INTERNATIONAL STANDARD

ISO/IEC 14143-2

First edition
2002-11-15

Information technology — Software measurement — Functional size measurement —

Part 2: Conformity evaluation of software size measurement methods to ISO/IEC 14143-1:1998

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

Partie 2: Évaluation de la conformité des méthodes de mesure de taille de logiciel à l'ISO/CEI 14143-1:1998

Reference number
ISO/IEC 14143-2:2002(E)

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

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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 3.

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.

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC 14143 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 14143-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and system engineering*.

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

— *Part 1: Definition of concepts*

— *Part 2: Conformity evaluation of software size measurement methods to ISO/IEC 14143-1:1998*

— *Part 3: Verification of functional size measurement methods*

— *Part 4: Reference model*

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

Annexes A, B and C of this part of ISO/IEC 14143 are for information only.

Introduction

Functional Size Measurement (FSM) is a technique used to measure the size of software by quantifying the Functional User Requirements of the software[1)]. 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. The end user may have many variants from which to choose, each with its own advantages in specific situations. ISO/IEC 14143-1:1998 was developed to define the concepts of FSM and provides a basis against which the user can compare all variants. This part of ISO/IEC 14143 was developed to provide a process for checking whether a Candidate FSM Method conforms to the provisions of ISO/IEC 14143-1:1998. The output from this process can assist prospective users of the Candidate FSM Method in judging whether it is appropriate to their needs.

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

Information technology — Software measurement — Functional size measurement —

Part 2: Conformity evaluation of software size measurement methods to ISO/IEC 14143-1:1998

1 Scope

1.1 This part of ISO/IEC 14143:

a) establishes a framework for the conformity evaluation of a Candidate FSM Method against the provisions of ISO/IEC 14143-1:1998,

b) describes a process for conformity evaluation of whether a Candidate FSM Method meets the (type) requirements of ISO/IEC 14143-1:1998 such that it is an actual FSM method, i.e. they are of the same type,

c) describes the requirements for performing a conformity evaluation in order to ensure repeatability of the conformity evaluation process, as well as consistency of decisions on conformity and the final result,

d) aims to ensure that the output from the conformity evaluation process is objective, impartial, consistent, repeatable, complete and auditable,

e) provides informative guidelines (refer Annex A) for determining the competence of the conformity evaluation teams,

f) provides an example checklist (refer Annex B) to assist in the conformity evaluation of a Candidate FSM Method, and

g) provides an example template (refer Annex C) for the conformity evaluation report.

Conformity evaluations are conducted by a conformity evaluation team that has the competencies described in this part of ISO/IEC 14143. This part of ISO/IEC 14143 assumes familiarity with the concepts and definitions described in ISO/IEC 14143-1:1998.

The conformity evaluation is performed by cross-referencing each component of a Candidate FSM Method against the corresponding provisions of ISO/IEC 14143-1:1998. The components of the Candidate FSM Method are then evaluated for their conformity.

The output from the conformity evaluation includes a decision for each provision evaluated. Only the requirements (shalls) are considered when determining if the Candidate FSM Method conforms to ISO/IEC 14143-1:1998. The recommendations (shoulds) of ISO/IEC 14143-1:1998 may also be investigated to provide additional information to end users of the Candidate FSM Method.

The output from the conformity evaluation process is the conformity evaluation report. The report may be used to:

a) inform end users that a Candidate FSM Method conforms to ISO/IEC 14143-1:1998 in accordance with this part of ISO/IEC 14143, and is therefore an FSM Method, and

b) assist end users in making informed judgements about which method best suits their needs.

1.2 This part of ISO/IEC 14143 may be used for first party (supplier), second party (user or purchaser) or third party (independent body), conformity evaluations.

NOTE The relationship between the owner, sponsor and evaluator depends on the type of evaluation that is performed, i.e. first, second or third party.

1.3 While conformance of a Candidate FSM Method to ISO/IEC 14143-1:1998 may be claimed without referencing this part of ISO/IEC 14143, this part provides a conformity evaluation process that may be used to add credibility to such claims. This part places requirements upon a conformity evaluation procedure and is usable for first, second or third party claims of conformance. Its provisions are particularly suitable for those who require third party conformity evaluation. Customers desiring to use or aquire an FSM Method evaluated for conformance in accordance with this part, should explicitly cite this International Standard when requesting the evaluation.

1.4 Conformity evaluation should not be construed as guaranteeing that the FSM Method is free from non-conformities; it only signifies that evidence of non-conformance was not found during the conformity evaluation process.

1.5 A Candidate FSM Method shall be determined as conforming if it successfully completes a conformity evaluation procedure which satisfies the requirements of sub-clause 4.4 of this part of ISO/IEC 14143.

NOTES

1 Conformity of a Candidate FSM Method is based on evaluation against requirements of ISO/IEC 14143-1:1998. This part of ISO/IEC 14143 defines a process that may be used in evaluating whether a Candidate FSM Method conforms to the requirements of ISO/IEC 14143-1:1998.

