



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

ISO/IEC JTC1/SC7 /N3020

2004-04-08

Document Type	Liaison Vision
Title	Proposed Revisions to: Vision of Liaison Outcomes IEEE CS and ISO/IEC JTC1/SC7.
Source	IEEE-CS Liaison
Project	
Status	Final
Reference	
Action ID	FYI or ACT
Due Date	
Distribution	AG
No. of Pages	33
Note	To be discussed at the Brisbane Plenary.

Address reply to: ISO/IEC JTC1/SC7 Secretariat
École de technologie supérieure – Département de génie électrique
1100 Notre Dame Ouest, Montréal, Québec Canada H3C 1K3
secretariat@jtc1-sc7.org

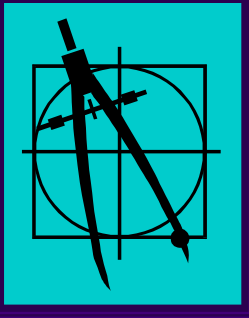
www.jtc1-sc7.org

*Proposed Revisions to:
Vision of Liaison Outcomes
IEEE CS and
ISO/IEC JTC1/SC7*



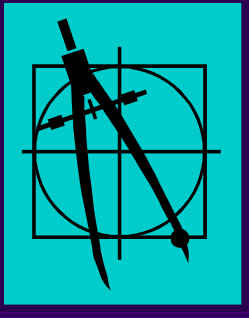
James W. Moore
Liaison Representative
IEEE Computer Society
April 2004

The current “Vision of Liaison Outcomes” (07N2742) was approved by the NBs with no negative votes (07N2803). The purpose of this document is to: update the results of the Category A liaison between IEEE CS and ISO/IEC JTC1/SC7; propose changes to the plans based on new circumstances and opportunities. Changes are marked in this color.



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.



Delete
slide.

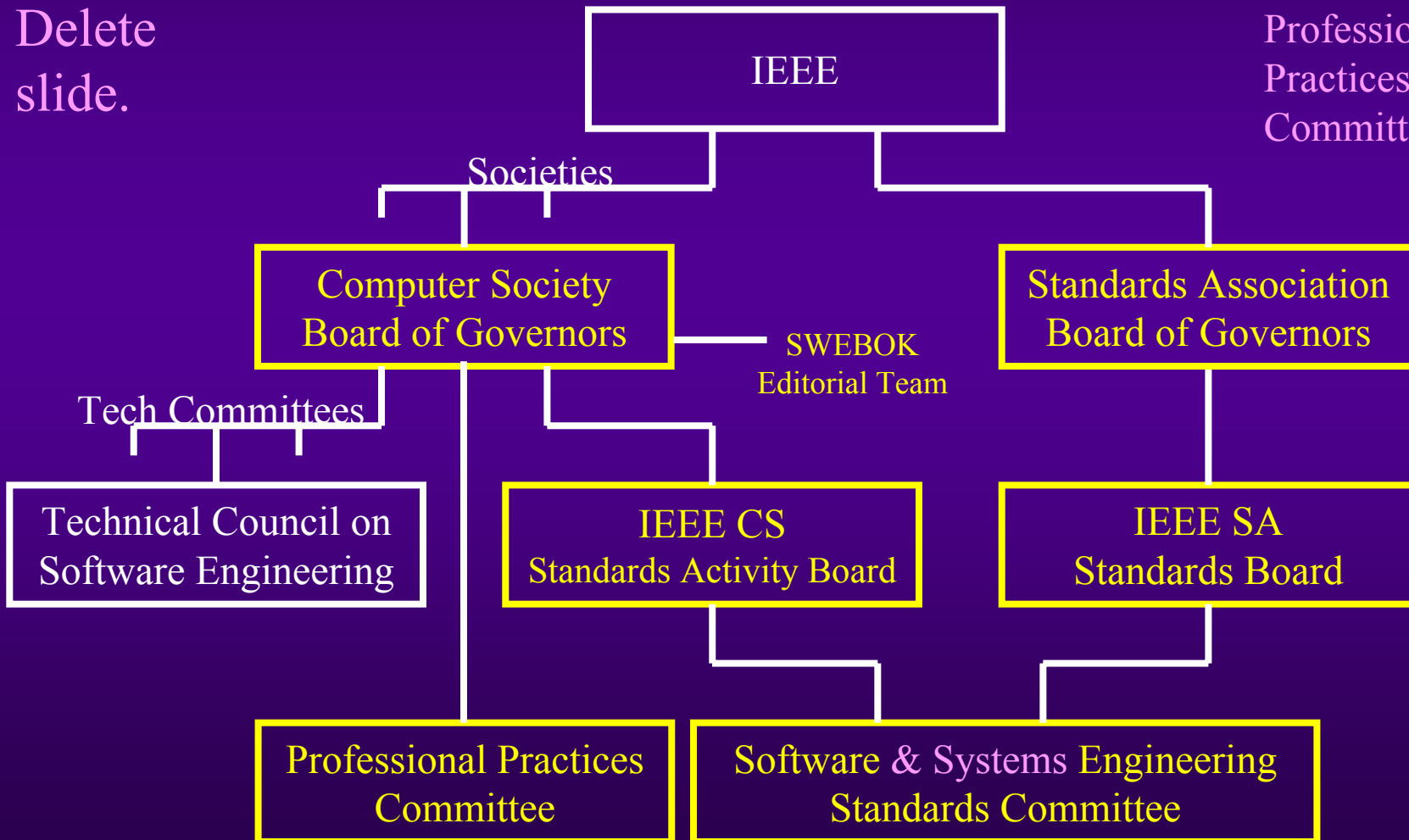
Institute of Electrical and Electronics Engineers

