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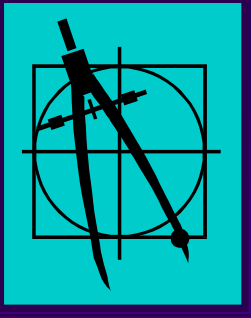
Vision of Liaison Outcomes

IEEE CS and

ISO/IEC JTC1/SC7

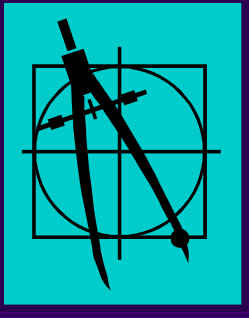


SC7 Secretariat
June 2004



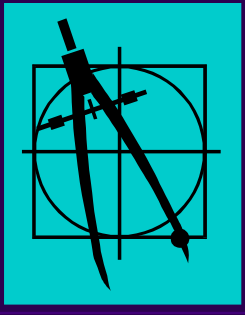
Change History

- ◆ 2002: Version 1 drafted by Jim Moore, IEEE CS.
- ◆ 07N2742: Distributed for ballot
- ◆ 07N2803: Letter ballot approval
- ◆ 07N3020: Proposed changes distributed
- ◆ 2004-05, Resolution 760: Changes approved



Purpose of this Document

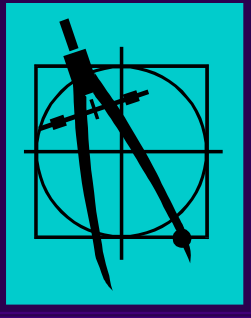
- ◆ This document presents a vision of possible outcomes from liaison between the IEEE Computer Society and ISO/IEC JTC1/SC7.
- ◆ Implementing steps toward achieving these outcomes are decided individually at appropriate times by mutual agreement between the organizations.



IEEE has already adopted several SC7 standards

- ◆ IS 12207, Software Life Cycle Processes (IEEE/EIA 12207.0)
 - ◆ Supplemented with guides to data and process implementation
- ◆ IS 12119, Software Packages--Quality and Testing (IEEE 1465)
- ◆ IS 14102, Guidelines for Evaluation and Selection of CASE Tools (IEEE 1462)
- ◆ IS 14143-1, Functional Size Measurement Concepts (IEEE 14143.1)
- ◆ Project to adopt ISO/IEC 15288, System Life Cycle Processes
- ◆ Project to adopt ISO/IEC 90003, Applying 9001 to Software

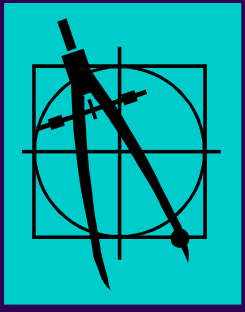
These standards were all adopted with minor changes to normative content.
Current procedures virtually guarantee capricious differences.
The coordination procedure addresses this problem.



IEEE CS standards cover some areas with no SC7 standard

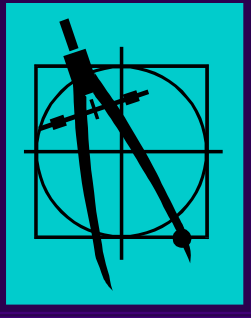
- ◆ Terminology
 - ◆ 610.12: Glossary ✓
- ◆ Reuse:
 - ◆ 1420.1, 1420.1a, 1420.1b: Libraries
 - ◆ 1571: Processes
- ◆ Systems engineering
 - ◆ 1362: Concept of Operations
 - ◆ 1233: Requirements Specification
 - ◆ 1220: Systems Engineering Process ✓
 - ◆ 1228: Safety Plans
- ◆ Software acquisition
 - ◆ 1062
- ◆ Software architecture description
 - ◆ 1471
- ◆ Software testing
 - ◆ 829: Test Documentation
 - ◆ 1008: Unit Testing
- ◆ Internet best practices
 - ◆ 2001: Web Page Engineering ✓
- ◆ SWEBOK ✓

