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Software & Systems Engineering
Secretariat: CANADA (SCC)

ISO/IEC JTC1/SC7 N2742

2002-12-10

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LETTER BALLOT

Document SC7 N2742

*Title: Vision of Liaison Outcomes, IEEE CS and ISO/IEC
JTC1/SC7*

“P” National Body must return their comments to the JTC 1/SC 7 Secretariat by email at Secretariat@jtc1-sc7.org no later than **2003-03-10**.

* We approve document N2742 as presented

OR

* We approve document N2742 with the attached comments

OR

* We disapprove document N2742 for the attached technical reasons

OR

* We abstain from voting (P-members have an obligation to vote)

National Body: _____

Date: _____

Signature: _____

NOTE: do NOT submit this form when voting by email. Simply type your vote (with comments where applicable) into an email message and send to Secretariat@jtc1-sc7.org.

Vision of Liaison Outcomes

IEEE CS and

ISO/IEC JTC1/SC7



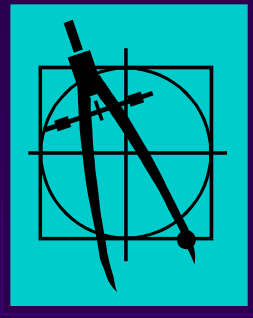
BPG of ISO/IEC JTC1/SC7

Drafted by James W. Moore

Liaison Representative

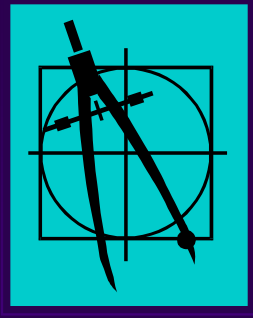
IEEE Computer Society

Version 1, November 2002



Purpose of this Document

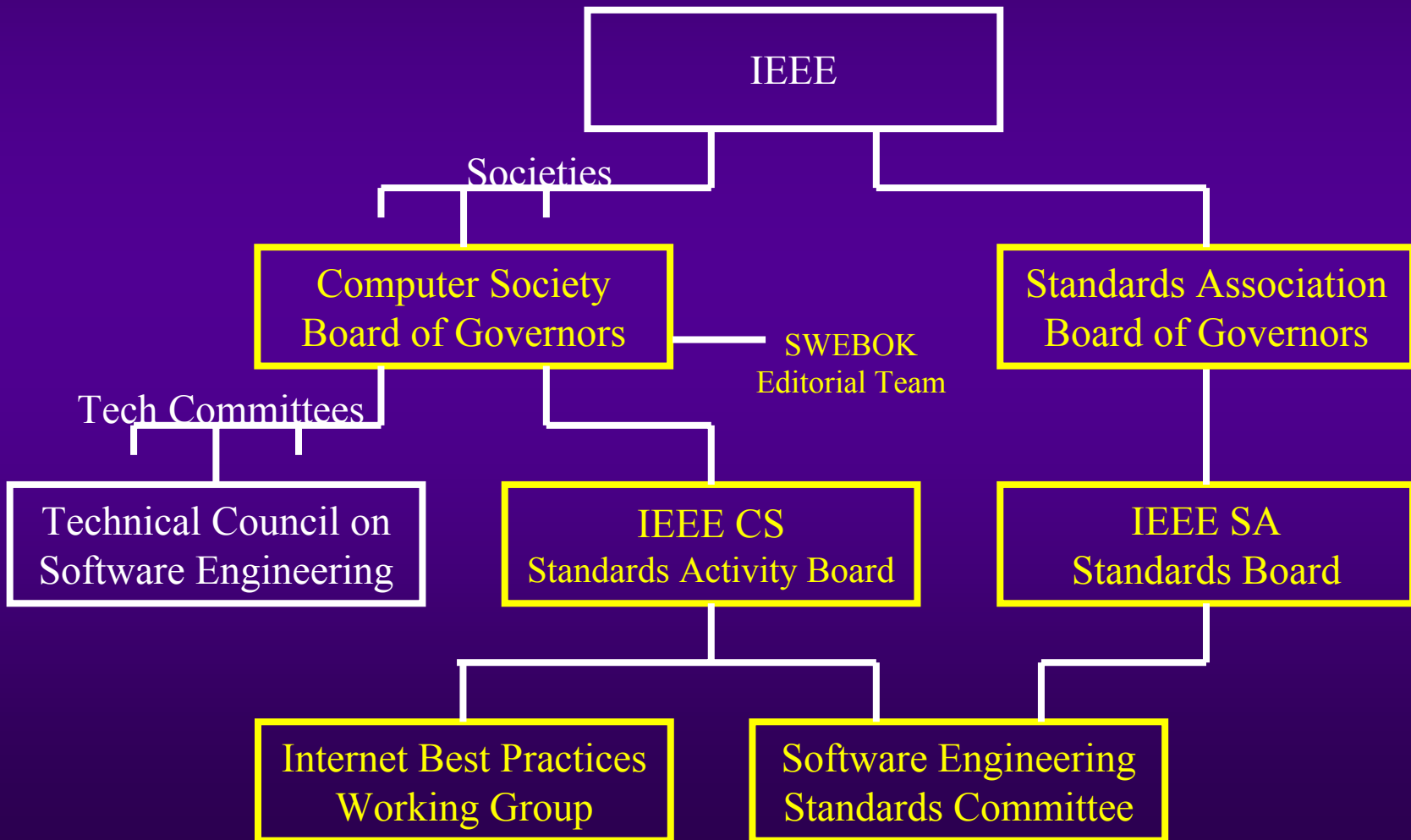
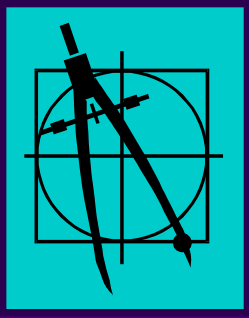
- ◆ This document presents a vision of possible outcomes from liaison between the IEEE Computer Society and ISO/IEC JTC1/SC7.
- ◆ Implementing steps toward achieving these outcomes are decided individually at appropriate times by mutual agreement between the organizations.