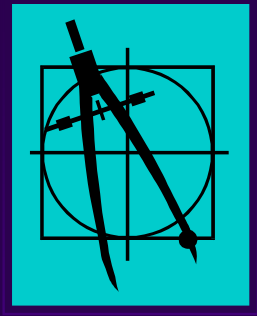
- ◆ **IEEE** is the world's largest organization of technical professionals--about 360,000 individuals.
- ◆ It publishes 30% of the world's technical literature in its areas of interest.
- ◆ It has a collection of about 50 standards for software and systems engineering.
- ◆ With about 100,000 members, the **IEEE Computer Society** is the largest of the 37 Technical Societies of the IEEE.
- ◆ IEEE CS originates all of the Information Technology standards approved by the IEEE.
- ◆ The **Software and Systems Engineering Standards Committee (S2ESC)** is the IEEE standards sponsor with scope similar to that of SC7.
- ◆ The **Professional Practices Committee (PPC)** manages efforts related to Body of Knowledge and professional certification.
- ◆ All IEEE standards are initiated, approved and published by the **IEEE Standards Association**.

Responsible Parties in IEEE

Delete slide.

Added Professional Practices Committee.

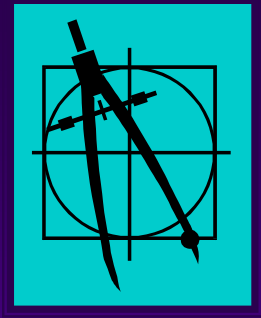




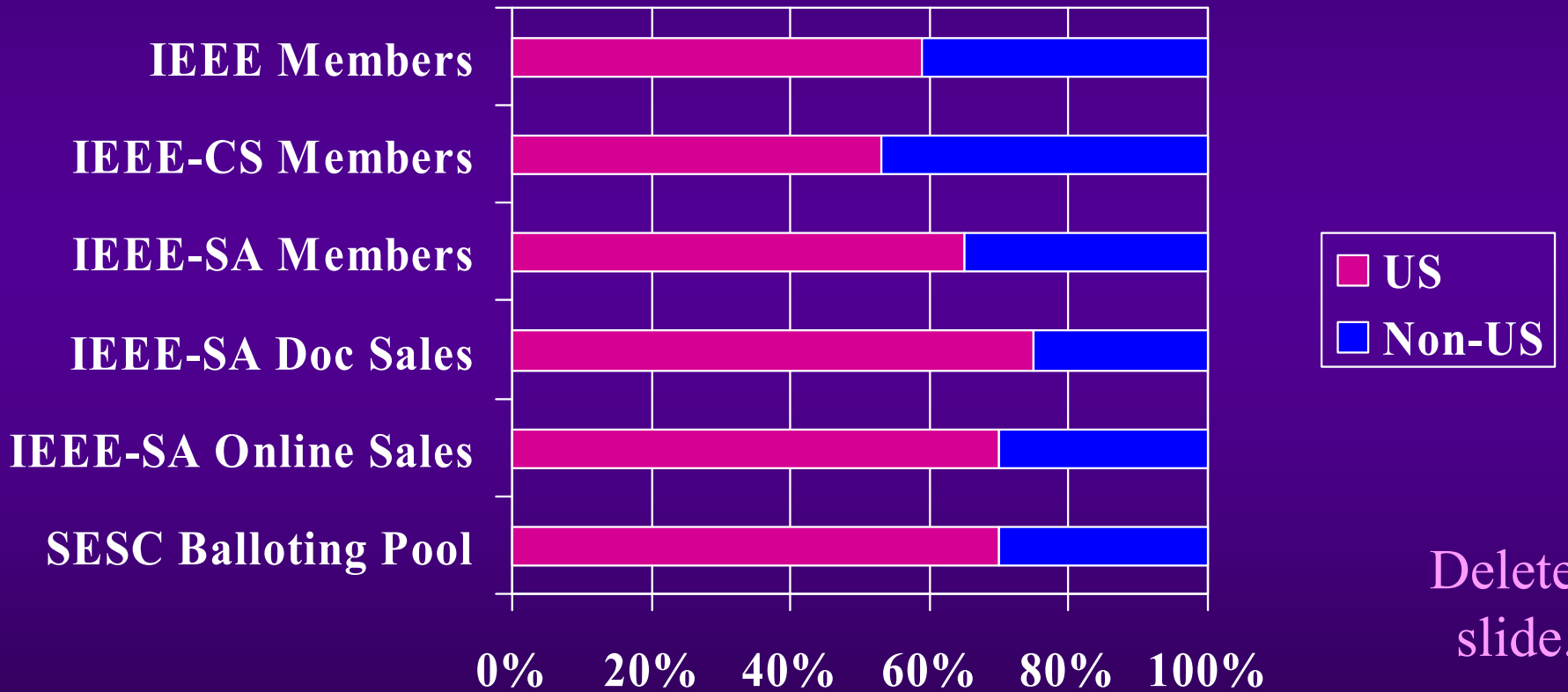
IEEE and the Computer Society are International in Scope

- ◆ IEEE has members in 150 countries.
- ◆ About half of Computer Society members have non-US addresses in about 125 countries. Non-US membership is growing more rapidly.
- ◆ IEEE standards are used in many countries, e.g. Australia, India, European Space Agency.
- ◆ Many SC7 experts contribute to S2ESC standards.

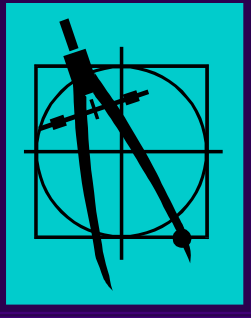
Delete slide



IEEE has an International Membership



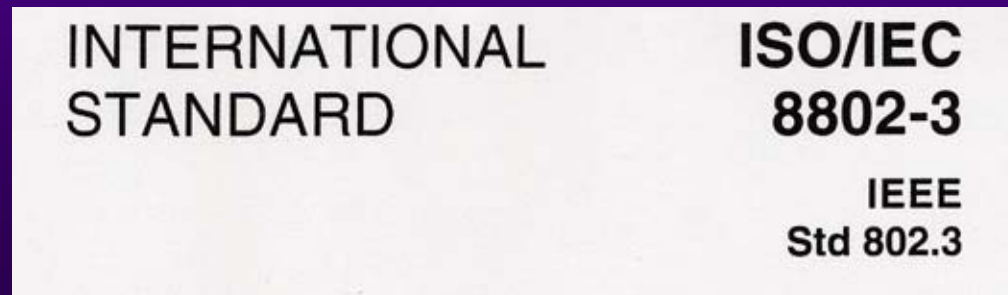
Delete
slide.



