

Patrice Nolin, M.SC.A.

# **Évaluation de la conformité de la méthode COSMIC-FFP v. 2.0 à la norme 14143-1:2000**

Révisé le **16 janvier 2001**

(Référence : c:\mes documents\uqam\éval 14143 ffp 2\_0évaluation conformité cosmic-ffp v2-0 a iso14143-1.doc)

## Sommaire exécutif

**Titre du rapport** Évaluation de la conformité de la méthode COSMIC-FFP v. 2.0 à la norme 14143-1:2000

### Identification de la méthode

Nom : COSMIC-FFP

Version : 2.0

Auteurs :  Common Software Measurement International Consortium (COSMIC)

Date de publication : Octobre 1999

Publié par : COSMIC et Université du Québec à Montréal (UQAM)

### Résultats de l'évaluation de la conformité

Date : Janvier 2001

Résultat : Échouée, la méthode des points de fonction étendus ne satisfait pas toutes les questions obligatoires de ISO/IEC 14143-1:1998.

Une évaluation précédente donnait un résultat négatif (P. Nolin, 15 décembre 1998). La différence entre cette évaluation et celle-ci se situe surtout au niveau de la nouvelle version de FFP qui est assez différente de l'ancienne. Elle a été entièrement réécrite.

**B.2 Assessment Compliance Checklist (Grille de vérification)**

*Note: the appendixes B “COSMIC-FFP Principles Identification” and C “COSMIC-FFP Rules Identification” have not been use to locate answers to assessment questions because you can find the whole content of those appendixes with the core of the document.*

Assessment questions	Locations	Understand-able?	Consistent single interpretation?	Answer requirements of question?	Corresponding provisions	Problem identified	Proposed solution
<b>B.2.1 Part 1 - Mandatory provisions</b>							
<i>B.2.1.1 Labelling conventions</i>							
a) Does the Candidate FSM Method use a name which distinguishes it from all other existing FMS Methods?	p. 1 p. 11 Introduction, l. 339	Yes	Yes	Yes	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 which it appends to its name?	p. 1, l. 11 p. 11, Introduction l. 339	Yes	Yes	Yes	7 (b)		
<i>B.2.1.2 Functional User Requirements</i>							
<b>B.2.1.2.1 Source information</b>							
a) Does the Candidate FSM Method use Functional User Requirements when deriving Functional Size?	p. 13, section 2.1, figure 2.1.1 p. 13, section 2.1, l. 430 p. 14, section 2.3, l. 495	Yes	Yes	Yes	6 (b)		
b) Does the Candidate FSM Method use the concept of functional size which corresponds to a size of the software derived by quantifying the Functional User Requirements?	p. 12, s. 2.1, l. 403 p. 13, s. 2.1, figure 2.1.1 p. 18, s. 2.4, l. 723, 728, 734 p. 18, s. 2.4, l. 745	Yes	Yes	Yes	6 (b)		
c) Does the Candidate FSM Method exclude Technical Requirements from the Functional User Requirements when deriving functional size?	p. 7, Glossary, l. 199 p. 10, Introduction, l. 304 p. 17, section 2.3.1, l. 655	Yes	Yes	Yes	5.1.1.1 (a)		
d) Does the Candidate FSM Method exclude Quality Requirements from the Functional User Requirements when deriving Functional Size?	p. 7, Glossary, l. 199 p. 17, section 2.3.1, l. 655	Yes	Yes	yes	5.1.1.1 (a)		
e) Is the representation of the Functional User Requirements used by the Candidate FSM Method based on the perspective of the users?	p. 6, Glossary, l. 448 p. 10, Introduction, l. 303 p. 12, s. 2.1, l. 403	Yes	No	No	5.1.1.1 (a)	In the document, it's impossible to find an explicit reference to “based on the perspective of the user”. This information is deduced from the fact that Functional User Requirement is supposed to be from the perspective of the user.	Replace the FUR definition of the glossary by “The term Functional User Requirements is an ISO expression designating a sub-set of the user requirements, <b>based on the user perspective</b> . FUR represent the user practices and procedures that the software must perform to fulfil the user's needs. FUR exclude Quality Requirements and any Technical Requirements”
f) Can the Candidate FSM Method be applied as soon as any Functional User Requirements are defined and whilst they are available?	p. 14, s. 2.3.1, l. 520 p. 13, s. 2.2, l. 451	Yes	Yes	Yes	5.1.1.1 (b)		
g) Are the Functional User Requirements used by the Candidate FSM Method a sub-set of the user requirements	p. 7, Glossary, l. 197	Yes	Yes	Yes	5.1.1.1 (a)		

