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Information technology — Software measurement — Functional size measurement —

Part 5: Determination of functional domains for use with functional size measurement

Technologies de l'information — Mesurage du logiciel — Mesurage de la taille fonctionnelle —

Partie 5: Détermination des domaines fonctionnels pour l'usage de mesurage de la taille fonctionnelle

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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

In exceptional circumstances, the joint 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 the joint 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC TR 14143-5, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and system engineering*.

This document is being issued in the Technical Report (type 2) series of publications (according to the Procedures for the technical work of ISO/IEC JTC 1) as a "prospective standard for provisional application" in the field of software measurement because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an "International Standard". It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the ISO Central Secretariat.

A review of this Technical Report (type 2) will be carried out not later than three years after its publication with the options of: extension for another three years; conversion into an International Standard; or withdrawal.

ISO/IEC TR 14143 consists of the following parts, under the general title *Information technology — Software measurement — Functional size measurement*:

- *Part 1: Definition of concepts*

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- *Part 2: Conformity evaluation of software size measurement methods to ISO/IEC 14143-1:1998*
- *Part 3: Verification of functional size measurement methods* [Technical Report]
- *Part 4: Reference model* [Technical Report]
- *Part 5: Determination of functional domains for use with functional size measurement* [Technical Report]

The following part is under preparation:

- *Part 6: Guide for use of ISO/IEC 14143 series and related International Standards*

Introduction

Functional Size Measurement (FSM) is a technique used to measure the size of software by quantifying the Functional User Requirements of the software¹⁾. The first published method to embrace this concept was Function Point Analysis, developed by Allan Albrecht in the late 1970s. Since then, numerous extensions and variations of the original method have been developed. Users of these methods have made various claims regarding the usefulness and limitations of a particular method when applied to different *types* of software. Examples of these *types* of software quoted include, amongst others, Management Information Systems (MIS), Embedded Software, Process Control Software, Decision Support Software, Military Software, Engineering and Real Time Software.

The terms and the phrase "*software types*" have been loosely defined. They are widely used to differentiate between categories of user functions performed by the software (what it does), software performance issues, degrees of internal processing complexity, physical implementation requirements and development environments. There is no universally consistent definition of these terms or of the characteristics of FUR relevant to assessing Functional Size. The consequences of this are:

- a) it is difficult for a potential user of a particular FSM Method to assess the Method's applicability for measuring the size of a specific set of FUR; and
- b) owners and developers of an FSM Method are not able to describe the Functional Domain(s) to which the FSM Method can be applied.

This Technical Report addresses these difficulties by describing how the characteristics of FUR may be used to determine software types. The phrase "software types" for the purposes of this Technical Report is replaced by the defined term Functional Domain. A Functional Domain is defined in ISO/IEC 14143-1:1998 as "a class of software based on the characteristics of FUR which are pertinent to Functional Size Measurement."

ISO/IEC 14143-1:1998 requires that an FSM Method shall describe the Functional Domain(s) to which it can be applied. The purpose of this Technical Report is to define how Functional Domains may be defined and to provide example methods that may be used to generate Functional Domains.

To ensure that this Technical Report did not unnecessarily duplicate established Functional Domains, were these to exist in general information technology, a literature search consisting of formal library retrievals, informal library reviews, personal correspondence, conference proceedings and on-line searches was conducted between June 1995 and May 1997 referencing topics pertinent to this project. Over 700 abstracts were reviewed in addition to articles, periodicals, conference presentations and other references as background to this Technical Report.

This Technical Report satisfies the unique needs of FSM, and therefore takes a different approach from ISO/IEC TR 12182. The classification categories of ISO/IEC TR 12182 were considered, and have been mapped in the informative annex.

1) Refer ISO/IEC 14143-1:1998, *Software engineering — Software measurement — Functional size measurement — Part 1: Definition of concepts*.