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Information technology — Software product evaluation — Quality characteristics and guidelines for their use

*Technologies de l'information — Évaluation des produits logiciels —
Caractéristiques de qualité de logiciel et directives d'utilisation*



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AVA **Documents**
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Contents

1 Scope 1

2 Normative references 1

3 Definitions 1

4 Software quality characteristics 2

4.1 Functionality 2

4.2 Reliability 3

4.3 Usability 3

4.4 Efficiency 3

4.5 Maintainability 3

4.6 Portability 3

5 Guidelines for use of quality characteristics 4

5.1 Usage 4

5.2 Views of software quality 4

5.3 Evaluation process model 6

Annexes

A Quality subcharacteristics 9

B History of the work 12

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

International Standard ISO/IEC 9126 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

Annexes A and B of this International Standard are for information only.

Introduction

As software applications have grown, so too has the importance of software quality. In order to manage software quality, the technology to specify and evaluate both the software product quality and development process quality objectively and quantitatively is most important. However, a framework is necessary that provides for the evaluation of software quality. This International Standard was produced as one part of a set of documents which provides that framework.

Information technology — Software product evaluation — Quality characteristics and guidelines for their use

1 Scope

This International Standard defines six characteristics that describe, with minimal overlap, software quality. These characteristics provide a baseline for further refinement and description of software quality. Guidelines describe the use of quality characteristics for the evaluation of software quality.

This International Standard does not provide subcharacteristics and metrics, and method for measurement, rating, and assessment. This International Standard adheres to the definition of quality in ISO 8402.

NOTE - A proposal for definitions of subcharacteristics is provided for information in annex A.

The definition of the characteristics and associated quality evaluation process model in this International Standard are applicable when specifying the requirements for and evaluating the quality of software products throughout their life cycle.

Its characteristics may be applicable to every kind of software, including computer programs and data contained in firmware.

This International Standard is intended for those associated with acquisition, development, use, support, maintenance, or audit of software.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 2382-20 :1990, *Information technology -- Vocabulary - Part 20 : Systems development*.
ISO 8402 : 1986, *Quality -Vocabulary*.

3 Definitions

For the purpose of this International Standard, the following definitions apply.

3.1 assessment : An action of applying specific documented assessment criteria to a specific software module, package, or product for the purpose of determining acceptance or release of the software module, package or product.

3.2 features : Features are identified properties of a software product which can be related to the quality characteristics.

NOTE - Examples of features include path length, modularity, program structure, and comments.

ISO/IEC 9126: 1991(E)

3.3 firmware : Hardware that contains a computer program and data that cannot be changed in its user environment. The computer program and data contained in firmware are classified as software; the circuitry containing the computer program and data is classified as hardware.

3.4 level of performance : The degree to which the needs are satisfied, represented by a specific set of values for the quality characteristics.

3.5 measurement : The action of applying a software quality metric to a specific software product.

3.6 quality : The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs (ISO 8402:1986).

NOTE - In a contractual environment, needs are specified, whereas in other environments, implied needs should be identified and defined (ISO 8402 : 1986, note 1).

3.7 rating : The action of mapping the measured value to the appropriate rating level. Used to determine the rating level associated with the software for a specific quality characteristic .

3.8 rating level : A range of values on a scale to allow software to be classified (rated) in accordance with the stated or implied needs. Appropriate rating levels may be associated with the different views of quality i.e. Users, Managers or Developers. These levels are called rating levels.

NOTE - These rating levels are different from the "grades" defined in ISO 8402.

3.9 software : Programs, procedures, rules and any associated documentation pertaining to the operation of a computer system.

3.10 Software product : A software entity designated for delivery to a user.

3.11 software quality : The totality of features and characteristics of a software product that bear on its ability to satisfy stated or implied needs.

3.12 software quality assessment criteria : The set of defined and documented rules and conditions which are used to decide whether the total quality of a specific software product is acceptable or not. The quality is represented by the set of rated levels associated with the software product.

3.13 software quality characteristics : A set of attributes of a software product by which its quality is described and evaluated. A software quality characteristic may be refined into multiple levels of sub-characteristics.

3.14 software quality metric : A quantitative scale and method which can be used to determine the value a feature takes for a specific software product.

4 Software quality characteristics

Software quality may be evaluated by the following characteristics.

4.1 Functionality

A set of attributes that bear on the existence of a set of functions and their specified properties. The functions are those that satisfy stated or implied needs.