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Vision of Liaison Outcomes

IEEE CS and

ISO/IEC JTC1/SC7

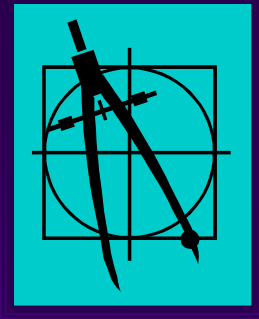


[Intended for issue by SC7 Secretariat]

February 2006

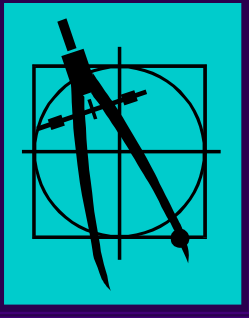
Draft 2, prepared by Jim Moore

Charts with substantive updates are marked



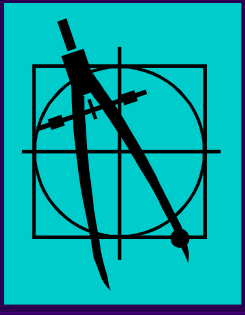
Change History

- ◆ 07N3337: 2005 edition, approved by resolution 820.
- ◆ Draft 2, 2006-02: 2006 edition drafted by JWM for consideration by BPG



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.



In the past, IEEE had adopted several SC7 standards

- ◆ IEEE/EIA 12207.0:1996, (IS 12207) Software Life Cycle Processes (Supplemented with guides to data and process implementation)
- ◆ IEEE 1465:1998, (IS 12119) Software Packages-- Quality and Testing
- ◆ IEEE 1462:1998, (IS 14102) Guidelines for Evaluation and Selection of CASE Tools
- ◆ IEEE 14143.1:2000, (IS 14143-1) Functional Size Measurement Concepts

These standards were all adopted with minor changes to normative content. The procedures in use at the time virtually guaranteed capricious differences.

Current IEEE Adoptions of SC7 Standards

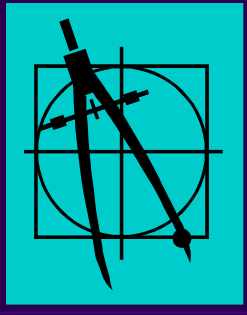


Updated

- ◆ IEEE Std 15288:2005, System Life Cycle Processes
- ◆ (Underway) IEEE draft P90003, Guidelines for the application of ISO 9001:2000 to computer software

S2ESC now attempts to adopt with minimum possible change:

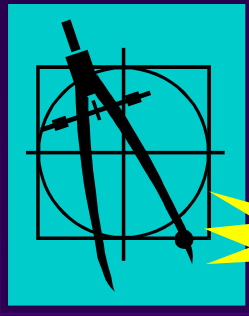
- Non-normative front matter describing adoption
- Non-normative annex describing relationship to IEEE standards
 - (If necessary) Normative annex listing errata



Current ISO/IEC Fast-Track Adoptions of S2ESC Standards

- ◆ ISO/IEC 16085:2004, Risk Management Process
 - ◆ “Coordinated revision” underway
- ◆ ISO/IEC TR 19759:2005, Guide to the Software Engineering Body of Knowledge
- ◆ ISO/IEC 23026:2006, Web Site Engineering, Web Site Management, and Web Site Life Cycle
- ◆ (Underway) DIS 26702, (IEEE 1220) Systems Engineering Process
- ◆ (Underway) DIS 25961, (IEEE 1471) Architecture Description

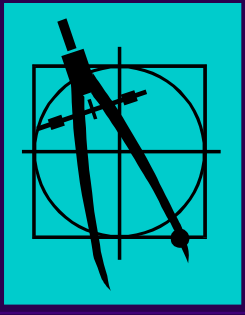




Updated

IEEE CS standards cover some areas with no SC7 standard

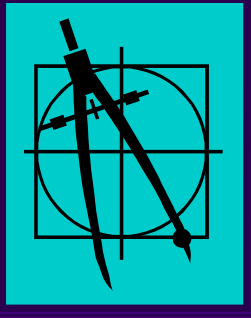
- ◆ Terminology
 - ◆ 610.12: Glossary ✓
- ◆ Reuse:
 - ◆ 1420.1, 1420.1a, 1420.1b: Libraries
 - ◆ 1571: Processes ✓
- ◆ Systems engineering
 - ◆ 1362: Concept of Operations ✓
 - ◆ 1233: Requirements Specification ✓
 - ◆ 1220: Systems Engineering Process ✓
 - ◆ 1228: Safety Plans
- ◆ Software acquisition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