✓ Coordination underway



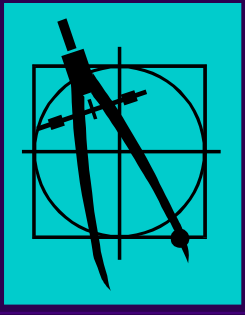
History of Liaison Relationship

Sep 12, 1999	Chairman of SC7 sends letter of invitation to IEEE Computer Society, inviting Category A Liaison.
Dec 31, 1999	President of Computer Society sends favorable reply.
Apr 22, 2000	SC7 approves Category A Liaison status.
Sep 29, 2000	JTC1 concurs.
Various	SC7 appoints Study Groups with responsibilities related to the liaison.
Nov 7, 2000	IEEE CS Standards Activity Board (SAB) delegates responsibility for liaison to its Software Engineering Standards Committee (SESC).
Feb 20, 2001	SAB concurs with SESC liaison policy and procedure.
Feb 21, 2001	SESC adopts the liaison policy and procedure and appoints Jim Moore as liaison representative. The procedure requires preparation of a liaison strategy.
Various	In consultation with participants of IEEE-CS and SC7, Moore drafts liaison strategy.
Dec 4, 2001	IEEE Standards Association staff reviews liaison strategy.
Feb 2, 2002	SESC adopts liaison strategy.
Feb 5, 2002	SAB approves liaison strategy.
May 12, 2002	IEEE CS Liaison strategy presented to SC7 AG and circulated for comment.
Oct 2002	Proposed "vision" and proposed coordination procedure drafted for SC7 BPG.
Mar 2003	"Vision of Outcomes" and coordination procedures approved by SC7.
May 2003	Several coordinated projects initiated.



Principles of Coordination

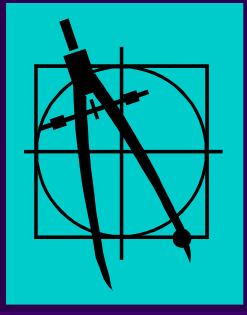
- ◆ *The collections of SC7 and SESC should be consistent and complementary--harmonized.* Users should be able to select and apply standards from both collections without contradiction.
- ◆ Both organizations should *respect the consensus* achieved by the other organization and *avoid creating multiple variants of the documents.*
- ◆ Whenever possible, coordination of a standard should commence by one organization adopting a standard of the other organization, so that *coordination begins with a shared baseline.*
- ◆ Maintenance / revision of adopted documents should be accomplished through a *coordinated process so both organizations have the same standard.*



Subject Areas of Cooperation

- ◆ General terminology and concepts
- ◆ Quality management
- ◆ Systems engineering
- ◆ Product quality
- ◆ Life cycle processes
 - ◆ Life cycle process framework
 - ◆ Maintenance process
 - ◆ Measurement process
 - ◆ Risk management process
 - ◆ Supporting processes
 - ◆ Process assessment
 - ◆ Process construction
- ◆ Safety
- ◆ Documentation: Life Cycle Data
- ◆ Documentation: User Documentation
- ◆ Functional size measurement
- ◆ CASE tools
- ◆ Notations
- ◆ Software Engineering Body of Knowledge (SWEBOK)
- ◆ Internet best practices
- ◆ Other

The following charts provide a baseline framework for harmonization. It is understood that we move toward harmonization through a series of individually agreed steps at a pace comfortable to both parties.



Possible cooperation: General terminology and concepts

SC7 Resources

- ◆ SC7 vocabulary database
- ◆ TR 12182, Categorization of SW
- ◆ TR 14759, Mockup and prototype

IEEE CS Resources

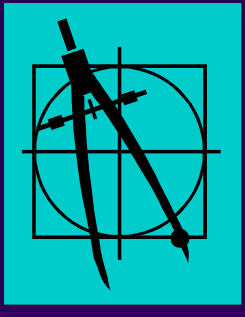
- ◆ 610.12, Glossary of SW engineering

Appropriate Actions for SC7

- ◆ SC7 has taken responsibility for Software and Systems Engineering vocabulary

Appropriate Actions for SESC

- ◆ IEEE has contributed 610.12 as a base document.
- ◆ IEEE liaises with SC7 vocabulary effort.
- ◆ IEEE adopts result of SC7 effort.
- ◆ IEEE extends results to SWEBOK and Certification programs.