2 An International Standard on conformity evaluation or test methods, such as this one, does not imply any obligation to carry out any kind of test. It defines the process by which the evaluation, if required and referred to (for example in a regulation, or in contract documents), should be carried out.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 14143. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/IEC 14143 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 14143-1:1998, *Information technology - Software measurement - Functional size measurement - Part 1: Definition of concepts*

ISO/IEC Guide 2:1996, *Standardization and related activities – General vocabulary*

3 Terms and definitions

For the purposes of this part of ISO/IEC 14143, the terms and definitions given in ISO/IEC 14143-1:1998 and the following apply.

3.1
Candidate FSM Method
documented software size measurement method submitted for conformity evaluation according to ISO/IEC 14143-1:1998

3.2
evaluation checklist
list of questions, each of which is designed to check for conformity of a product, process or service to one or more provisions within a particular International Standard

NOTE In the case of this part of ISO/IEC 14143, the product being evaluated for conformance is the Candidate FSM Method and the provisions are those of ISO/IEC 14143-1:1998.

3.3
evaluation procedure
series of tasks and steps that, when completed, enable the evaluation team to determine if the product, process or service being evaluated is conformant to a particular standard

3.4
evaluation sponsor
person or organization that requires the evaluation to be performed and provides financial or other resources to carry it out

3.5
exclusive requirement
(deprecated: mandatory requirement): requirement of a normative document that must necessarily be fulfilled in order to comply with that document

[ISO/IEC Guide 2:1996, definition 7.5.1]

3.6
optional requirement
requirement of a normative document that must be fulfilled in order to comply with a particular option permitted by that document

NOTE An optional requirement may be either:

a) one of two or more alternative requirements, or
b) an additional requirement that must be fulfilled only if applicable and may otherwise be disregarded.

[ISO/IEC Guide 2:1996, definition 7.5.2]

3.7
owner
person or organization that owns the copyright for the Candidate FSM Method

3.8
provision
expression in the content of a normative document, that takes the form of a statement, an instruction, a recommendation or a requirement

NOTE These types of *provision* are distinguished by the form of wording they employ e.g. *instructions* are expressed in the imperative mood, *recommendations* by the use of the auxilliary "should", and *requirements* by the use of the auxiliary "shall".

[ISO/IEC Guide 2:1996, definition 7.1]

3.9
recommendation
provision that conveys advice or guidance

[ISO/IEC Guide 2:1996, definition 7.4]

3.10
requirement
provision that conveys criteria to be fulfilled

[ISO/IEC Guide 2:1996, definition 7.5]

NOTE A requirement is denoted by the word “shall” and when used includes both the exclusive and applicable optional requirements.

4 Conformity evaluation

4.1 Overview

4.1.1 The objective of a conformity evaluation shall be to determine if the Candidate FSM Method conforms to all the requirements of ISO/IEC 14143-1:1998. Although the conformity evaluation procedure may also evaluate the implementation of the recommendations of ISO/IEC 14143-1:1998, the results of this evaluation shall not contribute to the determination of conformity.

4.1.2 A conformity evaluation shall be valid only for the particular version of a Candidate FSM Method that was the subject of the conformity evaluation process. Each new version of a method, including a Local Customisation, is considered to be another Candidate FSM Method, and requires a separate conformity evaluation. If a conformity evaluation team can identify the similarities and/or differences between a Candidate FSM Method and a previously evaluated version of the same method, they may use the output report from a previous conformity evaluation as the basis for the new conformity evaluation. If any non-conformities have been reported for a previously evaluated version of the same Candidate FSM Method, then the conformity evaluation team shall consider such non-conformities during the current conformity evaluation process.

NOTE If the conformity evaluation team bases a conformity evaluation on a previous evaluation report, then they need to be aware of the risks involved as the two versions may have differences that have not been noted. The conformity evaluation team needs to ensure that the net effect of all changes is taken into account during the evaluation.

4.1.3 The conformity evaluation team shall verify that the Candidate FSM Method Documentation is complete, as defined in sub-clause 4.3.2.1, and correct for the version of the Candidate FSM Method being evaluated.

4.1.4 The conformity evaluation team should liaise with the evaluation sponsor during the conformity evaluation process.

4.1.5 If the owner can be contacted, then the conformity evaluation team shall:
a) liaise with the owner during the conformity evaluation process;

b) document the subject of the liaison with the owner, within the conformity evaluation report and where appropriate, cross-reference the provision or evaluation activity to which it relates.

4.1.6 The evaluation team shall determine whether information received from the owner during the liaison would result in a different version of the method than that submitted for this conformity evaluation. In this case section 4.1.2 shall apply.

4.1.7 If the owner of the Candidate FSM Method can be contacted, then the owner shall be provided with the opportunity to respond to the findings of the conformity evaluation and to add comments to the conformity evaluation report before its publication.

4.1.8 If the owner of the Candidate FSM Method does not respond to the findings of the conformity evaluation report within a reasonable time period, then the conformity evaluation team may proceed with publication of the report. This time period should be agreed upon by the owner and the conformity evaluation team at the outset of the conformity evaluation process.

4.2 Evaluator characteristics

4.2.1 Evaluator organization

In cases of a third party conformity evaluation, the third party evaluator organizations shall be competent for the functions which they have to perform.

4.2.2 Conformity evaluation team

The conformity evaluation team shall be responsible for ensuring that all activities in the conformity evaluation process are completed. These activities shall include, but are not limited to, the following:

a) developing the conformity evaluation plan;

b) developing or acquiring the conformity evaluation procedure;

c) developing or acquiring the conformity evaluation checklist

d) performing the conformity evaluation procedure;

e) producing the conformity evaluation report.