Assessment questions	Locations	Understand-able?	Consistent single interpretation?	Answer requirements of question?	Corresponding provisions	Problem identified	Proposed solution
which represent the user practices and procedures that the software must perform to fulfill the users' needs?							
<b>B.2.1.2.2 Scope of the Measurement</b>							
a) Is the determination of the Scope of the FSM an activity required to derive Functional Size?	p. 20, s. 2.5, l. 843 p. 22, figure 3.1 p. 25, s. 3.2, l. 982	Yes	Yes	Yes	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?	No reference found			No	6 (b)	The confusion come from that the identification of what to measure is on "Functional Process", not "Functional User Requirement". The reader must deduce that the Functional Process is based on the FUR.	Replace the 1 <sup>st</sup> paragraph of section 3.3 by "This step consists in identifying the set of functional processes implementing the functionality delivered by the software to be measured, according to its requirements. <b>The scope of the FUR to measure correspond to all FUR describing Functional process identified</b> ".
c) Does the Candidate FSM Method describe how to identify which Functional User Requirements will be included within the Scope of the FSM?	p. 27, s. 3.3, l. 1067	Yes	No	No	5.2.2 (b)	The "How" describe how to identify which Functional process to measure, not which FUR to be include. The reader must deduce that selecting a Functional Process it means include his FUR in the scope.	Add the following paragraph before line 994 of p. 25 : " <b>Once the boundary identified, each FUR describing processes inside the boundary is include within the scope of the FMS.</b> "
d) Does the Candidate FSM Method have a concept of the Scope of the FSM which corresponds to the set of Functional User Requirements to be included in a specific FSM instance?	Implicit, no reference found			No	6 (b)	You have to deduce that the output of the mapping phase is the set of FUR that is within the scope.	Insert the following sentence before the line 498 : " <b>The software model produced correspond to the subset of the FUR to include in the scope of the specific FMS instance</b> ". This sentence, or another with the same essence can also be insert as well at line 725 of page 18.
<b>B.2.1.2.3 Boundary</b>							
a) Does the boundary it corresponds to the conceptual interface between the software under study and its users? Only answer this question if it is applicable to FSM Method being evaluated.	p. 25, s. 3.2, l. 983	Yes	Yes	Yes	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?	p. 18, s. 2.3.2, l. 691 p. 18, s. 2.3.2, figure 2.3.2.2 p. 26, s. 3.2, figure 3.2.1 p. 26, s. 3.2, l. 1034 p. 34, s.4.1, l. 1281, 1282, 1283, 1284	Yes	Yes	Yes	5.2.2 (f)		
<b>B.2.1.2.4 Functional Domain</b>							
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.	p. 12, s. 2, l. 372	Yes	Yes	Yes	5.2.1.1 (d)		
b) Is there a description of the Functional Domains to which the	p. 12, s. 2, l. 374, 379, 384	Yes	Yes	Yes	5.2.1.1 (d)		

Assessment questions	Locations	Understand-able?	Consistent single interpretation?	Answer requirements of question?	Corresponding provisions	Problem identified	Proposed solution
Candidate FSM Method can be applied?							