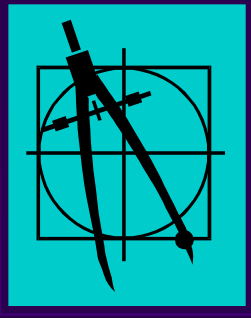


Institute of Electrical and Electronics Engineers

- ◆ **IEEE** is the world's largest organization of technical professionals--about 350,000 individuals.
- ◆ It publishes 1/4 of the world's technical literature in its areas of interest.
- ◆ It has a collection of about 50 standards for software and systems engineering.
- ◆ With about 100,000 members, the **IEEE Computer Society** is the largest of the 36 Technical Societies of the IEEE.
- ◆ IEEE CS originates all of the Information Technology standards approved by the IEEE.
- ◆ All IEEE standards are initiated, approved and published by the **IEEE Standards Association**.

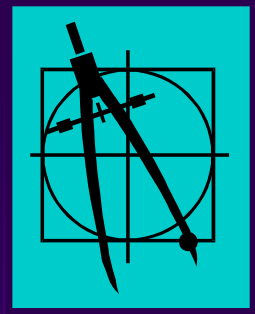
Responsible Parties in IEEE



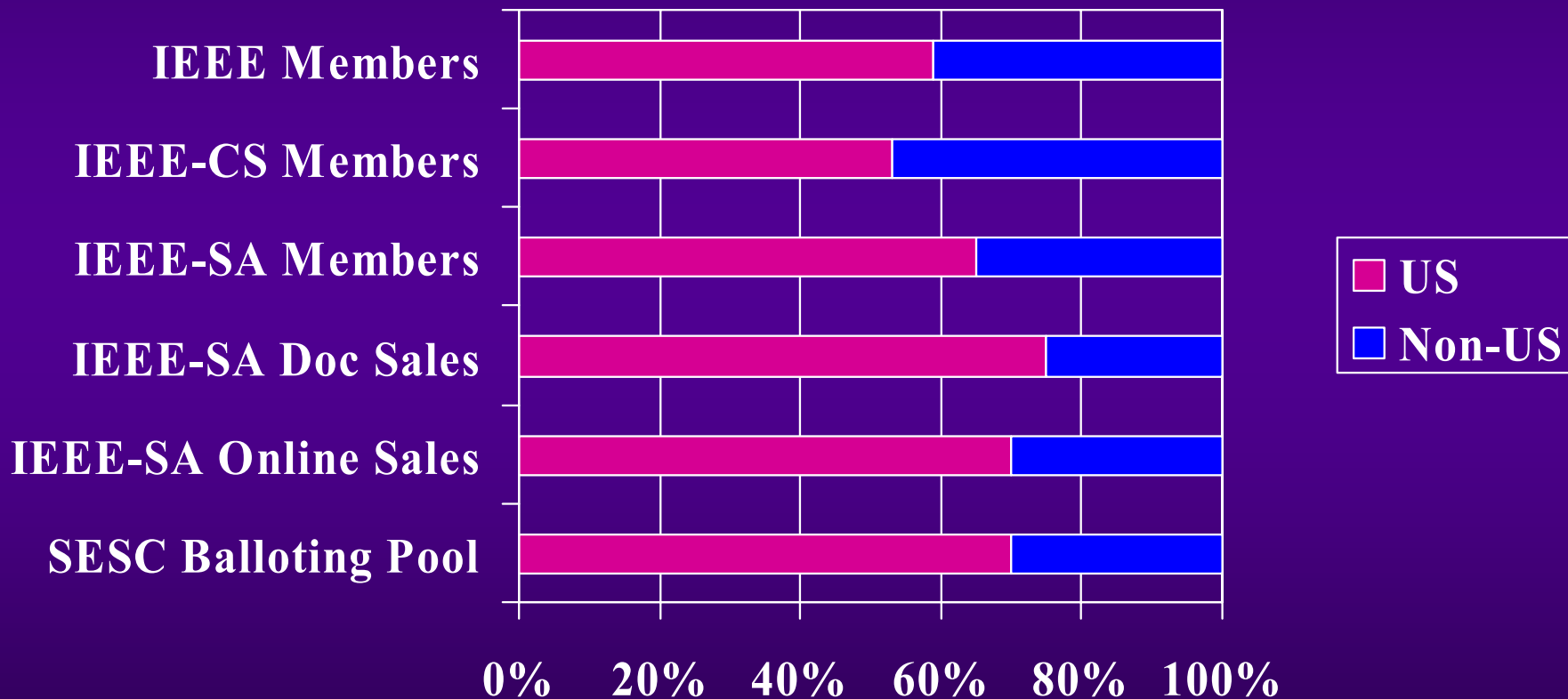


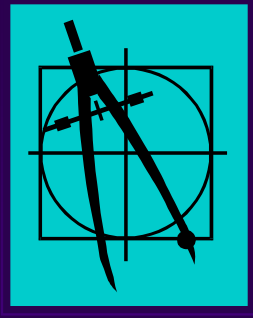
IEEE and the Computer Society are International in Scope