NOTE Confidence in the evaluation result is directly related to the competence of the conformity evaluation team. Annex A describes the characteristics of a competent conformity evaluation team, and the mechanisms that may be used to demonstrate the team's competence to perform conformity evaluation in accordance with the requirements of this part of ISO/IEC 14143.

4.3 Inputs to conformity evaluation

4.3.1 List of inputs

As a minimum, the inputs to the conformity evaluation process shall include the following:

a) parts 1 and 2 of ISO/IEC 14143;

b) Candidate FSM Method documentation;

c) conformity evaluation plan;

d) conformity evaluation procedure;

e) conformity evaluation checklist.

4.3.2 Candidate FSM Method documentation

4.3.2.1 The Candidate FSM Method documentation shall include all materials necessary for the proper use of the Candidate FSM Method, in the same format and content that would be supplied to the users of the method. Where a Candidate FSM Method is embedded within a software tool and the processes used to measure software size are not explicit to the user, then in order to be evaluated, the Candidate FSM Method shall include documentation to describe these processes. If the owner is contactable, then the evaluation team shall confirm that the Candidate FSM Method documentation provided as input to the evaluation is correct and complete. If the owner cannot be contacted, then the evaluation sponsor and the conformity evaluation team shall agree on the materials that will comprise the Candidate FSM Method documentation.

NOTE Such material may include manuals, guidelines, examples, case studies, and any other tools that are necessary for proper use of the method.

4.3.2.2 The Candidate FSM Method documentation shall be uniquely identifiable and should clearly state the:

a) name and version number of the Candidate FSM Method that it describes,

b) name(s) of author(s), if applicable,

c) date of publication, and

d) name and contact details of the publisher.

NOTE The process for evaluating the conformity of a Candidate FSM Method requires the unique identification of both the Candidate FSM Method and of the version being evaluated. This identification requires information that is not essential to the measurement of software size. Therefore, this part of ISO/IEC 14143 introduces exclusive requirements which are not present in ISO/IEC 14143-1:1998, but which are deemed essential to the conformity evaluation process. That is, a Candidate FSM Method does not have to uniquely identify its documentation in order to be an FSM Method. However, in order for the conformity evaluation process to be auditable, the report must be able to uniquely identify the Candidate FSM Method documentation that was evaluated. This will only be possible if the Candidate FSM Method conforms to the requirements of this clause.

4.3.3 Conformity evaluation plan

The conformity evaluation team shall develop the conformity evaluation plan in consultation with the evaluation sponsor. At a minimum, it shall include the following:

a) activities, schedule and resources required for the conformity evaluation process;

b) list of inputs that uniquely identifies each of the inputs to the conformity evaluation process;

c) names and contact details of the conformity evaluation team members;

d) name and contact details of the evaluator organization, in the case of third party assessment;

e) name(s) and contact details of the evaluation sponsor(s);

f) roles and responsibilities of all persons involved in the conformity evaluation process;

g) relationship of the conformity evaluation team members and the evaluator organization to any other parties involved.

4.3.4 Conformity evaluation procedure

The conformity evaluation team should develop the conformity evaluation procedure in consultation with the evaluation sponsor. The conformity evaluation procedure shall provide detailed descriptions of:

a) each of the tasks and steps to be performed by the conformity evaluation team and the evaluation sponsor as part of the conformity evaluation procedure (refer section 4.4)

b) how the inputs are used within the conformity evaluation procedure to produce the conformity evaluation output.

4.3.5 Conformity evaluation checklist

4.3.5.1 The conformity evaluation team should develop the conformity evaluation checklist in consultation with the evaluation sponsor. They may use as a basis for their checklist, an existing checklist - such as the one provided in Annex B. The conformity evaluation checklist shall consist of a set of evaluation questions that can be used to evaluate the Candidate FSM Method against all the requirements of ISO/IEC 14143-1:1998. The conformity evaluation checklist may also include a set of additional evaluation questions that can be used to evaluate the Candidate FSM Method against all the recommendations of ISO/IEC 14143-1:1998. When determining the conformity of a Candidate FSM Method, the conformity evaluation team shall use only the responses to evaluation questions relating to the requirements of ISO/IEC 14143-1:1998. The conformity evaluation team shall decide the appropriate structure and presentation of the conformity evaluation checklist.

NOTE Annex B contains an example of a conformity evaluation checklist that satisfies the requirements of this part of ISO/IEC 14143 by providing checks for the requirements of ISO/IEC 14143-1:1998. It also exceeds these by providing checks for the recommendations of ISO/IEC 14143-1:1998.

4.3.5.2 The conformity evaluation checklist shall be structured so that:

a) it contains evaluation questions that correspond to each of the requirements of ISO/IEC 14143-1:1998, against which the characteristics of the Candidate FSM Method are evaluated,

b) each requirement corresponds to at least one evaluation question,

c) it includes a matrix that cross-references each requirement of ISO/IEC 14143-1:1998 to the corresponding evaluation questions, and

d) the set of evaluation questions that correspond to a particular requirement, fully evaluate all aspects of that requirement.