Possible cooperation: Quality management

SC7 Resources

- ◆ Draft 90003, Guide for application of ISO 9001 to software

IEEE CS Resources

- ◆ 730, Quality assurance plans

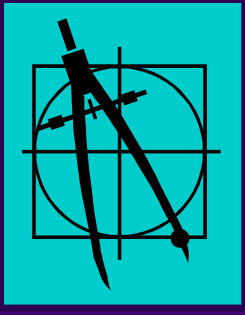
Also

- ◆ Note that ASQ “owns” the ISO 9000 standards in the US

Appropriate Actions for SC7

Appropriate Actions for SESC

- ◆ IEEE is adopting 90003.
- ◆ IEEE will add an informative annex providing cross-references to IEEE standards.



Possible cooperation: Systems engineering

SC7 Resources

- ◆ IS 15288, System life cycle processes
- ◆ TR 19760, Guide to 15288
- ◆ WG7 Harmonization Group

IEEE CS Resources

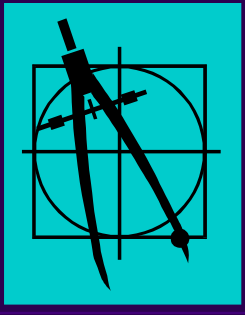
- ◆ 1220, Systems engineering process
- ◆ 1062, Software acquisition
- ◆ 1233, System requirements specification
- ◆ 1362, Concept of operations
- ◆ 1471, Architecture description

Appropriate Actions for SC7

- ◆ SC7 adopts revised 1220 via fast-track.
- ◆ SC7 harmonization group creates coordinated revision requirements for 15288, 1220 and others.
- ◆ Revise as necessary to support internal SC7 harmonization work.

Appropriate Actions for S2ESC

- ◆ IEEE adopts 15288.
- ◆ Works with WG7 to create coordinated revision requirements for 15288, 1220 and others.
- ◆ IEEE [(or joint WG)] revises 1220 accordingly.
- ◆ IEEE submits revised 1220 for fast-track.
- ◆ IEEE revises 1062, 1233, 1362, 1471 to be consistent.



Possible cooperation: Product quality

SC7 Resources

- ◆ IS 9126-1, Quality model
- ◆ Many more documents elaborating IS 9126-1
- ◆ IS 12119, Software packages (under revision)

IEEE CS Resources

- ◆ IEEE 1465 (adoption of IS 12119)

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for S2ESC

- ◆ IEEE has adopted the quality model of IS 9126-1 as a policy.
- ◆ IEEE adopts revised IS 12119.
- ◆ IEEE plans to revise its other standards to adopt terminology and concepts of 9126-1.



Possible cooperation: Life cycle process framework

SC7 Resources

- ◆ IS 12207, SW life cycle processes
- ◆ 12207/Amd, purpose and objectives
 - ◆ (The reuse process objectives of IEEE 1517 have already been coordinated with 12207/Amd.1.)
- ◆ TR 15271, Guide to 12207

IEEE CS Resources

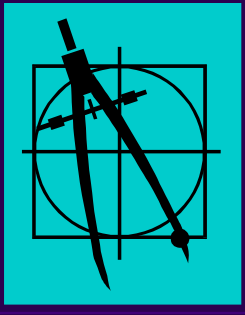
- ◆ 12207.0, adoption of IS 12207
- ◆ 12207.1, Guide to data
- ◆ 12207.2, Guide to process implementation
- ◆ 1517, Software reuse processes

Appropriate Actions for SC7

- ◆ SC7 incorporates IEEE 1517 into a future revision of IS 12207.
- ◆ Use “coordinated adoption” for revision of 12207.

Appropriate Actions for S2ESC

- ◆ IEEE “adopts” 12207 amendment as its process reference framework.
- ◆ IEEE contributes 1517 for use in revision of 12207.
- ◆ Use “coordinated adoption” for revision of 12207.