- ◆ IEEE has members in 150 countries.
- ◆ 47% of Computer Society members have non-US addresses in about 125 countries. Non-US membership is growing more rapidly. By the end of 2002, non-US may be the majority.
- ◆ IEEE standards are used in many countries, e.g. Australia, India, European Space Agency.
- ◆ Many SC7 experts contribute to SESC standards.



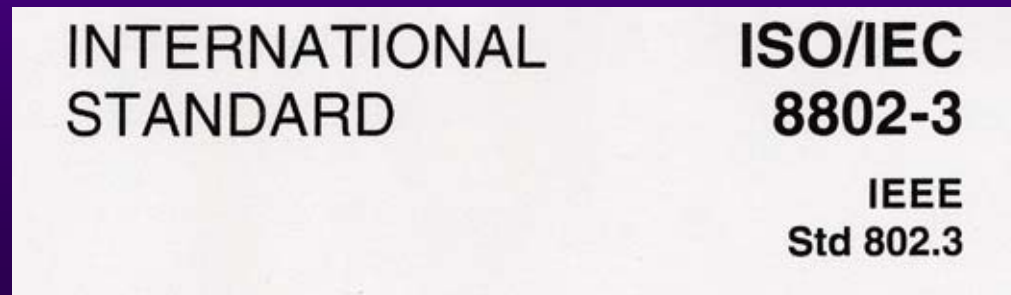
IEEE has an International Membership





IEEE Standards

- ◆ IEEE standards are created by forming a consensus of individual technical professionals. *(In a few cases, organizational balloting is used.)*
- ◆ IEEE-SA has a long history of international coordination on the content of important standards, e.g.:
 - ◆ ISO/IEC 9945 standards (POSIX) are identical with IEEE 1003 standards.
 - ◆ ISO/IEC 8802-3 standards (LAN/MAN) are identical with IEEE 802.3 standards.

