



ISO/IEC JTC1/SC7  
Software and Systems Engineering  
Secretariat: CANADA (SCC)

## ISO/IEC JTC1/SC7 /N3013

2004-04-07

<b>Document Type</b>	Working Group Report
<b>Title</b>	WG07 Configuration Management Study Group Report
<b>Source</b>	WG07 Convener
<b>Project</b>	
<b>Status</b>	Final
<b>Reference</b>	
<b>Action ID</b>	FYI or ACT
<b>Due Date</b>	
<b>Distribution</b>	AG
<b>No. of Pages</b>	6
<b>Note</b>	To be discussed at the Brisbane Plenary meeting.

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**Document type** Working Group report  
**Title** Configuration Management Study Group Report  
**Source** ISO/IEC JTC 1/SC 7/WG 7 CMSWG  
**Status** Final  
**Reference** ISO/IEC JTC1/SC7 W07N0722  
**Action ID** FYI or ACT

# 1 Introduction

## 1.1 Terms of reference

The Configuration Management (CM) Study Group of ISO/IEC JTC1/SC7/WG7 was created by the Resolution 11 passed at the interim WG7 meeting in Recife, Brazil, November 2003:

SC 7/WG 7 instructs its Secretariat to establish a Study Group on ISO/IEC 15846 Configuration management.

The terms of reference for this Study Group are to:

- \* Review the document to determine its future
- \* Recommend a suitable course of action for consideration by WG 7.

The Study Group shall take into consideration:

- \* The work of SC 7/SWG 5 on categorizing SC 7 documents, SC 7 N2839
- \* The fact that the document was eventually published as Technical Report type 1
- \* The TC 176 document ISO 10007 Configuration management
- \* IEEE Std 828 Software Configuration Management
- \* EIA 649 National Consensus Standard on Configuration Management
- \* Harmonization activities within SC 7.

Its membership will consist of: Jim Moore (IEEE-CS), Jonathan Earthy (Great Britain), Anatol Kark (Canada), Bob Johnson (USA), Marcelo Pessoa (Brazil)

This study group will be chaired by Anatol Kark and will submit a report by 2004-03-01.

## 1.2 Membership

The Study Group members were:

Jonathan Earthy (Great Britain),  
Robert Johnson (USA),  
Anatol Kark (Canada) – Chair,  
James Moore (IEEE-CS),  
Marcelo Pessoa (Brazil)

Members of the Study Group did seek assistance from their respective National Bodies and organizations.

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### **1.3 Inputs and documents considered**

As per above the resolution the following documents were considered. Please note that EIA 649 National Consensus Standard on Configuration Management document could not be obtained and therefore was not taken into the account in considerations.

- ISO 10007:2003. ISO 10007 is a guidance document developed by ISO TC176. It is intended to provide guidance on the configuration management aspects of ISO 9001.
- ISO/IEC TR 15846. ISO/IEC TR 15846 is a Type 1 Technical Report published in 1998. By definition, a Type 1 TR is the result of a standardization project where consensus could not be obtained. In addition to references to ISO 10007 and ISO/IEC 12207, the document imposes additional requirements for Configuration Management.
- IEEE Std 828-1998. IEEE Std 828 -1998 was provided from and used with permission from IEEE. It is a normative document prescribing the content of a Software Configuration Management Plan. It can therefore be viewed as an elaboration of a configuration management planning activity. IEEE Std 828 is currently being revised by the IEEE. The planned changes are small and intended to clarify compatibility with IEEE/EIA 12207 (identical with ISO/IEC 12207 for this subject) and the IEEE Computer Society's Guide to the Software Engineering Body of Knowledge (ISO/IEC TR 19759).
- ISO/IEC 15288:2002. ISO/IEC 15288:2002 is a normative document providing life cycle processes for systems. It contains a Configuration Management Process providing a purpose, outcomes, and a summary set of activities for configuration management.
- ISO/IEC 12207:1995 ISO/IEC 12207:1995 is a normative document providing life cycle processes for software. It contains a Software Configuration Management Process providing activities and specific required tasks for configuration management.
- ISO/IEC 12207 Amd 1. ISO/IEC 12207 Amd 1 provides purposes and outcomes for software life cycle processes including Software Configuration Management. The draft Amendment 2 of the same standard provides small modifications to the outcomes stated for Software Configuration Management in Amd 1.
- Guide to the Software Engineering Body of Knowledge (ISO/IEC TR 19759). This is a Type 3 Technical Report providing a topical outline of the knowledge characteristic of software engineering.

