
**Information technology — Categorization of
software**

Technologies de l'information — Classement des logiciels

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC TR 12182:1998](https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998)

<https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998>



Contents

1	Scope.....	1
2	Conformance	1
3	Normative references.....	2
4	Terms and definitions	2
5	Symbols (and abbreviated terms)	2
6	Concept of a categorization of software.....	2
6.1	Structure of views	3
6.2	Selection of views and categories.....	3
7	Scheme of categorization.....	4
7.1	Software function.....	4
7.2	Application area of information system.....	4
7.3	Operation mode.....	5
7.4	Scale of software.....	5
7.5	Data representation.....	6
7.6	Primary language	6
7.7	Software criticality	6
7.8	User class	7
7.9	Software stability.....	7
7.10	Software product availability	7
7.11	Usage of software data	7
7.12	Required performance.....	8
7.13	Security requirement	8
7.14	Reliability requirement.....	9

iTech STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409a-841a-764b89ecc60e/iso-iec-tr-12182-1998>

7.15	Computer system and environment.....	10
7.16	Computer resource requirement	10
8	Application of the scheme	10
8.1	Application to scope of standards	10
8.2	Application to standards	11
8.3	Application to software packages.....	11
8.4	Example Categorization of: Word Processing Package	12

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC TR 12182:1998](https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998)

<https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998>

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 main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC TR 12182, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software engineering*.

Introduction

This Technical Report has several purposes which are directed towards its various intended audiences: the software engineering community; the users of software engineering standards, specifically those developed by ISO/IEC JTC 1/SC 7; and developers of software engineering standards, primarily SC 7.

For the software engineering community, this document will identify the types of software to which particular software engineering standards apply. This will help the software engineer to establish the risk planning criteria, the adequate life-cycle model to apply, the specific effort required for specific life-cycle phases, and the tools needed.

For the users and developers of software engineering standards, it will establish a framework for discussing and identifying candidate software engineering standards based on the software categorization scheme and for using the scheme to relate software and software engineering standards.

Specifically for SC 7, this Technical Report will provide an aid for positioning software engineering standards and work items within the structure of SC 7 and it is intended that new projects, working drafts, committee drafts, and draft international standards will identify the target categorization(s) relevant to the area of application. With respect to the latter, it is understood that, in some documents, only part of this Technical Report will address the specified categorization.

Examples are given to clarify the categorization scheme for software. For the standards developer, this Technical Report helps position existing standards and work items. For the software engineer, it provides a high level scheme with which to locate existing standards. (standards.iteh.ai)

In addition to the normal introductory clauses, this Technical Report provides a Framework for Categorization of Software, a Scheme of Categorization, and Examples of Application of the Standard.

ISO/IEC TR 12182:1998
<https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC TR 12182:1998

<https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998>

Information technology — Categorization of software

1 Scope

The scope of this Technical Report is the categories of software (including relevant software development products and data) that are produced by software engineering processes. It describes a categorization scheme for software that encompasses different points of view and significant characteristics and attributes that describe and define software and software categories.

1.1 Field of application

The field of application of the Categorization of Software includes software engineering and its associated standards, software, data, and methodologies.

1.2 Audience and purpose

This Technical Report is primarily directed towards several audiences: the software engineering community; the users of software engineering standards, specifically those developed by ISO/IEC JTC 1/SC 7; and developers of software engineering standards, primarily SC 7.

The purpose or usage of the Categorization of Software is the identifying of software categories, identifying of applicable software engineering standards for software, and determining the relationship of software tasks, processes, or products to software engineering standards.

The use of the Categorization of Software is defined as the generation of a justifiable entry for each of the views specified in Clause 7 for the given software product or in a mapping of a software engineering standard. In some circumstances a null entry is appropriate.

It often occurs that the software engineering processes, and the products of those processes, apply to the procurement or development of certain kinds of software. For example, ISO 6592 applies to large application systems and ISO 9127 applies to packaged software. This Technical Report provides a categorization scheme to assist in (1) the understanding of the area of application of a standard or software, (2) the identification and selection of standards applicable to a software application, and (3) the positioning of new standards.

1.3 Limitations

Since software engineering is a fast changing field, the categorization outlined herein can only be a conceptual scheme. Users, therefore, should use judgement when applying it to applications. The categorization scheme in this Technical Report is empirical in nature. Its formulation is not based on well-defined user needs. The scheme has not been validated in field trials.

2 Conformance

Not applicable.

3 Normative references

No normative references are made within the Categorization of Software.

4 Terms and definitions

This clause provides definitions for terms used in this Technical Report. It does not define the concepts which are explained in the body of the document. It does not define terms which are not specific to the subject matter and are used in accordance with their ordinary English language usage.

For the purposes of this Technical Report, the following terms and definitions apply.

- 4.1 categorization scheme**
an orderly combination of views and categories related to software
- 4.2 view**
a set of related categories
- 4.3 category**
a specifically defined division or grouping of software based upon one or more attributes or characteristics

iTech STANDARD PREVIEW
(standards.iteh.ai)

5 Symbols (and abbreviated terms)

Not applicable. [ISO/IEC TR 12182:1998
https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998](https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998)

6 Concept of a categorization of software

The concept of a categorization of software is diagrammatically represented by Figure 1.