NOTES

1 ISO/IEC 14143-1:1998 contains a set of requirements against which the conformity evaluation team evaluates the Candidate FSM Method, but the structure of ISO/IEC 14143-1:1998 does not facilitate an efficient conformity evaluation. The conformity evaluation checklist is intended to provide a more effective mechanism for evaluating the conformity of a Candidate FSM Method to ISO/IEC 14143-1:1998. The checklist does this by providing a set of evaluation questions for which there are clear and simple responses, such as 'yes' or 'no'. To support a complete evaluation for each requirement in ISO/IEC 14143-1:1998, there must be at least one evaluation question in the checklist that evaluates the Candidate FSM Method against that requirement. To evaluate conformity to a particular requirement, the checklist may contain several evaluation questions.

2 In some circumstances, an evaluation question may correspond to multiple requirements, but multiple coverage evaluation questions should ideally be kept to a minimum.

4.3.5.3 If the conformity evaluation checklist includes evaluation questions which evaluate the recommendations of ISO/IEC 14143-1:1998, the evaluation checklist should be structured so that:

a) it contains evaluation questions that correspond to each of the recommendations of ISO/IEC 14143-1:1998, against which the characteristics of the Candidate FSM Method are evaluated,

b) each recommendation corresponds to at least one evaluation question,

c) the matrix also cross-references each recommendation of ISO/IEC 14143-1:1998 to the corresponding evaluation questions, and

d) the set of evaluation questions that correspond to a particular recommendation, fully evaluate all aspects of that recommendation.

4.3.5.4 If the conformity evaluation checklist contains evaluation questions relating to the recommendations of ISO/IEC 14143-1:1998, then these evaluation questions shall be grouped separately from those relating to the requirements of ISO/IEC 14143-1:1998.

4.3.5.5 The conformity evaluation checklist should be structured in terms of format, sequencing and grouping of questions such that it facilitates the conformity evaluation procedure.

4.3.5.6 Each evaluation question on the conformity evaluation checklist shall include a cross-reference to the corresponding provision(s) of ISO/IEC 14143-1:1998.

4.3.5.7 Evaluation questions that correspond to optional requirements within ISO/IEC 14143-1:1998 shall include the phrase "if applicable". Evaluation questions that do not correspond to optional requirements shall not contain the phrase "if applicable".

4.4 Tasks and steps of the conformity evaluation procedure

4.4.1 Guidance

Parties making use of the Candidate FSM Method should be able to derive from the contents of the Candidate FSM Method a common understanding of its meaning and intent. The Candidate FSM Method should be so clear and precise that it results in accurate and uniform interpretation.

If the owner can be contacted, then difficulties arising from 4.4.1 during the evaluation shall be referred to the owner of the Candidate FSM Method for clarification. If the difficulties still cannot be resolved then the evaluation question shall be deemed as not being able to be resolved.

4.4.2 Tasks and Steps

The conformity evaluation procedure shall include the tasks and steps listed below.

a) The conformity evaluation steps listed below shall be conducted **for each evaluation question**.

1) If the evaluation question has 'if applicable' as an option, then determine whether this evaluation question is applicable to the Candidate FSM Method being evaluated. If not, then this evaluation question does not contribute to the evaluation result for this method. Record that the evaluation question does not contribute to the evaluation. No further steps for this evaluation question are necessary.

2) Identify all relevant information in the Candidate FSM Method documentation. If no relevant information can be located, and is still not located after liaising with the owner, then this evaluation question shall be deemed as not being able to be resolved - proceed to step 4.4.2 a) 5).

3) Record the location of the relevant information (identified in step 4.4.2 a) 2)) against the evaluation question. Each recorded location shall include:

i) in the case of text, the page number, lowest level heading and paragraph or line number,

ii) in the case of tables, the page number, table name and row,

iii) in the case of diagrams, the page number, diagram name and number, or

iv) any other details necessary to locate the relevant information.

NOTE 1 Recording the information used to evaluate conformity to a provision of ISO/IEC 14143-1:1998 provides the evaluation sponsor with a clear statement of precisely what was evaluated. For the purpose of auditing, it is recommended that the identifier of the evaluation questions be recorded at the appropriate location on the Candidate FSM Method documentation.

4) Consider all located information as a whole and determine if it satisfies the requirements of the evaluation question. If so, then the Candidate FSM Method shall pass this evaluation question - proceed to step 4.4.2 a) 7). If the evaluation question was not able to be resolved - proceed to step 4.4.2 a) 5) otherwise proceed to step 4.4.2 a) 6).

5) If the evaluation question could not be resolved, then the conformity evaluation team shall record:

i) the locations of the information, or the absence of the information, that left the evaluation question unable to be resolved, and

ii) the justification for the decision that left the evaluation question unable to be resolved.

6) If any evaluation question was not passed, then the conformity evaluation team shall record:

   i) the locations of the information, or the absence of the information, which caused the evaluation question not to be able to be passed, and

   ii) the justification for the decision for not passing the evaluation question.

7) If the evaluation question was passed at every step in this procedure to reach this step, then the conformity evaluation team shall record that the Candidate FSM Method passed this evaluation question.

NOTE 2 Figure 1 provides an informative diagrammatic representation of the evaluation procedure for each evaluation question.