History of Liaison Relationship

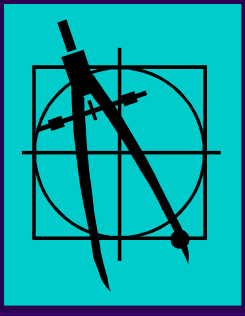
- Sep 1999** Chairman of SC7 sends letter of invitation to IEEE Computer Society, inviting Category A Liaison.
- Sep 2000** JTC1 approves Category A liaison.
- Nov 2000** IEEE CS Standards Activity Board (SAB) delegates responsibility for liaison to its Software Engineering Standards Committee (SESC).
- Feb 2001** SESC adopts the liaison policy and procedure and appoints Jim Moore as liaison representative. The procedure requires preparation of a liaison strategy.
- Dec 2001** IEEE Standards Association staff reviews liaison strategy.
- Feb 2002** IEEE CS approves Liaison strategy.
- Mar 2003** “Vision of Outcomes” and coordination procedures approved by SC7.
- May 2003** Several coordinated projects initiated.
- May 2005** 2005 Edition approved by Resolution 840
- Feb 2006** 2006 Edition drafted by JWM





Principles of Coordination

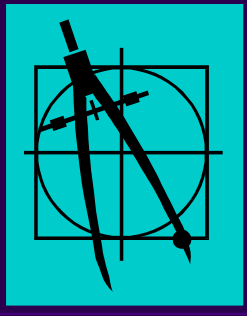
- ◆ *The collections of SC7 and S2ESC should be consistent and complementary--harmonized.* Users should be able to select and apply standards from both collections without contradiction.
- ◆ Both organizations should *respect the consensus* achieved by the other organization and *avoid creating multiple 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
 - ◆ *Project management process*
 - ◆ *V and V processes*
 - ◆ *CM process*
 - ◆ 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.



Updated

Possible cooperation: Terminology and concepts

SC7 Resources

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

IEEE CS Resources

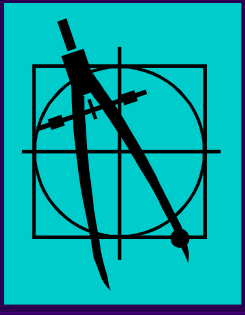
- ◆ 610.12, Glossary of SW engineering
- ◆ Definitions in other standards

Appropriate Actions for SC7

- ◆ *SC7 has taken responsibility for developing and maintaining a joint Software and Systems Engineering vocabulary*

Appropriate Actions for S2ESC

- ◆ IEEE has contributed 610.12 as a base document.
- ◆ *IEEE-SA has provided permission to use definitions in a publicly accessible DB.*
- ◆ *IEEE Computer Society has provided the publicly accessible DB host and tools.*
- ◆ *IEEE will adopt any standards.*



Possible cooperation: Quality management

SC7 Resources

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

IEEE CS Resources

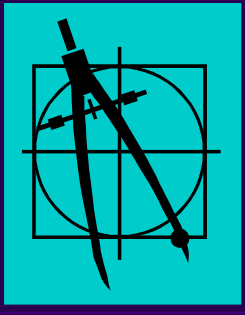
- ◆ 730, Quality assurance plans

Appropriate Actions for SC7

- ◆ SC7 is developing similar guidance for systems

Appropriate Actions for S2ESC

- ◆ IEEE is currently adopting 90003.
- ◆ IEEE will add an informative annex providing cross-references to IEEE standards.
- ◆ IEEE is trying to identify a participant in the systems-level project.



