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Compliance assessment of software sizing methods

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WORK ITEM: **07.31.2**

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TITLE: **PROJECT PLAN - 7.31.2: COMPLIANCE ASSESSMENT OF SOFTWARE SIZING METHODS**

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PROJECT 7.31.2 SUB PROJECT PLAN

ISO/IEC

Version 1.0 07 September 1995

Information Technology - Software Measurement - Compliance Assessment of Software Sizing Methods

Table of Contents

PLAN FOR SUB PROJECT

1. TITLE

Compliance Assessment of Software Sizing Methods

2. SCOPE

The scope of this sub project is the creation of a standard which will stipulate procedures for assessing the compliance of software sizing methods with ISO/IEC JTC1/SC7: DIS14143. The standard will also prescribe the format for the assessment report.

The standard will be used directly to assess the compliance of a software sizing method with ISO/IEC JTC1/SC7: DIS14143. The output of the assessment process will be a report in a prescribed format, which describes the level of compliance of the method in detail.

The assessment reports will be used for comparison of the level of compliance of different software sizing methods. This will enable the users to select the software sizing method which best suits their needs.

3. PURPOSE AND JUSTIFICATION

3.1 Background

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 method to embrace this concept was Function Point Analysis, developed by Alan Albrecht in the late 1970's. Since then, numerous extensions and variations of the original method have been developed. The end user now has more than twenty variants from which to choose, each with its own advantages in specific situations. Choosing the wrong method for a particular application could have undesirable consequences.

[1] Refer ISO/IEC/SC7 Standard CD 14143 ‘ Information Technology - Software measurement - Definition of functional size measurement’.

ISO/IEC JTC1/SC7: DIS14143 was developed to define the concept of FSM. This provides a basis against which all variants can be compared. However, there is no agreed process for assessing the extent of compliance of a software sizing method with ISO/IEC JTC1/SC7: DIS14143. In order for the assessments to be useful for the end user, they must be conducted in a consistent manner, and the results must be presented in a standard format. This would allow the end user to make informed judgements about which method best suits their needs.

3.2 Purpose

The purpose of this sub project is to establish a standard process for assessing the extent of compliance of software sizing methods with ISO/IEC JTC1/SC7: DIS14143. The standard will be related to and will reference other FSM standards. The sub project will ensure the introduction of unambiguous procedures for assessing software sizing methods and will enable the production of assessment reports in a standard format. The reports can be used to determine if a software sizing method complies with the standard and can be identified as an FSM method.

3.3 Benefits

Through the introduction of the standard, benefits anticipated are:

1. compliance assessors will have specific procedures to follow when assessing the extent of compliance of a software sizing method with ISO/IEC JTC1/SC7: DIS14143,

2. users of software sizing methods will be able to evaluate the strengths and weaknesses of different methods and select the one which is most suited to their needs,

3. users will also be able to identify if a software sizing method is also an FSM Method,

4. developers of potential FSM Methods will have a tool to assist them in complying with ISO/IEC JTC1/SC7: DIS14143,

5. refinement of software sizing methods to increase compliance with ISO/IEC JTC1/SC7: DIS14143,

6. reduction in the inappropriate application of some FSM Methods, and

7. increased end user awareness of the relative merits of FSM Methods.

In summary, the sub project will ensure that FSM Methods retain and enhance their position as a leading software size measurement technique in the information systems industry, through the development of better methods and through more appropriate use being made of them.

4. PROGRAMME OF WORK

4.1 Status

The programme of work is a single International Standard.

4.2 Architecture of the Standard

For each mandatory and non-mandatory feature within ISO/IEC JTC1/SC7: DIS14143, the standard will specify how to:

1. identify all references to the feature within the source documents defining the software sizing method,

2. determine whether each reference complies with ISO/IEC JTC1/SC7: DIS14143, and

3. report the extent of compliance of the source documents against the feature.

The standard will specify how to report the overall compliance of the software sizing method with ISO/IEC JTC1/SC7: DIS14143. A summary of the report will state whether the software sizing method is an FSM Method.

4.3 Terminology Fundamental to the standard

Terminology used in the following standards, or proposed standards, is considered fundamental to the standard:

1.	ISO 8402 :	Information technology - Glossary
2.	ISO/IEC JTC1/SC7: DIS14143	Information technology - Software measurement - Definition of functional size measurement
3.	ISO/IEC 9126:1988	Information technology - Software product evaluation - Quality characteristics and guidelines for their use

4.4 Method of Testing

Prior to submission as a Committee Draft, the standard will be tested against existing software sizing methods to assess its usability.

4.5 Interaction with Other Standards or Proposed Standards

The standard is proposed to be one of a suite of FSM standards. The first standard in the suite is ISO/IEC JTC1/SC7: DIS14143 'Information Technology - Software measurement - Definition of functional size measurement'.

The other related standards are to be developed concurrently with the standard being proposed here, and are also at sub project plan status. These sub projects are:

1. 'Determination of Functional Domains for Use with FSM' which will define classes of software known as functional domains. The criteria for each functional domain will be based on the characteristics of functional user requirements which are pertinent to FSM.