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## 1.4 Process

The Chair of the Study Group (SG) distributed via email all documents under considerations and posed the following questions:

- 1) Does ISO 10007:2003 align with 12207:1995 and its amendments?
- 2) Does Configuration Management (CM) require separate treatment – or Clause 6.2 of 12207 and subsequent modification on the 12207 Amendment – clause F.2.2 is sufficient?
- 3) Does TR 15846:1998 reflect the changes in the Configuration Management technologies? – Phrasing it differently – Does TR 15846 reflect state-of-the-art in the Configuration Management?
- 4) *Do TR 15486:1998 and IEEE 828-1998 address:*
  - The same Configuration Management processes?
  - Approach those processes in the same manner?
  - If there are differences – are they reconcilable, so that a single standard can be produced?
  - Should these standards remain voluntary (in case of IEEE) or TR (in case of ISO)?
- 5) What is your estimate of effort of any 828-15486 harmonization?

Additionally the members of the SG were encouraged to contribute any other comments on the subject.

All recommendations and comments were compiled into this document by the SG Chair, who then seek approval of the recommendations from other members. After a number of email iterations a consensus was obtained.

## 2 Findings

The following are the findings by the Study Group (in random order):

- 1) ISO/IEC TR 15846 life cycle was not followed and it should be withdrawn just on this basis. (The JTC1 Directives require that Type 1 Technical Reports should be revised or withdrawn after three years have passed.)
- 2) ISO/IEC TR 15846 is too prescriptive and therefore its application using today's technologies would be very difficult. The document would have to be radically changed in order to capture current methods of configuration management and standardization.
- 3) ISO 10007 is written from Quality systems point of view and refers to "product's configuration." It is therefore applicable to both software and systems.
- 4) There is a lack of a document providing hard requirements for configuration management at the system (15288) level.

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- 5) TR 15846 addresses all of software configuration management while IEEE 828 addresses only the planning activities. Requirements on planning can imply or induce requirements on the execution of the other activities.
  - 6) A separate treatment of configuration management raises its visibility; CM got "buried" in 12207. ISO 10007 makes a pretty thin standard and adds only a little to 12207.
  - 7) According to the bibliography and structure 10007:2003 seems to have taken some account of 15846. The scopes of 10007 and 12207/15846 configuration management processes are a different. 12207/15846 seems to include a lot of general material on project and information management, as well as release, whereas the scope of 10007 is more self-contained, if a little audit-centred.
  - 8) Clause F.2.2 of Amd1 of 12207 is sketchy, and Clause 6.2 requires updating to reflect the more precise control requirements of 10007:2003.
  - 9) ISO 10007 stills talks about change "control" rather than more modern "management," as if it were something that could or should be prevented and omits discussion of release management and delivery.
  - 10) ISO/IEC 12207 and IEEE Std 828 are compatible with the treatment of software configuration management provided in the Guide to the Software Engineering Body of Knowledge (ISO/IEC TR 19759).
  - 11)The mappings provided in the annex of ISO/IEC TR 15846 to ISO 10007:1995 and ISO/IEC 12207:1995 are overly complex. It would appear that the mappings were retroactively superimposed on a document originally written for a purpose other than supplementing those more fundamental documents.
  - 12)The main difference between IEEE 838 and ISO/IEC TR 15846 is one of intent; IEEE 828 is about a configuration management plan, whereas 15846 addresses both the planning and performance. It is SG members understanding that WG 8 was trying to do this for many years. They wanted to convert the 'planning' standard into a 'doing' standard.

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### 3 Recommendations

ISO/IEC TR 15846 is not recommended for revision as a standard.

SC7 Secretariat should advise JTC1 that ISO/IEC TR 15846 was not revised as required within the three-year period and that no project to do so is being proposed, and recommend that JTC1 advise ISO Central Secretariat to withdraw the document.

- 1) SC7 should note an eventual need to develop a system-level configuration management standard. This standard would be written as the task level (similar to Clause 6.2 of ISO/IEC 12207:1995) rather than the more prescriptive level exemplified by TR 15846. This new document would also provide guidance on the implementation of its requirements.
- 2) Future evolution of SC7 Standards dealing with Configuration Management (ISO/IEC 12207, ISO/IEC 15288, IEEE 828) should remain compatible with the SWEBOK Guide and consistent with ISO 10007 and each other.
- 3) Any future version of ISO/IEC 12207 should include an informative reference to IEEE Std 828. (According to the Directives, ISO/IEC standards are permitted to reference standards of other organizations.) If reference to ISO/IEC standards is preferred, then IEEE Computer Society can be requested to submit IEEE Std 828 for fast-track adoption.

### 4 Rationale

The Study Group agreed that the ISO/IEC TR 15846 should not be revised not just because administrative process was not followed, but it is simply a document, which cannot be applied with today's methodologies and technologies. At the same time the consistency among the remaining Configuration Management standards is required, while a separate CM standard at the system level could raise visibility and importance of Configuration Management.