Possible cooperation: Maintenance process

SC7 Resources

- ◆ IS 14764, SW maintenance
 - ◆ Conforms to 12207 Maintenance process

IEEE CS Resources

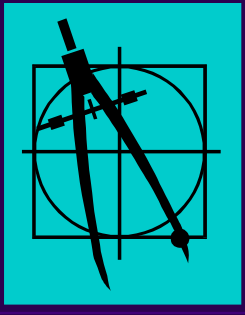
- ◆ IEEE 1219, SW Maintenance
 - ◆ Contains helpful practices that don't appear in IS 14764.

Appropriate Actions for SC7

- ◆ Project underway to merge the two standards into a new ISO/IEC/IEEE 14764.
- ◆ Maintain via “coordinated adoption.”

Appropriate Actions for S2ESC

- ◆ Project underway to merge the two standards into a new ISO/IEC/IEEE 14764.
- ◆ Maintain via “coordinated adoption.”



Possible cooperation: Measurement process

SC7 Resources

- ◆ FCD 15939, Software measurement process

IEEE CS Resources

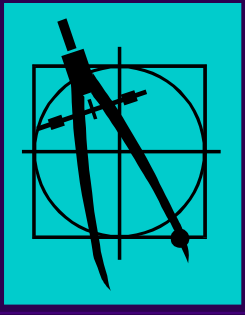
- ◆ IEEE 982 (2 parts), Measures for reliable software
- ◆ IEEE 1061, Quality metrics methodology

Appropriate Actions for SC7

- ◆ Perform future revision and maintenance of 15939 via “coordinated adoption.”

Appropriate Actions for S2ESC

- ◆ IEEE has adopted 15939 framework as a policy for all measurement standards.
- ◆ IEEE adopts 15939 standard.
- ◆ IEEE applies 15939 terminology, concepts and process to its other standards.
- ◆ Perform future revision and maintenance of 15939 via “coordinated adoption.”



Possible cooperation: Risk management process

SC7 Resources

- ◆ IS 16085 is fast-track adoption of IEEE 1540.

IEEE CS Resources

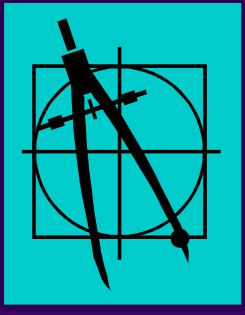
- ◆ IEEE 1540, Risk management process
 - ◆ (Uses ISO TMB risk management vocabulary from draft ISO Guide 73.)

Appropriate Actions for SC7

- ◆ Project underway to incorporate fast-track comments into a revised ISO/IEC/IEEE 16085.
- ◆ Perform future revision and maintenance via “coordinated adoption.”

Appropriate Actions for S2ESC

- ◆ Project underway to incorporate fast-track comments into a revised ISO/IEC/IEEE 16085.
- ◆ Perform future revision and maintenance via “coordinated adoption.”



Possible cooperation: Supporting processes

SC7 Resources

- ◆ TR 15846, Configuration management
- ◆ TR 16326, Project management

IEEE CS Resources

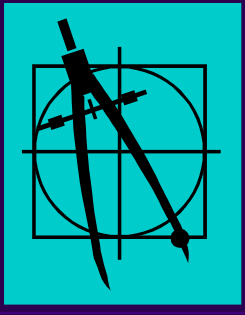
- ◆ IEEE 828, SW CM plans
- ◆ IEEE 1012, SW V&V
- ◆ IEEE 1058, SW project management plan
- ◆ IEEE 1490, Project management BOK

Appropriate Actions for SC7

- ◆ WG7 Study Group has recommended withdrawing TR 15846 and referring to IEEE 828.
- ◆ IEEE has recommended coordinated revision to merge IEEE 1058 and TR 16326.

Appropriate Actions for S2ESC

- ◆ IEEE has recommended coordinated revision to merge IEEE 1058 and TR 16326.
- ◆ As the IEEE standards are revised, bring them into conformance and improve consistency with selected SC7 standards (e.g. 12207, 9126-1, etc.).



Possible cooperation: Process assessment

SC7 Resources

- ◆ TR 15504 (9 parts), Software process assessment
- ◆ Draft IS 15504 (5 parts), Process assessment

IEEE CS Resources

- ◆ None

Also Note

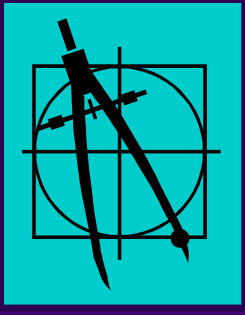
- ◆ SW-CMM is a de facto standard
- ◆ CMMI may become a de facto standard
 - ◆ (CMMI claims consistency with TR 15504.)