2. 'Functional Size Measurement Validation' which will be used by validators of an FSM Method to check the effectiveness of the Method as an indicator of software size.

3. 'Functional Size Measurement Validation Reference Model' which will be used by developers and validators of an FSM Method as an example set of functional user requirements, combined with a Reference FSM Method by which to measure them. The standard within this plan. will be made up of two parts:

   Part A - provides an example set of functional user requirements.

   Part B - provides a Reference FSM Method. It will be used by validators of an FSM Method as a reference model with which to compare the method under review. It will also be used by anyone needing to size functional user requirements using a Reference FSM Method.

4.6 Interaction with Other Projects

The project to develop the standard will be carried out concurrently with the projects developing the related standards:

1. Determination of Functional Domains for Use with FSM,

2. Functional Size Measurement Validation, and

3. Functional Size Measurement Validation Reference Model.

It is planned that all draft deliverables from each of these related standards will be reviewed by the other projects to ensure consistency in terminology and style. In addition to these regular document reviews, all project teams will meet as a group twice yearly at the SC7 Plenary and the SC7 Fall meetings to realign their direction and review each others' work.

4.7 Resource Availability

The standards associations of the following countries have already indicated their availability to actively participate in the development of the standard. In most cases, this participation will be through their national software metric user groups as listed below:

country	software metrics user group
Australia	Australian Software Metrics Association (ASMA),
Canada	Centre d'Intérêt sur les Métriques (CIM),
France	French Function Point Users Group (FFPUG),
Germany	Deutschsprachige Anwendergruppe für Software Metrik und Aufwandschätzung (DASMA),
Italy	Gruppo Utenti Function Points Italia (GUFPI),
Japan	
Netherlands	Netherlands Software Metrics Association (NESMA),
UK	UK Function Point Users Group (UFPUG),
USA	International Function Point Users Group (IFPUG).

The members of the above software metrics user groups liaise directly with the standards associations in their home countries. These user groups have previously worked together on ISO/IEC JTC1/SC7: DIS14143, where they have demonstrated their ability to successfully co-ordinate activities, meet project deadlines and actively contribute to an international project.

4.8 Project Plan

Project: Compliance Assessment of Software Sizing Methods

schedule	tasks and deliverables
1995 JUNE Plenary JULY NOVEMBER	 refine Sub Project Plan at Plenary, Submit to SC7 for approval commence development of standard discuss preliminary draft of standard at WG12 meeting in Dublin
1996 JUNE Plenary JULY NOVEMBER	 agree on working draft and testing strategy commence testing and revisions report on tests at WG12 meeting and revise strategy
1997 MARCH JUNE Plenary	 distribute draft CD to all WG12 members final revision of standard - submit CD to SC7

5. RELEVANT DOCUMENTS TO BE CONSIDERED

The following documents may be referenced as sources of additional information on the subject of functional sizing methods. The list is not definitive but emphasises those publications which are relevant to assessing the compliance of software sizing methods with ISO/IEC JTC1/SC7: DIS14143.

Albrecht, A. J.: "Measuring Application Development Productivity", Proceedings of the Joint SHARE/GUIDE/IBM Application Development Symposium, Oct 1979, pp. 83-92

Albrecht, A. J. and Gaffney, J. E.: "Software Function, Source Lines of Code, and Development Effort Prediction: A Software Science Validation", IEEE Transactions on Software Engineering, Vol. SE-9, No. 6, Nov. 1983, pp. 639-648.

Dreger, J. B.: "Function Point Analysis", Englewood Cliffs, NJ: Prentice-Hall, 1989.

European Function Point Users Group, Function Point Extensions Special Interest Group: "Function Point Counting Practices for Highly Constrained Systems".

International Function Point Users Group: "Function Point Counting Practices Manual", Release 4.0, 1994

Jones, C.: "A Short History of Function Points and Feature Points", Software Productivity Research Incorporated, mimeo version, 2.0, Feb. 20, 1988.

Kemerer, C. F.: "Reliability of Function Points Measurement: A Field Experiment", Communications of the ACM, Feb. 1993.

Kemerer, C. F. and Porter, B. S.: " Improving the Reliability of Function Point Measurement: An Empirical Study", IEEE Transaction on Software Engineering, Vol. SE-18, No. 11, Nov. 1992, pp. 1011-1024.

Netherlands Function Point Users Group: "Definitions and Counting Guidelines for the Application of Function Point Analysis", Release 1.1, 1992.

Reifer, D. J.: “ Asset-R: A Function Point Sizing Tool for Scientific and Real-Time Systems”, Reifer Consultants Inc., mimeo Technical Note Number RCI-TN-299, Oct 2,1987.

Symons, C. R.: "Function Point Analysis: Difficulties and Improvements", IEEE Transaction on Software Engineering, Vol. SE-14, No. 1, Jan. 1988, pp. 2-11.

Whitmire, S. C.: "3D Function Points: Scientific and Real-Time Extensions to Function Points", Proceedings of the Pacific Northwest Software Quality Conference, Jun. 1, 1992.