B.2.1.3 Application of an FSM

**B.2.1.3.1 Base Functional Component (BFC)**

a) Does the Candidate FSM Method have or refer to definition for the concept of a BFC?	p. 6, Glossary, l. 142 p.34, s. 4.1, l. 1069	Yes	No	No	5.2.1.1 (a)	Difficult to match the Process->BFC, not explicit	I personally would replace the title 4.1 Identify sub-process of page 33, with "3.3 Identify process (BFC)" to clarify it.  Add the following sentence at the ends of line 143 of p. 6 and of line 1069 of p. 27 : "A COSMIC-FFP process is equivalent to an ISO Base Functional Component (BFC).".
b) Does this definition for a BFC correspond to being an elementary unit of Functional User Requirements?	p. 6, Glossary, l. 142	Yes	Yes	Yes	5.1.2 (a)		
c) Does the FSM Method use these elementary units of Functional User Requirements for measurement purposes?	p. 6, Glossary, l. 142	Yes	Yes	Yes	5.2.2 (a)		
d) Does the Candidate FSM Method define the attributes of BFCs?	p. 27, s. 3.3, l. 1073, 1076	Yes	Yes	Yes	5.2.1.1 (a)		
e) Does the Candidate FSM Method define rules to assess the BFCs?	p. 27, s. 3.3, l. 1073, 1076	Yes	Yes	Yes	5.2.1.1 (b)		
f) Is there a description of how to identify the BFCs within the Functional User Requirements?	p. 28, s. 3.3, l. 1070	Yes	Yes	Yes	5.2.2 (c)		
g) Are the characteristics of a BFC such that they only express Functional User Requirements?	p. 6, Glossary, l. 142	Yes	Yes	No	5.1.2 (c)	This characteristic is not mentioned in the definition of BFC.	Insert the following sentence at the end of line 143 : "The BFC express only functional user requirements, and exclude Quality and technical requirements".
h) Are the characteristics of a BFC such that they do not express Technical Requirements?	p. 6, Glossary, l. 142	Yes	Yes	No	5.1.2 (b)	This characteristic is not mentioned in the definition of BFC.	Same solution than B.2.1.3.1 g)
i) Are the characteristics of a BFC such that they do not express Quality Requirements?	p. 6, Glossary, l. 142	Yes	Yes	No	5.1.2 (c)	This characteristic is not mentioned in the definition of BFC.	Same solution than B.2.1.3.1 g)
j) Is the identification of the BFCs within the Functional User Requirements an activity required to derive Functional Size?	p. 22, s. 3, figure 3.1 p. 27, s. 3.3, l. 1067	Yes	Yes	Yes	6 (c)		I personally would replace the title 4.1 Identify sub-process of page 33, with "4.1 Identify sub-process (BFC types)" to clarify it.

**B.2.1.3.2 Base Functional Component Type (BFC Type)**

a) Is there a concept of a BFC Type that corresponds to being a category of BFCs?	p. 6, Glossary, l. 145	Yes	Yes	Yes	5.2.2 (a)		
b) Is there definition for each BFC Type?	p. 6, Glossary, l. 170 p. 7, Glossary, l. 178 p. 8, Glossary, l. 253 p. 9, Glossary, l. 287 p. 34, s.4.1, l. 1281, 1282, 1283, 1284	Yes	Yes	Yes	5.2.2 (a)		The "Read" label in the glossary (p. 8, line 253), should be <b>Read (-type)</b> according to the other elements definition.

Assessment questions	Locations	Understand-able?	Consistent single interpretation?	Answer requirements of question?	Corresponding provisions	Problem identified	Proposed solution
c) Can a BFC be classified as one, and only one, BFC Type?	p. 35, s. 4.1.1 b), c), l. 1352 p. 36, s. 4.1.2 b), c), l. 1363 p. 37, s. 4.1.3 b), c), l. 1377 p. 37, s. 4.1.4 b), c), l. 1385	Yes	Yes	Yes	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?	p. 35, s. 4.1.1, l. 1352 p. 36, s. 4.1.1, l. 1355 p. 36, s. 4.1.2, l. 1363 p. 36, s. 4.1.2, l. 1366 p. 37, s. 4.1.3, l. 1377 p. 37, s. 4.1.4, l. 1385	Yes	Yes	Yes	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?	p. 35, s. 4.1, figure 4.1.1 p. 35, s. 4.1, l. 1316, 1324, 1333, 1341	Yes	Yes	Yes	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?	Implicit, no reference found			No	6 (d)		Insert a sentence like the following one at the end of line 1272 of page 33 : "Once sub-processes are identified, their type are identified , according to the procedures describe in the following pages".