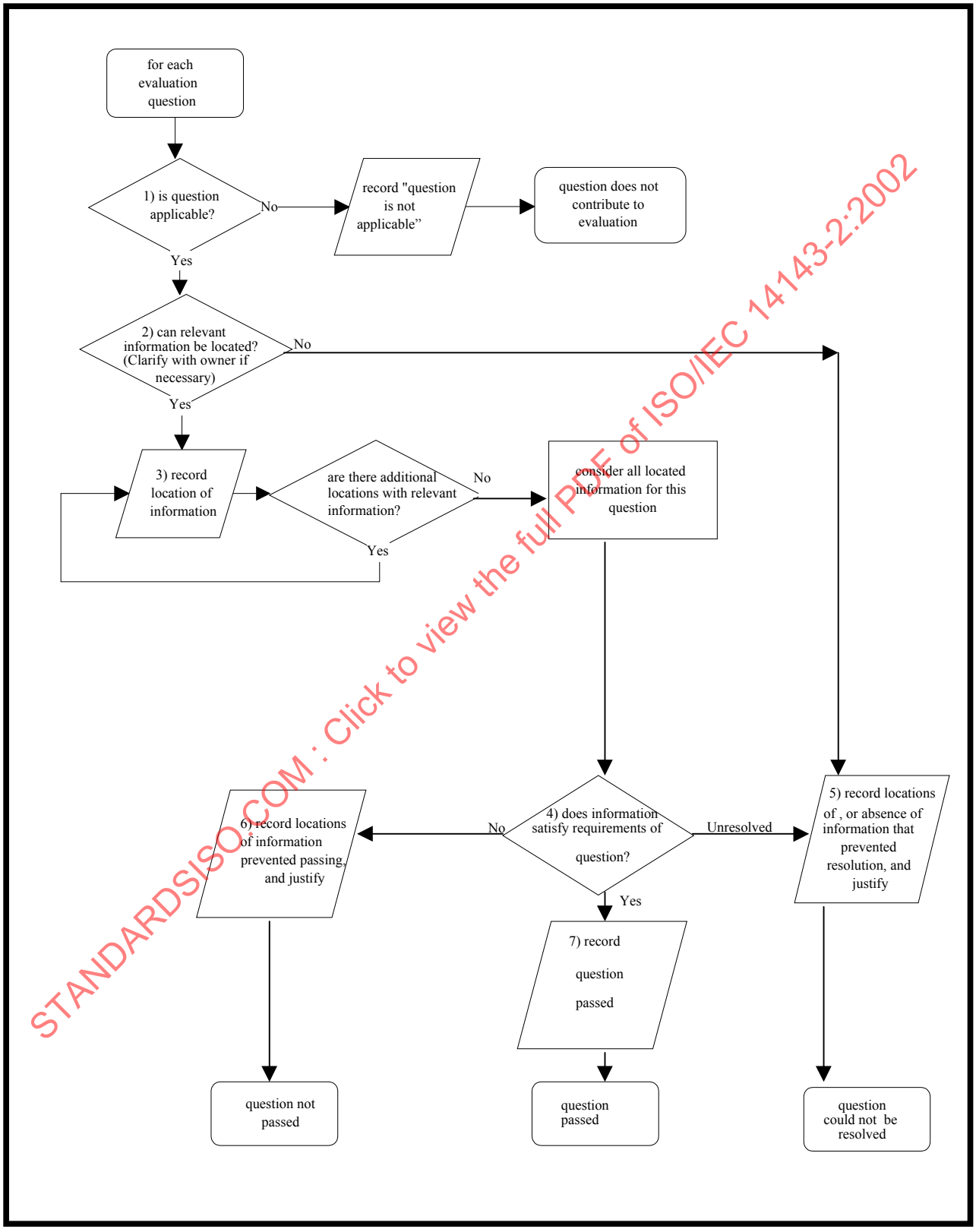

Figure 1 — Example of diagrammatic procedure for use with each evaluation question

b) The conformity evaluation steps listed below shall be conducted for each provision in ISO/IEC 14143-1:1998.

1) Determine if the Candidate FSM Method has passed all corresponding evaluation questions.

2) If the Candidate FSM Method has passed all corresponding evaluation questions, then it shall be deemed-to-satisfy this provision, and the result shall be recorded as the 'provision has been satisfied'.

3) If the Candidate FSM Method has one or more corresponding evaluation questions which were not passed, then the provision shall be deemed as not having been satisfied.

4) If the Candidate FSM Method has one or more corresponding evaluation questions which could not be resolved, then the provision shall be deemed 'unable to be evaluated'.

5) If the provision was deemed as not having been satisfied, then the conformity evaluation team shall record the justification for the decision.

6) If the provision was deemed as 'unable to be evaluated', then the conformity evaluation team shall record the justification for the decision.

NOTE 3 Figure 2 provides an informative diagrammatic representation of the evaluation procedure for each provision.