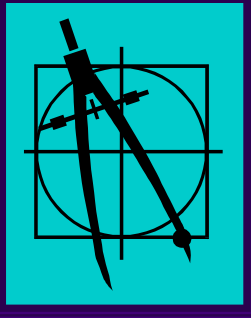
Delete
slide.

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.



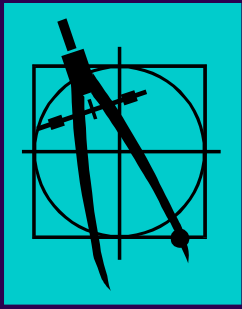
Top right corner
of cover page of
ISO/IEC 8802-3



IEEE CS Software & Systems Engineering Standards Committee (S2ESC)

Delete
slide.

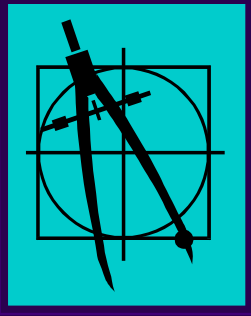
- ◆ Purpose [from SESC Charter]:
 - ◆ Codify the norms of professional software engineering practices into standards.
 - ◆ Promote use of software engineering standards among clients, practitioners, and educators.
 - ◆ *Harmonize national and international software engineering standards development.*
- ◆ 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

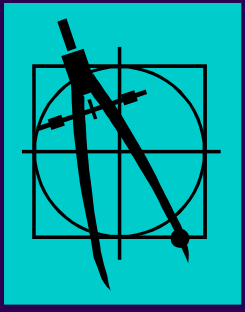
- ◆ IS 12207, Software Life Cycle Processes (IEEE/EIA 12207.0)
 - ◆ Supplemented with guides to data and process implementation
- ◆ IS 12119, Software Packages--Quality and Testing (IEEE 1465)
- ◆ IS 14102, Guidelines for Evaluation and Selection of CASE Tools (IEEE 1462)
- ◆ IS 14143-1, Functional Size Measurement Concepts (IEEE 14143.1)
- ◆ 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
- ◆ Risk management
 - ◆ 1540: Software Risk Management Process [DELETE]
- ◆ 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



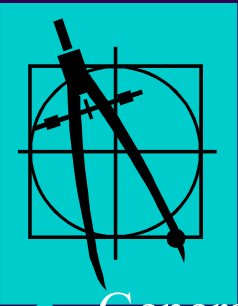
History of Liaison Relationship

- | | |
|---------------------|---|
| 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

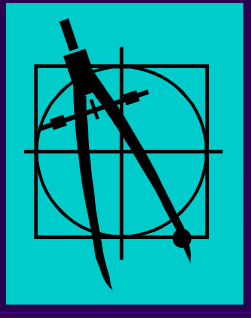
- ◆ ***The collections of SC7 and S2ESC should be consistent and complementary--harmonized.*** Users should be able to select and apply standards from both collections without contradiction.
- ◆ ***The SC7 collection, taken as a whole, should be at a higher level of abstraction than the S2ESC collection.*** Typically, SC7 standards would describe principles; S2ESC standards would provide more detailed treatments of selected subjects. [Drop this principle: Has not proved useful.]
- ◆ 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

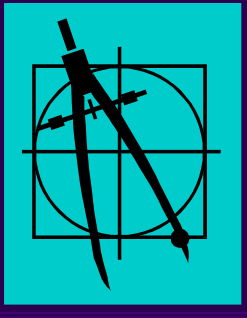
- ◆ 610.12, Glossary of SW engineering

Appropriate Actions for SC7

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

Appropriate Actions for S2ESC

- ◆ 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

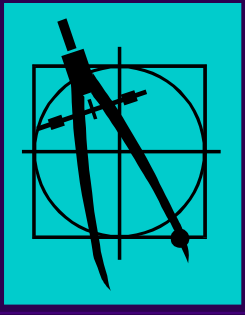
- ◆ Note that ASQ “owns” the ISO 9000 standards in the US