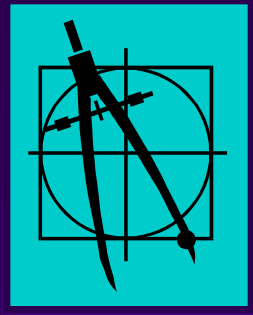


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of cover page of
ISO/IEC 8802-3



IEEE CS Software Engineering Standards Committee (SESC)

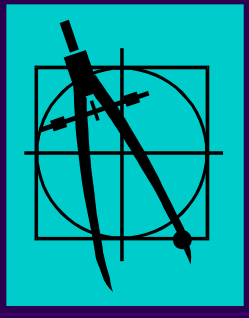
- ◆ Purpose [from SESC Charter]:
 - ◆ Codify the norms of professional software engineering practices into standards.
 - ◆ Promote use of software engineering standards among clients, practitioners, and educators.
 - ◆ *Harmonize national and international software engineering standards development.*
- ◆ Scope [from SESC Fundamental Policy 2]:
 - ◆ Standardization of processes, products, resources, notations, methods, nomenclatures, and techniques for the engineering of software and systems dependent on software.



IEEE has already adopted several SC7 standards

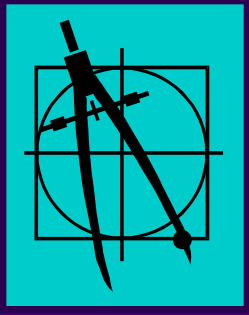
- ◆ IS 12207, Software Life Cycle Processes (IEEE/EIA 12207.0)
 - ◆ Supplemented with guides to data and process implementation
- ◆ IS 12119, Software Packages--Quality and Testing (IEEE 1465)
- ◆ IS 14102, Guidelines for Evaluation and Selection of CASE Tools (IEEE 1462)
- ◆ IS 14143-1, Functional Size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

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



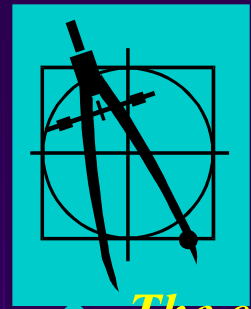
IEEE CS standards cover some areas with no SC7 standard

- ◆ Terminology
 - ◆ 610.12: Glossary
- ◆ Reuse:
 - ◆ 1420.1, 1420.1a, 1420.1b: Libraries
 - ◆ 1571: Processes
- ◆ Risk management
 - ◆ 1540: Software Risk Management Process
- ◆ 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



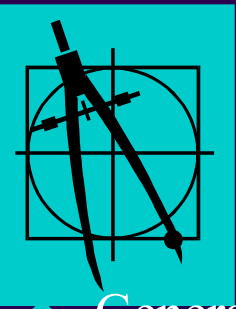
History of Liaison Relationship

- | | |
|---------------------|---|
| 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. |



Principles of Coordination

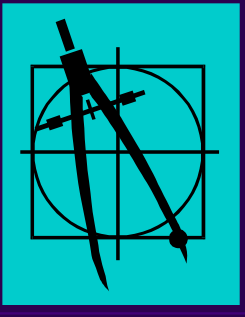
- ◆ ***The collections of SC7 and SESC should be consistent and complementary--harmonized.*** Users should be able to select and apply standards from both collections without contradiction.
- ◆ ***The SC7 collection, taken as a whole, should be at a higher level of abstraction than the SESC collection.*** Typically, SC7 standards would describe principles; SESC standards would provide more detailed treatments of selected subjects.
- ◆ 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
- ◆ 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

