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Software Engineering
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Comments in JTC1 N4086 *Summary of
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Proposal for a New Work Item on
Standard for System Life Cycle
Processes*

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RESPONSE FROM JTC1/SC7 ON THE COMMENTS IN JTC1 N4086

France

Comment from France:

In the scope (a), change the sentence into: The scope of the work is development of an International Standard for aspects [of] life cycle process that will result from integration of software components into it.

Response from SC7:

The proposed standard intends to establish those system life cycle processes that result by integrating the three basic components of the modern system: hardware (including digital computer), software and personnel. Software is always in a computer or firmware, which is always a part of, embedded in, or integral to a system. The components of a system affect each other and must play their respective functions properly, correctly, and jointly for the system to provide the needed operational capability. Logically and realistically, at the least, hardware, software and personnel need to be considered jointly to "define, describe, and establish" a complete, practical system standard. Considering only those aspects of the system life cycle processes that result from integrating software only (or hardware or personnel, for that matter) into them would not yield a unified, complete, and coherent description of the system life cycle processes.

Comment from France:

For the same reason, we propose that (b) be deleted.

Response from SC7:

This clause is required by the SC7 guidance on the preparation of NWIs. However, the list in (b) would be deleted and replaced by the following:

Information technology;
Conventional engineering.

Japan

Comment from Japan:

The meaning of word "System" is so wide and ambiguous that the work may go nowhere. Therefore, the meaning of the word system should be defined clearly and restrictedly in the scope to avoid unnecessary confusion. In addition, title should be chosen properly as well.

Response from SC7:

Agree that a generic meaning of the word "system" without an accompanying definition is wide and confusing. For clarity, the

pertinent definitions from the SC7 Ad hoc Group's Study Report on Software-System Relationships (SC7 N1331, March 3, 1995) and ISO/IEC 12207 are cited below:

System: An integrated composite that consists of one or more of the processes, hardware, software, facilities, and people, that provides a capability to satisfy a stated need or objective. [ISO/IEC 12207, 1995].

Software: A [piece of] software is a combination of computer instructions and computer data definitions required to enable the computer to perform computational or control functions. [US DOD-STD-2167A, 1988].

Life cycle: The span of the life of a system from the conceptualization of a need, continuing through the development, operation and maintenance of the system, and ending with the termination of its use.

Process: A set of interrelated activities, which transform inputs into outputs. [ISO/IEC 12207, 1995].

The main purpose of this proposed effort is to prepare the engineering and management communities for addressing the future, modern system that would be an integration of hardware, software, and personnel to accomplish the needed functionalities. The standard is intended to establish a set of processes for the life cycle of such a modern system. In the future revisions, if JTC1 so decides, other components of a system, such as materiel, etc. may be included.

United Kingdom

Comment from the UK:

1. The UK would first like to have seen, directly from those areas of standardization responsible for the areas of common interest listed on page 1 paragraph A of SC 7 N 1385 "Project requirements", documentary evidence of the consensus asserted on page 2 of JTC 1 ! N3787 (i.e. regarding liaison issues with those same areas of common interests).

Response from SC7:

During the formulation of the proposal and the project requirements, the liaisons present in the SC7's June 94 and June 95 plenaries were involved (i.e., CEN TC311 and IEC TC56).

Liaisons have been or are being set up with the following groups for aligning the related standards:

IEC TC 56, IEC TC 65, ISO TC 176, JTC1/SC7/WG9, and CEN TC 311.

Comment from the UK:

2. The proposals do not address the existence of an established European Technical Committee TC 311 "Information Systems Engineering", which currently has a CEN mandate to carry out a European-wide survey on the actual need in Europe for ISE standardization - before allowed to

precede with its planned program of work. The UK suggests that ISO/IEC/JTC 1 recommends to ISO and to IEC that those bodies should participate by extending that survey so as to establish user needs for true international standardization, before decisions are taken as to what should be standardized and by whom.

Response from SC7:

The project requirements and the proposal recognize the necessity of establishing liaison and involvement of CEN TC 311. CEN TC 311 have already provided their draft ISE Standard as input to this SC7 work. In addition, SC7/WG7 (Life Cycle Management) has established contacts with IEEE Engineering of Computer Based Systems (IEEE ECBS) and International Council on Systems Engineering (INCOSE). Some of these organizations are providing experts to WG7 through their respective national delegations. WG7 plans to expand such contacts with more organizations.

Comment from the UK:

In the meantime, JTC1/SC7 should be encouraged to concentrate its resource on progressing towards completion its existing large and diverse program of work, while remaining strictly within its present Terms of Reference.

Response from SC7:

There is a definite need for a "system approach" to developing, operating and maintaining the future, modern system. There is a wide support for a system life cycle standard among the majority of the National Bodies. So far, most areas/components/parts of the system management/engineering discipline have been evolving unilaterally, without a top-level, umbrella life cycle framework. It is the latter part that SC7 is trying to establish. The SC7 effort is expected to bring diverse system areas, particularly hardware, software and human-machine interface, under one streamlined, coherent, concurrent framework. There is no intent whatsoever to standardize the diverse areas separately; these are left to the various specialty groups in the ISO, IEC, JTC1, and other National and International Bodies.

IEC/TC 56

Comment from IEC/TC 56:

IEC/TC 56 notes that the proposed standard extends over the boundaries of many technical discipline accepted, it is essential that the work should be co-ordinated and harmonized across the wide range of ISO and IEC IEC/TC 56 and other identified in the proposal.

Response from SC7:

The proposed standard intends to establish an architecture [framework] of the life cycle of a system so as to integrate the top-level processes in a proper, relative perspective. The proposed standard will not establish any specialty-area process or attribute in details. At best, the standard would identify the place for and justify the existence of these specialty areas in the [total] life cycle. The standard would

then reference any specialty standard as judged appropriate by the ISO and IEC groups.

Liaisons have been or are being set up with the following groups for aligning the related standards (see SC7 N1385, Project Requirements, System Life Cycle Processes):

IEC TC 56, IEC TC 65, ISO TC 176, JTC1/SC7/WG9, and CEN TC 311.