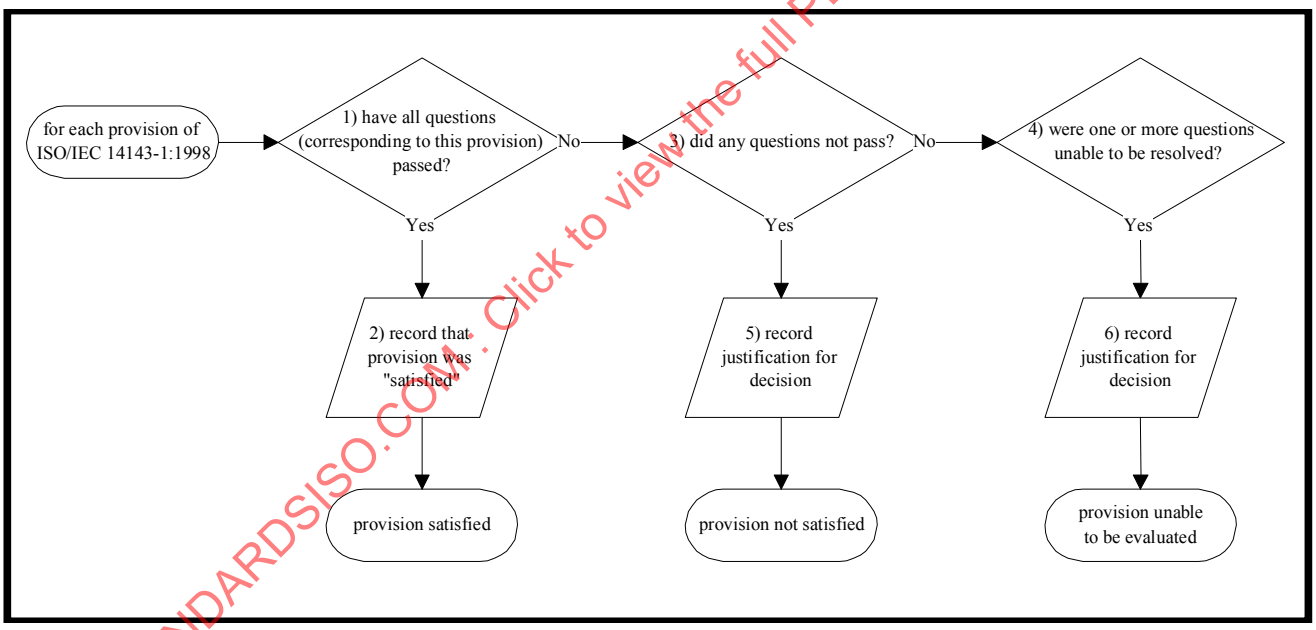

Figure 2 — Example of diagrammatic procedure for use with each evaluation provision

NOTE 4 The conformity evaluation team must be able to justify their decision not to pass a provision. The justifications would be required for the following types of decisions where the evaluation team were unable to:

- pass an evaluation question,
- resolve an evaluation question,
- deem a provision as satisfied, or
- evaluate a provision.

These justifications are essential to the review of the conformity evaluation process, both by the evaluation sponsor and by those who may want to use a specific software sizing method. This is required in order for the conformity evaluation to be understood and respected.

c) If all requirements, of ISO/IEC 14143-1:1998 have been recorded as having been satisfied, then the Candidate FSM Method shall be deemed to have successfully completed this conformity evaluation procedure.

d) If any requirements, of ISO/IEC 14143-1:1998 have not been able to be recorded as being satisfied, or have been recorded as being unable to be evaluated, then the Candidate FSM Method shall be deemed not to have successfully completed this conformity evaluation procedure.

e) If the owner of the Candidate FSM Method has added comments to the conformity evaluation report, then the evaluation team shall review those comments to determine if any steps of the conformity evaluation process need to be repeated before the conformity evaluation report is published.

4.5 Conformity evaluation output

4.5.1 The conformity evaluation process shall include the production of a conformity evaluation report. The report is the means of recording the detailed evidence to support the conformity evaluation decision against each provision of ISO/IEC 14143-1:1998.

4.5.2 As a minimum, the conformity evaluation report shall include the following sections:

a) executive summary, which shall include as a minimum the following information:

   1) full identification details of the Candidate FSM Method;

   2) name of the evaluator organization;

   3) type of assessment ie. first, second or third party;

   4) date(s) of the conformity evaluation;

   5) result of the evaluation.

b) completed conformity evaluation checklist;

c) results (including all the information that contributed to any decisions made);

d) conformity evaluation plan;

e) justifications for decisions where a requirement was not deemed as satisfied or was unable to be evaluated;

f) conformity evaluation procedure;

g) qualifications of conformity evaluation team;

h) record of liaison with the owner during the conformity evaluation process.

4.5.3 The conformity evaluation plan section shall include the original conformity evaluation plan, and describe and justify any deviations from that plan.

4.5.4 For each provision that was not deemed as satisfied or was unable to be evaluated, the justification for results section shall include the following:

a) list of evaluation questions that contributed to that decision;

b) locations of all information that contributed to that decision;

c) justification for that decision.

4.5.5 The section describing the qualifications of conformity evaluation team shall contain information to assist both the evaluation sponsor and the readers of the report to assess the competence of the conformity evaluation team.

NOTE Annex C contains an example template of a conformity evaluation report that exhibits the minimum requirements of this part of ISO/IEC 14143.

4.6 Conformity evaluation result

If, after applying the requirements of this part of 14143, the conformity evaluation team determines that the Candidate FSM Method meets the requirements of this part, then the evaluation sponsor can make the following statement in whichever form is suitable: "The method of Functional Size Measurement known as [name of Candidate FSM Method and version, as required by ISO/IEC 14143-1:1998] conforms to the requirements of ISO/IEC 14143-1:1998 in accordance with ISO/IEC 14143-2."