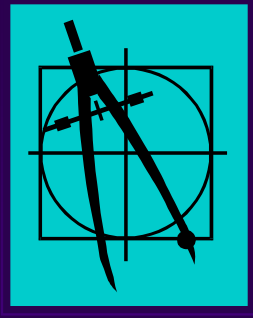
- ◆ 610.12, Glossary of SW engineering

Appropriate Actions for SC7

- ◆ SC7 takes responsibility for Software and Systems Engineering vocabulary

Appropriate Actions for SESC

- ◆ IEEE contributes 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

- ◆ CD 9000-3, Guide for application of ISO 9001 to software

IEEE CS Resources

- ◆ 730, Quality assurance plans

Also

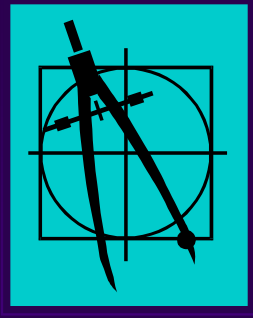
- ◆ Note that ASQ “owns” the ISO 9000 standards in the US

Appropriate Actions for SC7

- ◆ WG18 continues development of 9000-3

Appropriate Actions for SESC

- ◆ IEEE coordinates with ASQ to adopt IS 9000-3 when completed.
- ◆ IEEE adds an informative annex providing cross-references to IEEE standards.



Possible cooperation: Systems engineering

SC7 Resources

- ◆ FCD 15288, System life cycle processes
- ◆ PDTR 19760, Guide to 15288
- ◆ WG7 Study Group

IEEE CS Resources

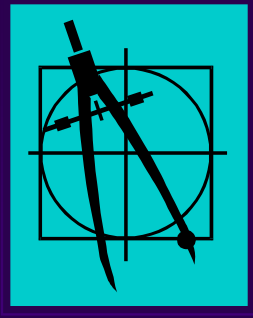
- ◆ 1220, Systems engineering process
- ◆ 1062, Software acquisition
- ◆ 1233, System requirements specification
- ◆ 1362, Concept of operations
- ◆ 1471, Architecture description

Appropriate Actions for SC7

- ◆ Fast-track current IEEE 1220.
- ◆ SC7 study group creates coordinated revision requirements for 15288, 1220 and others.
- ◆ Fast-track IEEE 1220 revised per requirements of study group.
- ◆ Repeat as necessary to support internal SC7 harmonization work.

Appropriate Actions for SESC

- ◆ Liase with SG to create coordinated revision requirements for 15288, 1220 and others.
- ◆ IEEE (or joint WG) revises 1220 accordingly.
- ◆ SC7 and IEEE adopt identical 1220.
- ◆ IEEE adopts revised 15288.
- ◆ 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

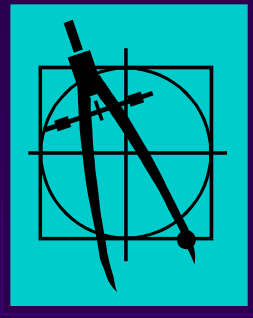
- ◆ IEEE 1465 (adoption of IS 12119)

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for SESC

- ◆ IEEE adopts IS 9126-1.
- ◆ 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.1, 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

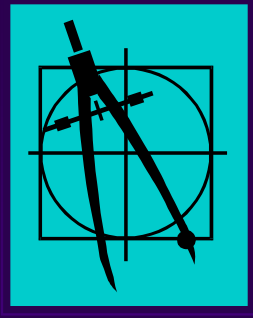
- ◆ 12207.0, adoption of IS 12207
- ◆ 12207.1, Guide to data
- ◆ 12207.2, Guide to process implementation
- ◆ 1517, Software reuse processes

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 SESC

- ◆ 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

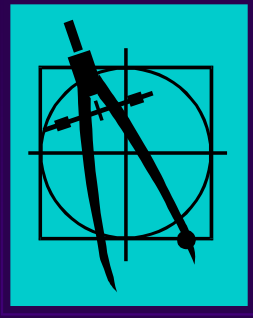
- ◆ IEEE 1219, SW Maintenance
 - ◆ Contains helpful practices that don't appear in IS 14764.

Appropriate Actions for SC7

- ◆ Jointly develop a strategy to merge the two documents into a single one suitable for adoption by both SC7 and IEEE.
- ◆ Maintain via “coordinated adoption.”

Appropriate Actions for SESC

- ◆ Jointly develop a strategy to merge the two documents into a single one suitable for adoption by both SC7 and IEEE.
- ◆ Maintain via “coordinated adoption.”