Updated

Possible cooperation: Systems engineering

SC7 Resources

- ◆ [IS 15288 is treated on a separate slide.]
- ◆ TR 19760, Guide to 15288
- ◆ WG7 Harmonization Project

IEEE CS Resources

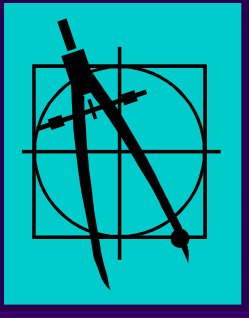
- ◆ 1220:2005, Systems engineering process
- ◆ 1062, Software acquisition
- ◆ 1233, System requirements specification
- ◆ 1362, Concept of operations
- ◆ 1471, Architecture description

Appropriate Actions for SC7

- ◆ *Following fast-track, commence coordinated revision of 25961 (1471).*
- ◆ *Following fast-track, commence coordinated revision of 26702 (1220).*

Appropriate Actions for S2ESC

- ◆ *IEEE has submitted 1471 for fast track ballot as 25961.*
- ◆ *IEEE has submitted revised 1220 for fast-track ballot as 26702.*
- ◆ *IEEE will participate in coordinated revisions following fast-track adoption.*



Possible cooperation: Product quality

SC7 Resources

- ◆ IS 9126-1, Quality model, being revised as 25010
- ◆ IS 12119, Software packages, being revised as 25051
- ◆ SQUARE project

IEEE CS Resources

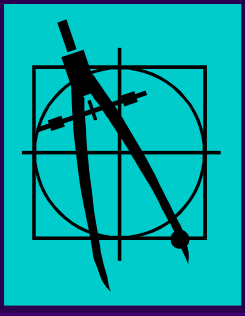
- ◆ IEEE has adopted the quality model of IS 9126-1 as a policy.
- ◆ IEEE 1465 (adoption of IS 12119)

Appropriate Actions for SC7

- ◆ WG6 should consider IEEE comments on 25051 project.

Appropriate Actions for S2ESC

- ◆ IEEE should provide comments on 25051 revision project.
- ◆ IEEE should adopt revised IS 25051.



Updated

Possible cooperation: Life cycle process framework

SC7 Resources

- ◆ IS 15288, Sys life cycle processes
- ◆ IS 12207, SW life cycle processes
- ◆ TR 15271, Guide to 12207
- ◆ *VSE Project*
- ◆ *Project 24774, Process Definition Guide*

IEEE CS Resources

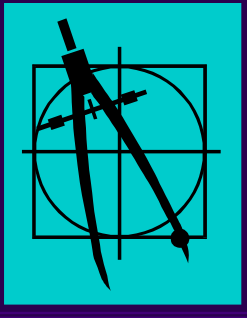
- ◆ 15288, adoption of IS 15288
- ◆ 12207.0, adoption of IS 12207
- ◆ 12207.2, Guide to 12207.0
- ◆ 1517, Software reuse processes
- ◆ IEEE uses 12207.0 (with plug-ins) as process reference framework

Appropriate Actions for SC7

- ◆ *Coordinated revision is underway to revise 12207 and 15288 and improve alignment.*

Appropriate Actions for S2ESC

- ◆ IEEE has contributed 1517 for study.
- ◆ *IEEE has contributed 12207.0.*
- ◆ *Coordinated revision is underway to revise 12207 and 15288 and improve alignment.*
- ◆ *IEEE CS provides a co-editor of 24774 project and VSE project.*



Possible cooperation: Maintenance process

SC7 Resources

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

IEEE CS Resources

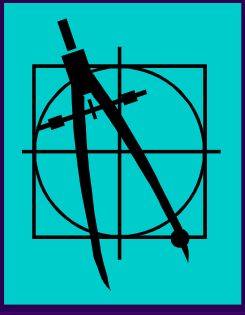
- ◆ IEEE 1219, SW Maintenance
 - ◆ Contains helpful practices that don't appear in IS 14764.

Appropriate Actions for SC7

- ◆ Coordinated revision project underway to merge the two standards into a new ISO/IEC/IEEE 14764.