**B.2.1.3.3 Deriving Functional Size**

a) Is the functional size derived through the compliance assessment of BFCs?	p. 38, s. 4.3, l. 1434	Yes	Yes	Yes	5.1.1.1 (c)		
b) Is the derivation of Functional Size independent of the effort required to develop the software being measured?	no reference found			No	5.1.3 (a)		Insert the sentence at the end of line of page 33 : "The derivation of Functional Size of the software being measured is independent of the effort required to develop or maintain the software, of the method use to develop or maintain the software, of any physical or technological components of the software".
c) Is the derivation of Functional Size independent of the effort required to support the software being measured?	no reference found			No	5.1.3 (b)		Same solution than B.2.1.3.3 b)
d) Is the derivation of Functional Size independent of the methods used to develop the software being measured?	no reference found			No	5.1.3 (c)		Same solution than B.2.1.3.3 b)
e) Is the derivation of Functional Size independent of the methods used to support the software being measured?	no reference found			No	5.1.3 (d)		Same solution than B.2.1.3.3 b)
f) Is the derivation of Functional Size independent of any physical components of the software being measured?	no reference found			No	5.1.3 (e)		Same solution than B.2.1.3.3 b)
g) Is the derivation of Functional Size independent of any technological components of the software being measured?	no reference found			No	5.1.3 (f)		Same solution than B.2.1.3.3 b)
h) Is there a definition of how to assign a numeric value a BFC according to its BFC Type?	p. 38, s. 4.2, l. 1414, 1416	Yes	Yes	Yes	5.2.2 (e)		
i) Is assigning a numeric value to a BFC one of the activities required to derive Functional Size?	p. 33, section 4, figure 4.1 p. 38, s. 4.2, l. 1414,	Yes	Yes	Yes	6 (e)		

Assessment questions	Locations	Understand-able?	Consistent single interpretation?	Answer requirements of question?	Corresponding provisions	Problem identified	Proposed solution
j) Does the Candidate FSM Method define how to calculate the Functional Size? <b>B.2.1.3.4 Units of Functional Size</b>	p. 38, s. 4.3, l. 1437,	Yes	Yes	Yes	6 (f)		
a) Is there a definition of the units in which the Functional Size is expressed?	p. 7, Glossary, l. 220 p. 38, s. 4.2, l. 1417	Yes	Yes	Yes	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?	p. 40, s. 5.1, l. 1470	Yes	Yes	Yes	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?	p. 40, s. 5.1, l. 1470	Yes	Yes	Yes	5.2.3 (b)		
d) If the Candidate FSM Method is customized, is the user required to indicate this when reporting the Functional Size?	p. 40, s. 5.1, l. 1474	Yes	Yes	Yes	5.2.3 (c)		

