether the primary intention is to identify issues, to resolve issues, or to convey information. If more reviewers are involved in the “individual review” activity then more defects will normally be found, although reviewer effectiveness at defect detection is largely dependent on their expertise (typical reviewers will find about one in three defects). If reviewers with high levels of expertise are available, then two reviewers are often optimal.

Whenever more than one reviewer is chosen, care should be taken to focus the reviewers on distinct aspects of the work product under review as otherwise duplication of effort (and duplication of issues raised) can reduce cost effectiveness.

In some review types, a minimum number of reviewers is required to avoid too many roles being taken by the same person.

C.1.2.6 Planned number of reviews

It is rarely cost effective to plan multiple formal reviews on a single work product; however, the result of a first review can mean that another review is necessary. Multiple reviews of the same work product often occur when a formal review process is first introduced to an organization, reflecting the fact that the authors whose work is reviewed have not previously been subject to rigorous quality control, and have not previously received training in creating good-quality work products.

It can be cost effective to ensure that work products are in a reviewable state ahead of a more expensive formal review by first performing a less formal review of the work product.

C.1.2.7 Formal reporting

The formality of reporting through Issue Logs, Incident Reports and Review Reports can vary depending on organizational, regulatory and other constraints. Options for each include:

- Issue Logging. For example, issues marked up on a copy of the work product, a separate document listing identified issues (see [A.2](#)) or a verbal report.
- Incident Reporting. For example, a separate incident report for each individual incident (see [A.3](#)); an individual incident report only for key issues; an individual incident report for non-cosmetic issues, or a single incident report containing a list of all issues (which is also supported by [A.3](#)). Marked-up work products or verbal reports can also be used.
- Review Reporting. For example, a full report (see [A.4](#)), a marked-up work product, or a verbal report.

C.1.2.8 Training required

Training may be required by those participating in the review process and can include:

- training courses for review leaders/facilitators;
- training courses in the review process, e.g. for reviewers and authors;
- training courses for managers in the strategic planning, use and resourcing of reviews.

C.1.2.9 Review improvement

The formality of the approach used to determine how the review process will be improved over time will vary, and can include:

- ad hoc improvement (e.g. an informal activity);
- metrics-based improvement (based on planned measurement);
- improvement as a specific activity (e.g. lessons learned).

NOTE To maintain the effectiveness of reviews, data collected is not to be used to evaluate the performance of individuals.

For more details on process improvement, refer to [H.7](#).

C.1.2.10 Entry and exit criteria

If a review is begun without meeting the entry criteria, it is likely that conducting the review will waste significant resources and may result in an unfavourable outcome. Entry criteria, based on past experience, help identify sub-optimal conditions before the review begins. A judgment can then be made as to whether it is cost effective to resolve the failed entry criteria. Exit criteria identify whether the review has been completed successfully. They are often based on experience with what has gone wrong on past occasions, and it is never safe to waive them without consideration of whether the benefits outweigh the likely costs.

Both entry and exit criteria may be applied to the full review process, or to individual activities within the process. For example, a set of entry criteria may be applied to evaluate whether a review meeting is desirable and necessary, should be postponed pending additional individual review/preparation, or may be waived altogether because very few issues have been raised. More formal types of review such as Inspection and Technical Review tend to apply more rigorous entry and exit criteria in order to exercise risk and cost control over the process.

The entry criteria for the various activities in the review process may include (but are not limited to):

- an author check (e.g. spelling and grammar check, cross-referencing and indexing, clean compile, automated static analysis) has been completed;
- all source documents have successfully exited their own reviews;
- an informal review has been completed (preceding a more formal review);
- the work product and supporting documents have been sent to reviewers;
- issues from individual reviews have been documented;
- issues have been collated and analysed.

Issues from previous reviews of the work product have been fixed. The exit criteria for the various activities in the review process may include (but are not limited to):

- issues have been documented;
- issues have been satisfactorily resolved;
- issues that relate to other supporting artefacts have been raised as Incident Reports;
- consensus has been achieved;
- the scope of the review has been achieved;
- the required decisions have been made;
- review metrics have been captured;
- review report has been produced.

NOTE Entry and exit criteria will typically be aligned with project quality requirements.

Annex D (informative)

Review types

D.1 Review types

D.1.1 Overview

The expectation is that many users of this document will create their own unique review process based on the generic process and attributes described in [Annex C](#).

This annex provides a mapping of the attributes described in [Annex C](#) to the generic review process for a number of popular review types.

D.1.2 Mapping — review types vs. review attributes

Each review type is distinguished by a distinct set of review attributes. [Table D.1](#) provides an example mapping between them. Attributes are shown against each review type as mandatory (M), optional (O) or not significant (blank) in the table.

NOTE 1 The attributes included in [Table D.1](#) are described in [Annex C](#) and are not intended to be an exhaustive list of all possible review attributes.