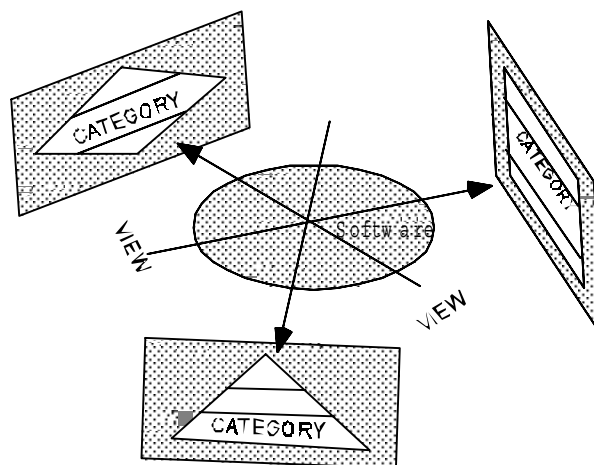


Figure 1 — Categorization of software

As is implied by the figure, the categorization of software is composed of a number of views of software and each view contains categories relevant to the view. The various views are discussed in Clause 7. The selection of categories is at the discretion of the user.

It should be noted that it may be appropriate that a category exists in more than one view and, in several instances, the domain of one category overlaps that of another.

6.1 Structure of views

The categorization scheme consists of 16 views. In use, views of software may be grouped into collections of views such as:

- Internal
 - Operation mode (7.3)
 - Scale of software (7.4)
 - Software stability (7.9)
 - Functionality
 - Software function (7.1)
 - Security requirement (7.13)
 - Reliability requirement (7.14)
 - Required performance (7.12) [ISO/IEC TR 12182:1998](https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998)
 - Primary language (7.6) [764b89ecc60e/iso-iec-tr-12182-1998](https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998)
- Environment
 - Application area of information system (7.2)
 - Computer system and environment (7.15)
 - User class (7.8)
 - Computer resource requirement (7.16)
 - Software criticality (7.7)
 - Software product availability (7.10)
- Data
 - Data representation (7.5)
 - Usage of software data (7.11)

6.2 Selection of views and categories

For any given instance, such as when the categorization scheme is applied to other software engineering standards, the use of all views may not be required. In these cases, one view or a selected set of views with

specific categories will be sufficient to characterize the software. Applications for which subsets of views may be desirable include characterization of software with respect to specific software engineering standards, selection of appropriate software engineering standards, selection of methods, definition of life cycle, determination of document structure, and quality rating.

When applying the characterization scheme to applications for which subsets of views are desirable, all relevant views and related categories should be used. For example, if software is to be characterized with respect to its environment, the set of views contained in the Environment subset presented in 6.1 would be appropriate. Depending upon the particular circumstances of the application, it may be necessary to also include additional views such as security requirement or reliability requirement.

In some applications of the categorization scheme, characterization with respect to a single primary view may be sufficient. For example, software criticality may be the primary view for quality assurance standards.

For other uses of the categorization scheme, several views with specific categories can be combined to represent more specific characteristics of software. For example, software function and user class may be used to determine the documentation structure.

7 Scheme of categorization

Associated with the description of each view of the categorization scheme is a list of the categories relevant to the view. In most cases, the lists are representative or open-ended rather than exhaustive or complete.

The categories relevant to the views are not necessarily mutually exclusive. While in certain applications only one of these categories may apply, in other applications all may apply.

Similarly, the categories relevant to a view are not necessarily at the same level of abstraction.

Where required for clarity, examples are provided for the usage or application of a view. The examples provided are illustrative and provide only a representative set of possible applications.

Users of the Categorization Scheme should apply judgement when selecting the relevant or appropriate categories for a given application or application area.

7.1 Software function

For the software function view, categories should be defined by the type function to which it is targeted.

Examples of categories of software function are:

- Business transaction processing
- Compiler
- Scientific calculation
- Word processing
- Medical systems
- Control systems

7.2 Application area of information system

For the application area view, categories should be defined by the type or class of external system in which they are contained.

For example, software which is an element of process control systems may be categorized as process control facility software and software which is an element of network systems may be categorized as network control software.

Examples of categories of application area are:

- Scientific
- Home appliance
- Equipment
- Process control facility
- Business enterprise
- Networking system

7.3 Operation mode

For the operation mode view, categories should be defined by the specific processing technique or type adopted by the software system.

Examples of categories of operating mode are:

- Batch processing
- Real-time processing
- Time shared processing
- Parallel processing
- Concurrent processing

STANDARD PREVIEW
(standards.iteh.ai)
ISO/IEC TR 12182:1998
<https://standards.iteh.ai/catalog/standards/sist/3173b250-6e8c-409e-841c-764b89ecc60e/iso-iec-tr-12182-1998>

7.4 Scale of software

For the scale of software view, categories should be defined either by the size or by the complexity of the software.

For example, size could be determined in terms of the number of source lines of code (SLOC) excluding comments and adjusted for the level of the language (i.e., assembly vs. fortran vs. Ada). Complexity may be determined as a function of an appropriate parameter such as data flow complexity. Scale determinations should be normalized for the application area.

Examples of categories of scale of software are:

- Small
- Medium
- Large

It should be understood that the ranges for the above categories should not be interpreted strictly. Instead, the categories should be considered to represent fuzzy or approximate ranges.