## Cross-reference between provisions of ISO/IEC 14143-1:1998 and COSMICFFP (v2.0)

ISO / IEC 14143-1:1998		Xref to assessment question for	Compliance assessment
Section	Provision	Mandatory Provision	Result
5.1.1 FMS Characteristics	5.1.1.1 (a)	B.2.1.2.1 (c)	Yes
	5.1.1.1 (a)	B.2.1.2.1 (d)	Yes
	5.1.1.1 (a)	B.2.1.2.1 (e)	No
	5.1.1.1 (a)	B.2.1.2.1 (g)	Yes
	5.1.1.1 (b)	B.2.1.2.1 (f)	Yes
	5.1.1.1 (c)	B.2.1.3.3 (a)	Yes
5.1.2 Base Functionnal Component Characteristics	5.1.2 (a)	B.2.1.3.1 (b)	Yes
	5.1.2 (b)	B.2.1.3.1 (h)	No
	5.1.2 (c)	B.2.1.3.1 (g)	No
	5.1.2 (c)	B.2.1.3.1 (i)	No
	5.1.2 (d)	B.2.1.3.2 (c)	Yes
5.1.3 Functional Size Characteristics	5.1.3 (a)	B.2.1.3.3 (b)	No ref found
	5.1.3 (b)	B.2.1.3.3 (c)	No ref found
	5.1.3 (c)	B.2.1.3.3 (d)	No ref found
	5.1.3 (d)	B.2.1.3.3 (e)	No ref found
	5.1.3 (e)	B.2.1.3.3 (f)	No ref found
	5.1.3 (f)	B.2.1.3.3 (h)	Yes
5.2.1 FMS method Requirements	5.2.1.1 (a)	B.2.1.3.1 (a)	No
	5.2.1.1 (a)	B.2.1.3.1 (d)	Yes
	5.2.1.1 (b)	B.2.1.3.1 (e)	Yes
	5.2.1.1 (c)	B.2.1.3.4 (a)	Yes
	5.2.1.1 (d)	B.2.1.2.4 (a)	Yes
	5.2.1.1 (d)	B.2.1.2.4 (b)	Yes
5.2.2 Base Functional Component compliance assessment requirements	5.2.2 (a)	B.2.1.3.1 (c)	Yes
	5.2.2 (a)	B.2.1.3.2 (a)	Yes
	5.2.2 (a)	B.2.1.3.2 (b)	Yes
	5.2.2 (b)	B.2.1.2.2 (c)	No



ISO / IEC 14143-1:1998		Xref to assessment question for	Compliance assessment
Section	Provision	Mandatory Provision	Result
	5.2.2 (c)	B.2.1.3.1 (f)	Yes
	5.2.2 (d)	B.2.1.3.2 (d)	Yes
	5.2.2 (e)	B.2.1.3.3 (i)	Yes
	5.2.2 (f)	B.2.1.2.3 (a)	Yes
	5.2.2 (f)	B.2.1.2.3 (b)	Yes
	5.2.2 (g)	B.2.1.3.2 (e)	Yes
5.2.3 Designation of Functional Size	5.2.3 (a)	B.2.1.3.4 (b)	Yes
	5.2.3 (b)	B.2.1.3.4 (c)	Yes
	5.2.3 (c)	B.2.1.3.4 (d)	Yes
No ref found6. Process for applying an FMS method	6 (a)	B.2.1.2.2 (a)	No ref found
	6 (b)	B.2.1.2.1 (a)	Yes
	6 (b)	B.2.1.2.1 (b)	Yes
	6 (b)	B.2.1.2.2 (b)	Yes
	6 (b)	B.2.1.2.2 (d)	Yes
	6 (c)	B.2.1.3.1 (j)	Yes
	6 (d)	B.2.1.3.2 (f)	No ref found
	6 (e)	B.2.1.3.3 (j)	Yes
	6 (f)	B.2.1.3.3 (k)	Yes
7. FMS Method Labelling conventions	7 (a)	B.2.1.1 (a)	Yes
	7 (b)	B.2.1.1 (b)	Yes

## Plan de vérification de la conformité original

### Tâches, horaire, ressources

- Tâches :
  - Lecture des documents sur 14143-1 :1998 et 14143-2 :2000
  - Inventaire des documents requis pour la méthode des COSMIC-FFP v.2.0
  - Lecture des documents inventoriés
  - Élaboration des tests de conformité
  - Réalisation des tests de conformité
  - Rédaction du rapport de conformité
  - Remise du rapport de conformité
- Horaire : du 1<sup>er</sup> décembre 2000 au 14 janvier 2001
- Ressources : Aucune

### Document en entrée

- COSMIC-FFP v.2 Measurement Manual

### Membre de l'équipe

- Patrice Nolin, 255-2553

### Détail du requérant

- LRGL, UQAM, Alain Abran 987-3000 ext. 8900

### Rôles et responsabilité

- Patrice Nolin : Réaliser toutes les tâches décrites dans 4.3.3 a
- Alain Abran : Fournir la documentation sur la méthode des points de fonction et fournir le support requis

## Déviations par rapport au plan de vérification de la conformité original

Aucune.