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for S2ESC

- ◆ None



Possible cooperation: Process construction

SC7 Resources

- ◆ None

IEEE CS Resources

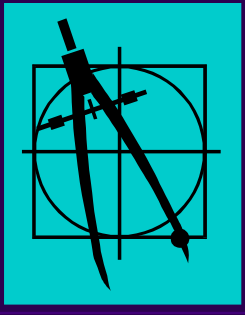
- ◆ IEEE 1074, Developing SW life cycle processes
- ◆ IEEE plans to broaden 1074 to deal with process provisions of 12207, 15288, 15504 and 9000-3.

Appropriate Actions for SC7

- ◆ SC7 could study the possibility of coordinated adoption of 1074.

Appropriate Actions for S2ESC

- ◆ IEEE would be willing to consider coordinated adoption of 1074.



Possible cooperation:

Safety

SC7 Resources

- ◆ IS 15026, System and software integrity levels

IEEE CS Resources

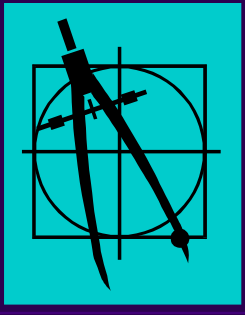
- ◆ IEEE 1228, SW safety planning
- ◆ IEEE plans to broaden 1228 to deal with 15026 and IEC 61508.

Appropriate Actions for SC7

- ◆ SC7 could study the possibility of coordinated adoption of 1228.

Appropriate Actions for S2ESC

- ◆ IEEE would be willing to consider coordinated adoption of 1228.



Possible cooperation: Documentation-LC Data

SC7 Resources

- ◆ CD 15289, Guide for application of 12207 to documentation process

Also Note

- ◆ SC7/WG2 documents are not fully harmonized with SC7/WG7 documents

IEEE CS Resources

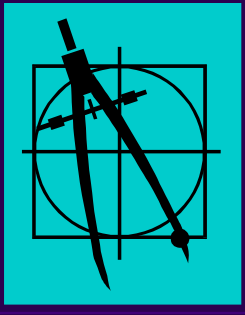
- ◆ IEEE 12207.1, Guide to life cycle data

Appropriate Actions for SC7

- ◆ IEEE and SC7 work jointly to develop a single documentation framework consistent with 12207 by considering 12207.1 and CD 15289.
- ◆ SC7 applies the framework uniformly across its collection.

Appropriate Actions for S2ESC

- ◆ IEEE contributes 12207.1.
- ◆ IEEE and SC7 work jointly to develop a single documentation framework consistent with 12207 by considering 12207.1 and CD 15289.
- ◆ IEEE applies the framework uniformly across its collection.



Possible cooperation: User Documentation

SC7 Resources

- ◆ IS 18019, Guide for design and preparation of user documentation

Also Note

- ◆ SC7/WG2 documents are not fully harmonized with SC7/WG7 documents

IEEE CS Resources

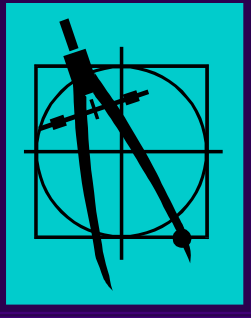
- ◆ IEEE 1063, SW user documentation

Appropriate Actions for SC7

- ◆ SC7 and S2ESC perform coordinated adoption of IEEE 1063.

Appropriate Actions for S2ESC

- ◆ SC7 and S2ESC perform coordinated adoption of IEEE 1063.