Annex A
(informative)

Evaluator capability

A.1 Conformity evaluation team

To perform a conformity evaluation in accordance with this part of ISO/IEC 14143, the conformity evaluation team should consist of a lead evaluator and two or more assistant evaluators. This team should have the necessary competencies. These competencies should include:

a) experience and skills in performing conformity evaluations to National or International Standards in a software environment (not necessarily under this part of ISO/IEC 14143);

b) knowledge of the concepts of parts 1 and 2 of ISO/IEC 14143;

c) experience and skills in performing software size measurement using industry recognised methods.

NOTES

1 The conformity evaluation process could be subjective if carried out by one individual. A team which has several members could discuss and vote on each subjective issue, thereby potentially increasing the objectivity, consistency, and reliability of the conformity evaluation.

2 To assist in gaining a better understanding of the Candidate FSM Method, the conformity evaluation team should consider applying the Candidate FSM Method. The Candidate FSM Method should be applied as specified in the Candidate FSM Method documentation. If the conformity evaluation team have sufficient experience with the Candidate FSM Method then they may apply it themselves. Alternatively they may observe it being applied by other people who are experienced in its use.

A.2 Demonstration of competence

A.2.1 Individual declaration

The evaluator organization should obtain a declaration from each member of the conformity evaluation team. The declaration should state the competencies of the member of the conformity evaluation team in each of the following:

a) evaluation practice;

b) software size measurement concepts;

c) software size measurement practice using industry recognised methods.

A.2.2 Evaluation practice

In relation to evaluation practice, the declaration should state each member's:

a) years of experience,

b) roles performed (lead evaluator, assistant evaluator, etc.),

c) formal training, and

d) certification to conduct third- party evaluations (lead evaluator, evaluator, etc.).

A.2.3 Software size measurement concepts

In relation to software size measurement concepts, the declaration should state each member's experience in:

a) development and review of software size measurement methods,

b) provision of training in software size measurement methods,

c) publishing papers on software size measurement,

d) study of papers and books on software size measurement, and

e) development of standards for software measurement.

A.2.4 Software size measurement practice

In relation to software size measurement practice using industry recognised methods, the declaration should state each member's:

a) years of experience and number of instances of measuring software size and types of software size measurement,

b) formal training and qualifications,

c) certification in any software size measurement methods, and

d) experience with Functional Domains relevant to the Candidate FSM Method.

Annex B
(informative)

Example of a conformity evaluation checklist

B.1 Introduction

B.1.1 Background

The example conformity evaluation checklist has been structured to facilitate the evaluation process.

B.1.2 Structure

The example conformity evaluation checklist is divided into three parts:

a) part 1 contains evaluation questions relating to the requirements of ISO/IEC 14143-1:1998;

b) part 2 contains evaluation questions relating to the recommendations of ISO/IEC 14143-1:1998; and

NOTE Part 2 is optional for a conformity evaluation checklist.

c) part 3 contains a matrix cross-referencing the provisions in ISO/IEC 14143-1:1998 to the evaluation questions.

B.1.3 Instructions

The checklist may be used as described in section 4.4 of this part of ISO/IEC 14143.

B.2 Conformity evaluation checklist

B.2.1 Part 1 - requirements

B.2.1.1 Labelling conventions

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Does the Candidate FSM Method use a name that distinguishes it from all other existing FSM Methods?				7(a)
b) If the Candidate FSM Method implies that there are other versions of the Method, then does it also include the current version number that it appends to its name?				7(b)

B.2.1.2 Functional User Requirements

B.2.1.2.1 Source information

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Does the Candidate FSM Method use Functional User Requirements when deriving Functional Size?				6 (b)
b) Does the Candidate FSM Method use a concept of functional size that corresponds to a size of the software derived by quantifying the Functional User Requirements?				6 (b)
c) Does the Candidate FSM Method exclude Technical Requirements from the Functional User Requirements when deriving functional size?				5.1.1.1 (a)
d) Does the Candidate FSM Method exclude Quality Requirements from the Functional User Requirements when deriving Functional Size?				5.1.1.1 (a)

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
e) Is the representation of the Functional User Requirements used by the Candidate FSM Method based on the perspective of the users?				**5.1.1.1 (a)**
f) Can the Candidate FSM Method be applied as soon as any Functional User Requirements are defined and while they are available?				**5.1.1.1 (b)**
g) Are the Functional User Requirements used by the Candidate FSM Method a sub-set of the user requirements, and do they represent the user practices and procedures that the software must perform to fulfil the users' needs?				**5.1.1.1 (a)**

B.2.1.2.2 Scope of the Measurement

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Is the determination of the Scope of the FSM an activity required to derive Functional Size?				**6 (a)**
b) Is the identification of which Functional User Requirements are to be included within the Scope of the FSM an activity required to derive Functional Size?				**6 (b)**
c) Does the Candidate FSM Method describe how to identify which Functional User Requirements will be included within the Scope of the FSM?				**5.2.2 (b)**

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
d) Does the Candidate FSM Method have a concept of the Scope of the FSM that corresponds to the set of Functional User Requirements to be included in a specific FSM instance?				**6 (b)**