Possible cooperation: Measurement process

SC7 Resources

- ◆ FCD 15939, Software measurement process

IEEE CS Resources

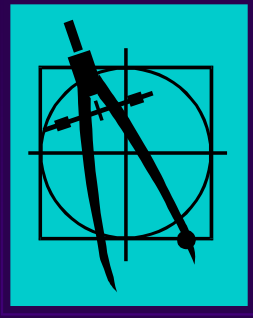
- ◆ IEEE 982 (2 parts), Measures for reliable software
- ◆ IEEE 1061, Quality metrics methodology

Appropriate Actions for SC7

- ◆ Perform future revision and maintenance of 15539 via “coordinated adoption.”

Appropriate Actions for SESC

- ◆ IEEE adopts 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 15539 via “coordinated adoption.”



Possible cooperation: Risk management process

SC7 Resources

- ◆ WG9 has requested fast-track of IEEE 1540.
- ◆ The process objectives of IEEE 1540 have already been coordinated with 12207/Amd.1.

IEEE CS Resources

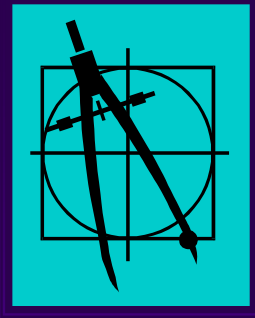
- ◆ IEEE 1540, Risk management process
 - ◆ (Uses ISO TMB risk management vocabulary from draft ISO Guide 73.)

Appropriate Actions for SC7

- ◆ Fast-track 1540.
- ◆ Perform immediate revision via “coordinated adoption” process.
- ◆ Perform future revision and maintenance via “coordinated adoption.”

Appropriate Actions for SESC

- ◆ Contribute 1540 for fast-track.
- ◆ Perform immediate revision via “coordinated adoption” process.
- ◆ Perform future revision and maintenance via “coordinated adoption.”



Possible cooperation: Supporting processes

SC7 Resources

- ◆ TR 12220, Configuration management
- ◆ TR 16326, Project management

IEEE CS Resources

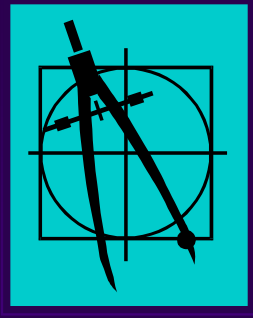
- ◆ IEEE 828, SW CM plans
- ◆ IEEE 1012, SW V&V
- ◆ IEEE 1058, SW project management plan
- ◆ IEEE 1490, Project management BOK

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for SESC

- ◆ 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
- ◆ CD 15504 (5 parts), Process assessment

IEEE CS Resources

- ◆ None

Also Note

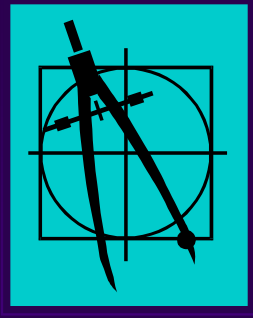
- ◆ SW-CMM is a de facto standard
- ◆ CMMI may become a de facto standard
 - ◆ (CMMI claims consistency with TR 15504.)

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for SESC

- ◆ None



Possible cooperation: Process construction

SC7 Resources

- ◆ None

IEEE CS Resources

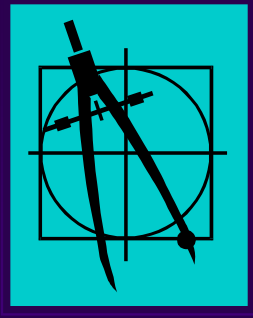
- ◆ IEEE 1074, Developing SW life cycle processes
- ◆ IEEE plans to broaden 1074 to deal with process provisions of 12207, 15288, 15504 and 9000-3.

Appropriate Actions for SC7

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

Appropriate Actions for SESC

- ◆ 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

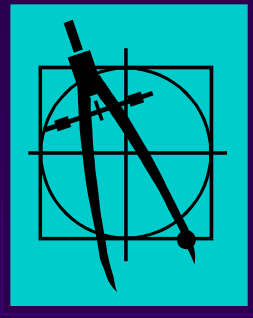
- ◆ IEEE 1228, SW safety planning
- ◆ IEEE plans to broaden 1228 to deal with 15026 and IEC 61508.