Table D.1 — Example mapping of review types to review attributes

Review attribute	Review types								
	Author check	Buddy check	Informal group review	Inspection	Milestone review	Pair review	Peer desk check	Technical review	Walk-through
Purpose:									
Detect issues	M	M	M	M		M	M	O	M
Evaluate quality and build confidence in the work product				M	M			O	O
Educate reviewers							O		O
Gain consensus					M			M	O
Generate new ideas		O	O			O	O	O	O
Motivate and enable authors to improve				O			O	O	O
Reduce time, cost and risks	O								

Table D.1 (continued)

Review attribute	Review types								
	Author check	Buddy check	Informal group review	Inspection	Milestone review	Pair review	Peer desk check	Technical review	Walk-through
Roles:									
Author ^a	M	M	M	M ^b	O	M	M	M	M
Customer					O				
Facilitator			O	M	O			M	
Management					M				
Reader				M	O				M
Recorder/Scribe				M	O			M	M
Review leader		O	M	M	M	O	O	M	M
Reviewer	M	M	M	M	M	M	M	M	M
Technical lead			O					M	
^a The author is shown as mandatory for most review types as they are expected to fix issues as part of the "Fixing and Reporting" activity in the review process. ^b In Inspections, the author cannot act as the review leader, reader or recorder/scribe.									
Individual review techniques:									
Ad hoc	O	O	O	O	O	O	O	O	O
Checklist-based	O	O	O	O	O	O	O	O	O
Scenario-based	O	O	O	O	O	O	O	O	O
Perspective-based reading	O	O	O	O	O	O	O	O	O
Role-based reviewing	O	O	O	O	O	O	O	O	O
Optional activities:									
Individual review	M		O	M	M			M	O
Review meeting			O	M	M		M	O	M
Number of reviewers:									
Number of people involved in review	1	2	3+	5+	3+	3	2	5+	3+
Number of reviewers	1	1	2+	2+	1+	2	1	2+	2
Planned number of reviews:									
Planned number of reviews	1	1	1+	1+	1+	1	1	1+	1+
Formal reporting									
Issues Log	O	O	O	M	O	O	O	M	M
Incident Reporting									
Review Report				M	M	O		M	M

Table D.1 (continued)

Review attribute	Review types								
	Author check	Buddy check	Informal group review	Inspection	Milestone review	Pair review	Peer desk check	Technical review	Walk-through
Training required:									
Training required	0	0	0	M	M	0	0	M	M
Review improvement:									
Ad hoc	0	0	0	0	0	0	0	0	0
Metrics-based				M	0			0	0
Specific activity				M	M			M	0
Entry criteria									
An author check has been completed		0	0	M	M	0	0	M	M
All source documents have successfully exited their own reviews				M	M			0	0
An informal review has been completed (for a more formal review)				M	0			0	0
The work product and supporting documents have been sent to reviewers		M	M	M	M	M	0	M	0
Issues from individual reviews have been documented		0		M		M		0	0
Issues have been collated and analyzed				M				0	0
Issues from previous reviews have been fixed				M	M			0	0
Exit criteria:									
Issues have been documented		0		M	M	M	0	M	0
Issues have been satisfactorily resolved	M	M	M	M	M	M	M	M	M
Issues that relate to other supporting artefacts have been raised as Incident Reports	M	M	M	M	M	M	M	M	M

Table D.1 (continued)

Review attribute	Review types								
	Author check	Buddy check	Informal group review	Inspection	Milestone review	Pair review	Peer desk check	Technical review	Walk-through
Consensus has been achieved		O		M	M	M	O	M	M
The scope of the review has been achieved		O		M	M	M	O	M	M
The required decisions have been made				M	M			M	
Review metrics have been captured				M				O	O
Review report has been produced			O	M	M	O		M	O

Annex E (informative)

Mapping to IEEE 1028-2008

This annex describes the alignment of the activities defined in this document with the procedures of IEEE 1028-2008. The mapping in [Table E.1](#) covers all corresponding procedures in IEEE 1028-2008.

Table E.1 — IEEE 1028-2008 to ISO/IEC 20246 high-level mapping

IEEE 1028-2008			ISO/IEC 20246	
Technical Reviews	Management Preparation	5.5.1	6.4.1	Planning
	Planning the review	5.5.2		
	Overview of the review procedures	5.5.3	6.4.2	Initiate review
	Overview of the software product	5.5.4		
	Preparation	5.5.5	6.4.3	Individual review
	Examination	5.5.6	6.4.4	Issue communication and analysis
	Rework/Follow-up	5.5.7	6.4.5	Fixing and reporting
Inspections	Management Preparation	6.5.1	6.4.1	Planning
	Planning the inspection	6.5.2		
	Overview of the inspection procedures	6.5.3	6.4.2	Initiate review
	Preparation	6.5.5	6.4.3	Individual review
	Examination	6.5.6	6.4.4	Issue communication and analysis
	Rework/Follow-up	6.5.7	6.4.5	Fixing and reporting
Walkthroughs	Management Preparation	7.5.1	6.4.1	Planning
	Planning the walkthrough	7.5.2		
	Overview	7.5.3	6.4.2	Initiate review
	Preparation	7.5.4	6.4.3	Individual review
	Examination	7.5.5	6.4.4	Issue communication and analysis
	Rework/Follow-up	7.5.6	6.4.5	Fixing and reporting