Appropriate Actions for SC7

- ◆ WG18 continues development of 9000-3
[DELETE: Finished]

Appropriate Actions for S2ESC

- ◆ 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

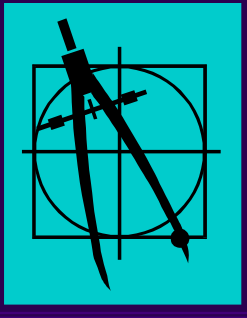
- ◆ 1220, Systems engineering process
- ◆ 1062, Software acquisition
- ◆ 1233, System requirements specification
- ◆ 1362, Concept of operations
- ◆ 1471, Architecture description

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

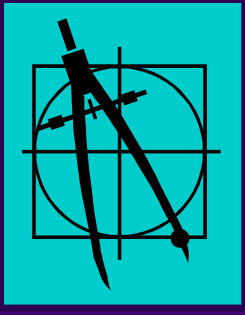
- ◆ 12207.0, adoption of IS 12207
- ◆ 12207.1, Guide to data
- ◆ 12207.2, Guide to process implementation
- ◆ 1517, Software reuse processes

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

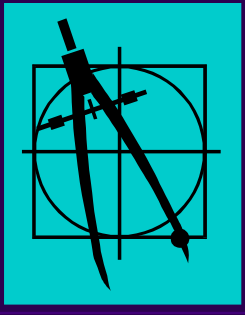
- ◆ IEEE 1219, SW Maintenance
 - ◆ Contains helpful practices that don't appear in IS 14764.

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

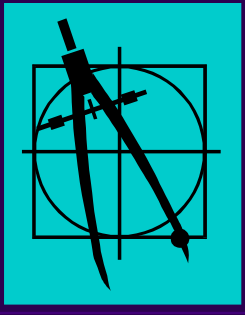
- ◆ IEEE 982 (2 parts), Measures for reliable software
- ◆ IEEE 1061, Quality metrics methodology

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

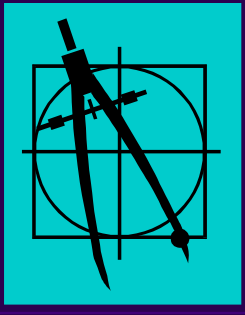
- ◆ IEEE 1540, Risk management process
 - ◆ (Uses ISO TMB risk management vocabulary from draft ISO Guide 73.)

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

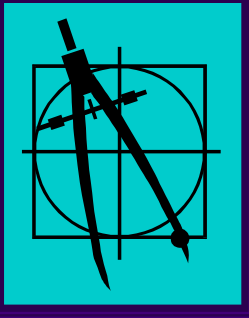
- ◆ IEEE 828, SW CM plans
- ◆ IEEE 1012, SW V&V
- ◆ IEEE 1058, SW project management plan
- ◆ IEEE 1490, Project management BOK

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

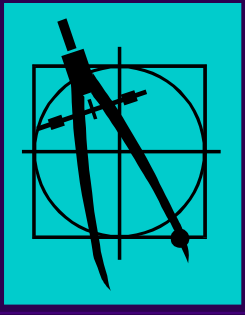
- ◆ SW-CMM is a de facto standard
- ◆ CMMI may become a de facto standard
 - ◆ (CMMI claims consistency with TR 15504.)

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for S2ESC

- ◆ None



Possible cooperation: Process construction

SC7 Resources

- ◆ None

IEEE CS Resources

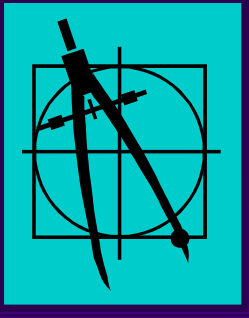
- ◆ IEEE 1074, Developing SW life cycle processes
- ◆ IEEE plans to broaden 1074 to deal with process provisions of 12207, 15288, 15504 and 9000-3.