B.2.1.2.3 Boundary

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Does the boundary correspond to the conceptual interface between the software under study and its users? Only answer this question if it is applicable to the FSM Method being evaluated.				**5.2.2 (f)**
b) Where the Candidate FSM Method implies a relationship exists between a Base Functional Component (BFC) Type and the boundary, is there a definition of that relationship for each BFC Type?				**5.2.2 (f)**

B.2.1.2.4 Functional Domain

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Does the Candidate FSM Method use the concept of Functional Domain which corresponds to a class of software based on the characteristics of Functional User Requirements which are pertinent to FSM?				**5.2.1.1 (d)**
b) Is there a description of the Functional Domains to which the Candidate FSM Method can be applied?				**5.2.1.1 (d)**

B.2.1.3 Application of an FSM

B.2.1.3.1 Base Functional Component (BFC)

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Does the Candidate FSM Method have, or refer to, a definition for the concept of a BFC?				**5.2.1.1 (a)**
b) Does this definition for a BFC correspond to being an elementary unit of Functional User Requirements?				**5.1.2 (a)**
c) Does the FSM Method use these elementary units of Functional User Requirements for measurement purposes?				**5.2.2 (a)**
d) Does the Candidate FSM Method define the attributes of BFCs?				**5.2.1.1 (a)**
e) Does the Candidate FSM Method define rules used to assess the BFCs?				**5.2.1.1 (b)**
f) Is there a description of how to identify the BFCs within the Functional User Requirements?				**5.2.2 (c)**
g) Are the characteristics of a BFC such that they only express Functional User Requirements?				**5.1.2 (a)**
h) Are the characteristics of a BFC such that they do not express Technical Requirements?				**5.1.2 (b)**
i) Are the characteristics of a BFC such that they do not express Quality Requirements?				**5.1.2 (c)**
j) Is the identification of the BFCs within the Functional User Requirements an activity required to derive Functional Size?				**6 (c)**

B.2.1.3.2 Base Functional Component Type (BFC Type)

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Is there a concept of a BFC Type that corresponds to being a category of BFCs?				**5.2.2 (a)**
b) Is there a definition for each BFC Type?				**5.2.2 (a)**
c) Can a BFC be classified as one, and only one, BFC Type?				**5.1.2 (d)**
d) If there is more than one BFC Type, is there a definition of how to classify BFCs into the appropriate BFC Type?				**5.2.2 (d)**
e) If the Candidate FSM Method implies that there are relationships between BFC Types, then does it provide a definition of those relationships? Only answer this question if it is applicable to the FSM Method being evaluated.				**5.2.2 (g)**
f) If the Candidate FSM Method has more than one BFC Type, is the classification into types one of the activities required to derive Functional Size?				**6 (d)**

B.2.1.3.3 Deriving Functional Size

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Is the functional size derived through the evaluation of BFCs?				**5.1.1.1 (c)**
b) Is the derivation of Functional Size independent of the **effort** required to **develop** the software being measured?				**5.1.3 (a)**

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
c) Is the derivation of Functional Size independent of the **effort** required to **support** the software being measured?				**5.1.3 (b)**
d) Is the derivation of Functional Size independent of the **methods** used to **develop** the software being measured ?				**5.1.3 (c)**
e) Is the derivation of Functional Size independent of the **methods** used to **support** the software being measured?				**5.1.3 (d)**
f) Is the derivation of Functional Size independent of any **physical** components of the software being measured?				**5.1.3 (e)**
g) Is the derivation of Functional Size independent of any **technological** components of the software being measured?				**5.1.3 (f)**
h) Is there a definition of how to assign a numeric value to a BFC according to its BFC Type?				**5.2.2 (e)**
i) Is assigning a numeric value to a BFC one of the activities required to derive Functional Size?				**6 (e)**
j) Does the Candidate FSM Method define how to calculate the Functional Size?				**6 (f)**

B.2.1.3.4 Units of Functional Size

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding requirements
a) Is there a definition of the units in which the Functional Size is expressed?				5.2.1.1 (c)
b) When reporting the Functional Size, is the user required to qualify it with the units specified by the Candidate FSM Method?				5.2.3 (a)
c) When reporting the Functional Size, is the user required to qualify it with the name specified by the Candidate FSM Method?				5.2.3 (b)
d) If the Candidate FSM Method is customised, is the user required to indicate this when reporting the Functional Size?				5.2.3 (c)

B.2.2 Part 2 - recommendations

B.2.2.1 FSM Method

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding recommendations
a) Is the Candidate FSM Method independent of any particular software development method or technology?				5.1.1.2

B.2.2.2 Documentation of the result of applying an FSM

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding recommendations
a) Is there a description of the kind of information necessary to enable the Candidate FSM Method to be applied?				5.2.1.2 (a)
b) Are there guidelines provided on how to document a specific instance of FSM?				5.2.1.2 (b)

B.2.2.3 Using the Functional Size Results

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding recommendations
a) Is there a description of the purposes for which the FSM Method can best be used, such that the users of the FSM can judge its suitability for their purpose?				5.2.1.2 (c)

B.2.2.4 Convertibility of Functional Size

evaluation question	locations	satisfies 4.4.1?	satisfies the requirements of evaluation question?	corresponding recommendations
a) Is there a statement of the degree of convertibility to other size measurement methods?				5.2.1.2 (d)