Appropriate Actions for SC7

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

Appropriate Actions for SESC

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



Possible cooperation: Documentation

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

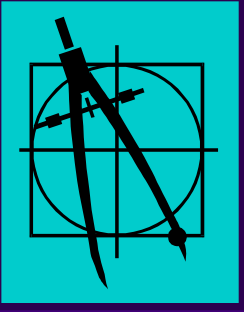
- ◆ IEEE 1063, SW user documentation
- ◆ IEEE 12207.1, Guide to life cycle data

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

Appropriate Actions for SESC

- ◆ 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.
- ◆ SC7 and SESC 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

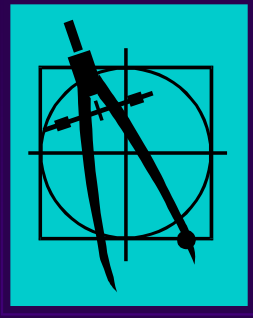
- ◆ IEEE 14143.1 (Adoption of 14143-1)
- ◆ IEEE 1045, SW productivity metrics

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for SESC

- ◆ 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

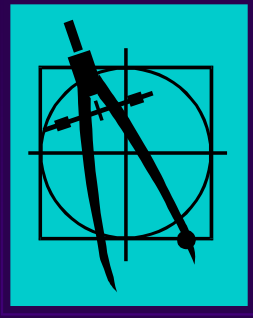
- ◆ IEEE 1462 (Adoption of IS 14102)
- ◆ IEEE 1348, Adoption of CASE tools

Appropriate Actions for SC7

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

Appropriate Actions for SESC

- ◆ IEEE adopts 14471 to replace IEEE 1348.
- ◆ Perform future revision and maintenance via “coordinated adoption.”



Possible cooperation: Notations

SC7 Resources

- ◆ DIS 19501-1, UML
- ◆ Others

IEEE CS Resources

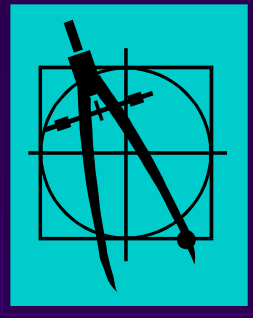
- ◆ 1320.1 and 1320.2, IDEF

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for SESC

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



Possible cooperation: ***SWEBOK***

SC7 Resources

- ◆ Study Group on SWEBOK

IEEE CS Resources

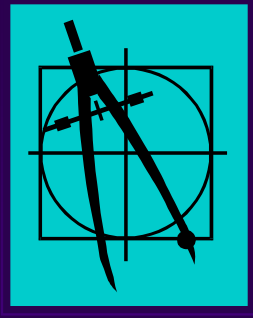
- ◆ Trial-use version of SWEBOK
- ◆ (Ca. 2003, final SWEBOK)

Appropriate Actions for SC7

- ◆ SC7 uses accelerated process to adopt trial-use SWEBOK as TR3.
- ◆ Comments are provided to SWEBOK editorial team.
- ◆ SC7 uses accelerated process to adopt final SWEBOK, as is, as TR3.

Appropriate Actions for SWEBOK

- ◆ IEEE provides trial use SWEBOK for adoption.
- ◆ SWEBOK editorial team resolves SC7 comments in final SWEBOK, ca 2003.
- ◆ IEEE provides final SWEBOK for adoption.



Possible cooperation: Internet best practices

SC7 Resources

- ◆ None

Appropriate Actions for SC7

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

IEEE CS Resources

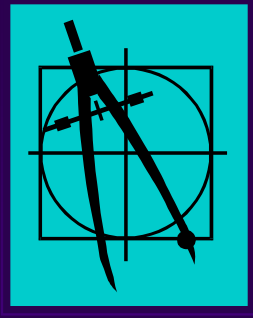
- ◆ IEEE 2001, Web page engineering

Also Note

- ◆ IEEE 2001 is not currently the responsibility of SESC, but SESC will take initiative for transfer.
- ◆ IEEE 2001 is currently being revised.

Appropriate Actions for SESC

- ◆ Obtain responsibility for IEEE 2001.
- ◆ 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 SESC

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