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

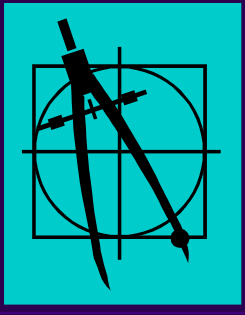
- ◆ IEEE 1228, SW safety planning
- ◆ IEEE plans to broaden 1228 to deal with 15026 and IEC 61508.

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.



One chart
has been
split into
two.

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

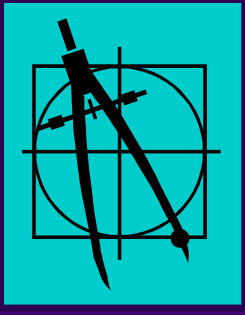
- ◆ IEEE 12207.1, Guide to life cycle data

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.



One chart
has been
split into
two.

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

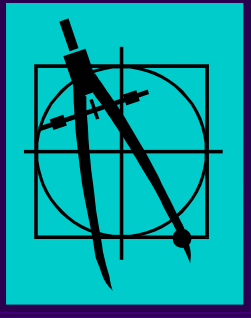
- ◆ IEEE 1063, SW user documentation

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

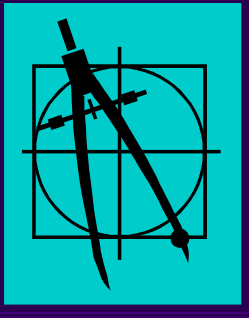
- ◆ IEEE 14143.1 (Adoption of 14143-1)
- ◆ IEEE 1045, SW productivity metrics

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

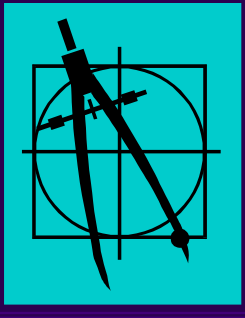
- ◆ IEEE 1462 (Adoption of IS 14102)
- ◆ IEEE 1348, Adoption of CASE tools

Appropriate Actions for SC7

- ◆ SC7 has authorized revision of both.
- ◆ Perform future revision and maintenance via “coordinated adoption.” [DELETE]

Appropriate Actions for S2ESC

- ◆ IEEE adopts 14471 to replace IEEE 1348. [DELETE]
- ◆ Perform future revision and maintenance via “coordinated adoption.” [DELETE]
- ◆ IEEE adopts results of SC7 revision.



Possible cooperation: Notations

SC7 Resources

- ◆ DIS 19501-1, UML
- ◆ Others

IEEE CS Resources

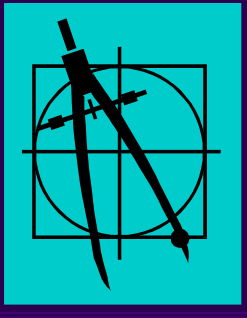
- ◆ 1320.1 and 1320.2, IDEF

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

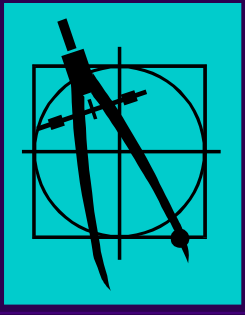
- ◆ Trial-use version of SWEBOK
- ◆ (Ca. 2004, final SWEBOK)

Appropriate Actions for SC7

- ◆ SC7 uses accelerated process to adopt trial-use SWEBOK as TR3. [DELETE]
- ◆ 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

Appropriate Actions for SC7

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

IEEE CS Resources

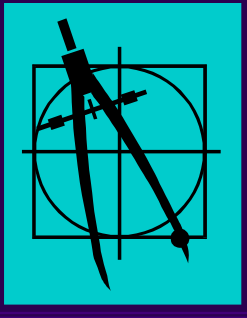
- ◆ IEEE 2001, Web page engineering

Also Note [DELETE]

- ◆ IEEE 2001 is not currently the responsibility of S2ESC, but S2ESC will take initiative for transfer.
- ◆ IEEE 2001 is currently being revised.

Appropriate Actions for S2ESC

- ◆ Obtain responsibility for IEEE 2001. [DELETE]
- ◆ 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.).