## Procédure de tests pour l'évaluation de conformité

### Description des activités

#### *Lecture des documents sur 14143-1 et 14143-2*

Cette activité consiste à prendre connaissance des documents ISO décrivant la façon d'évaluer la conformité de la méthode des PFE. Le document 14143-1 décrit ce qu'est une méthode de mesure fonctionnelle et inclus des définitions ; le document 14143-2 décrit le processus d'évaluation les outils à utiliser et les sorties à produire.

Cette activité est sous la responsabilité de Patrice Nolin.

#### *Inventaire des documents requis pour la méthode COSMIC-FFP*

Cette activité consiste à rassembler les documents de la méthode COSMIC-FFP qui seront utilisés pour vérifier sa conformité. Ce sont les mêmes documents qui sont habituellement remis à une équipe de comptage. Tous les documents électroniques utilisés pour l'évaluation de conformité ont été fournis par le professeur Abran. Une fois rassemblé, ces documents ont été lus avant de réaliser l'évaluation.

L'inventaire des documents est sous la responsabilité de Patrice Nolin ; le représentant du LRGL, Alain Abran, est responsable de rendre disponibles ces documents.

#### *Lecture des documents inventoriés*

Cette activité consiste à prendre connaissance du contenu des documents recensés à l'étape précédente afin d'avoir en main tous les éléments nécessaires pour réaliser une évaluation adéquate.

Cette activité est sous la responsabilité de Patrice Nolin.

#### *Élaboration des tests de conformité*

Cette étape consiste à monter une liste de vérification des points à vérifier pour s'assurer de la conformité de la méthode des COSMIC-FFP v.2.0 avec la norme 14143. La liste de vérification utilisée dans ce cas-ci sera celle fournie à l'annexe B du document 14143-2:2000 pour les questions obligatoires seulement.

Cette activité est sous la responsabilité de Patrice Nolin.

*Réalisation des tests de conformité*

Cette activité consiste à répondre aux questions listées dans la liste de vérification en cherchant dans les documents en entrée des références concrètes pour appuyer les réponses.

Le formatage du document COSMIC-FFP v 2.0 a été modifié afin d'inclure les numéros de lignes dans la marge afin de faciliter le repérage des références (locations).

Cette activité est sous la responsabilité de Patrice Nolin.

*Rédaction du rapport de conformité*

Cette activité consiste à rédiger un rapport selon le modèle fourni dans l'annexe C du document 14143-2:2000. Une copie du document «COSMIC-FFP v. 2.0 Measurement Manual, October 1999 » utilisé en entrée sera jointe au rapport.

Ce document a la particularité d'avoir les lignes de chaque page numérotées à partir de 1 afin de faciliter le repérage des références.

Cette activité est sous la responsabilité de Patrice Nolin.

*Remise du rapport de conformité*

Le rapport de conformité sera remis à Alain Abran dans le cadre du cours du 16 décembre 1998 par Patrice Nolin.

Cette activité est sous la responsabilité de Patrice Nolin.

## Qualification de l'équipe de vérification de la conformité

### Patrice Nolin

- Possède une expérience de plus de 13 ans en développement et maintenance de logiciels.
- Détenteur d'une maîtrise en génie logiciel de l'UQAM. Son projet de génie logiciel a porté sur la méthode COSMIC-FFP v.2.0.
- Connaît la méthode des points de fonction étendus. A effectué un comptage dans le cadre d'une formation académique et de son projet de génie logiciel.