Possible cooperation: Functional size measurement

SC7 Resources

- ◆ IS 14143-1, Functional size measurement
- ◆ 4 documents elaborating 14143-1
- ◆ 3 documents for particular methods

IEEE CS Resources

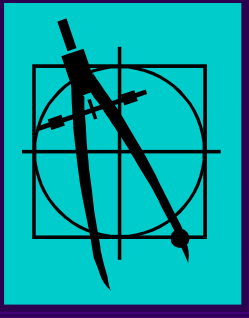
- ◆ IEEE 14143.1 (Adoption of 14143-1)
- ◆ IEEE 1045, SW productivity metrics

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for S2ESC

- ◆ IEEE revises 1045 to make appropriate reference to 14143.1 and to other SC7 resources.



Possible cooperation: CASE tools

SC7 Resources

- ◆ IS 14102, Evaluation and selection of CASE tools
- ◆ TR 14471, Adoption of CASE tools

IEEE CS Resources

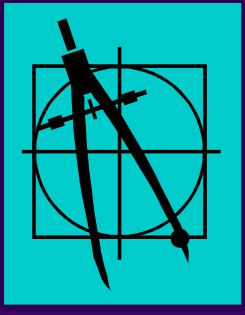
- ◆ IEEE 1462 (Adoption of IS 14102)
- ◆ IEEE 1348, Adoption of CASE tools

Appropriate Actions for SC7

- ◆ SC7 has authorized revision of both.

Appropriate Actions for S2ESC

- ◆ IEEE adopts results of SC7 revision.



Possible cooperation: Notations

SC7 Resources

- ◆ DIS 19501-1, UML
- ◆ Others

IEEE CS Resources

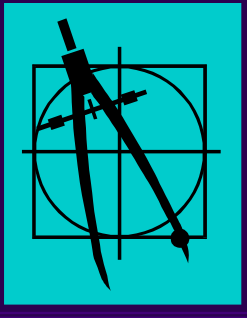
- ◆ 1320.1 and 1320.2, IDEF

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for S2ESC

- ◆ IEEE adopts 19501-1 or S2ESC adopts a policy encouraging use of 19501-1 as a normative reference.



Possible cooperation: ***SWEBOK***

SC7 Resources

- ◆ Working Group on SWEBOK

IEEE CS Resources

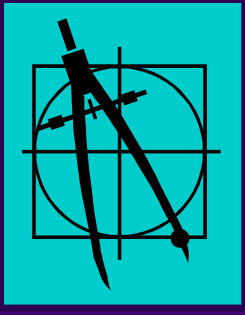
- ◆ Trial-use version of SWEBOK
- ◆ (Ca. 2004, final SWEBOK)

Appropriate Actions for SC7

- ◆ PDTR and DTR comments are provided to SWEBOK editorial team.
- ◆ SC7 adopts final SWEBOK as TR3.

Appropriate Actions for SWEBOK

- ◆ IEEE provides trial use SWEBOK for adoption.
- ◆ SWEBOK editorial team resolves SC7 comments in final SWEBOK, ca 2004.
- ◆ IEEE provides final SWEBOK for adoption via DTR ballot.



Possible cooperation: Internet best practices

SC7 Resources

- ◆ None

IEEE CS Resources

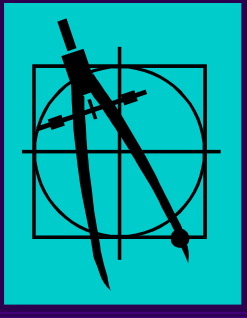
- ◆ IEEE 2001, Web page engineering

Appropriate Actions for SC7

- ◆ Fast-track IEEE 2001.
- ◆ Perform future revision and maintenance via “coordinated adoption.”

Appropriate Actions for S2ESC

- ◆ Contribute 2001 for fast-track.
- ◆ Perform future revision and maintenance via “coordinated adoption.”



Possible cooperation: Other standards

SC7 Resources

- ◆ 17 OSI and ODP documents
- ◆ Dozens of SEDDI documents

IEEE CS Resources

- ◆ IEEE 829, Test documentation
- ◆ IEEE 830, SW requirements
- ◆ IEEE 1008, Unit testing
- ◆ IEEE 1016, SW design description
- ◆ IEEE 1028, SW reviews
- ◆ IEEE 1044, Classification of anomalies
- ◆ IEEE 1420.x, SW reuse libraries

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for S2ESC

- ◆ As the IEEE standards are revised, improve consistency with selected SC7 standards (e.g. 12207, 9126-1, etc.).