Appropriate Actions for S2ESC

- ◆ Coordinated revision project underway to merge the two standards into a new ISO/IEC/IEEE 14764.



Possible cooperation: Measurement process

SC7 Resources

- ◆ IS 15939, Software measurement process

IEEE CS Resources

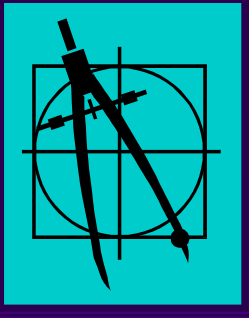
- ◆ IEEE 982 (2 parts), Measures for reliable software
- ◆ IEEE 1061, Quality metrics methodology
- ◆ IEEE has adopted 15939 framework as a policy for all measurement standards.

Appropriate Actions for SC7

- ◆ *NP for coordinated revision project is being balloted.*

Appropriate Actions for S2ESC

- ◆ *Initiate corresponding IEEE procedures for coordinated revision project.*



Possible cooperation: Risk management process

SC7 Resources

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

IEEE CS Resources

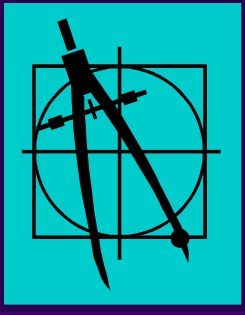
- ◆ IEEE 16085 (néé 1540), Risk management process
 - ◆ (Uses ISO TMB risk management vocabulary from draft ISO Guide 73.)

Appropriate Actions for SC7

- ◆ “Coordinated revision” of 16085 is underway.

Appropriate Actions for S2ESC

- ◆ “Coordinated revision” of 16085 is underway.



Updated

Possible cooperation: Project management process

SC7 Resources

- ◆ TR 16326, Project management

IEEE CS Resources

- ◆ IEEE 1058, SW project management plan

Also

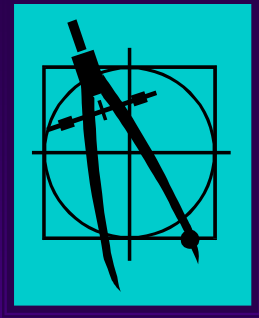
- ◆ IEEE 1490, Adoption of PMI PMBOK Guide

Appropriate Actions for SC7

- ◆ *Coordinated revision project underway to merge the two standards into a new ISO/IEC/IEEE 16326.*

Appropriate Actions for S2ESC

- ◆ *Coordinated revision project underway to merge the two standards into a new ISO/IEC/IEEE 16326.*



Updated

Possible cooperation: V&V processes

SC7 Resources

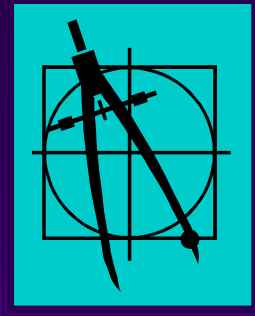
IEEE CS Resources

- ◆ IEEE 1012, SW Verification and Validation

Appropriate Actions for SC7

Appropriate Actions for S2ESC

- ◆ *IEEE is interested in revising 1012 to incorporate systems-level concerns and fast-tracking the result into SC7.*



Updated

Possible cooperation: CM process

SC7 Resources

- ◆ TR 15846, Configuration management

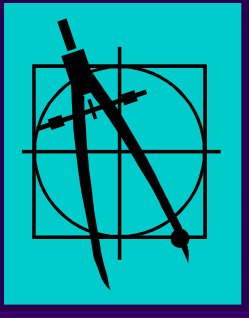
IEEE CS Resources

- ◆ IEEE 828, SW CM plans

Appropriate Actions for SC7

- ◆ WG7 Study Group has recommended withdrawing TR 15846 and referring to IEEE 828.
- ◆ *Withdrawal of TR 15846 has never been effected.*

Appropriate Actions for S2ESC



Possible cooperation: Process assessment

SC7 Resources

- ◆ IS 15504 (5 parts), Process assessment
- ◆ Additional parts under development

IEEE CS Resources

- ◆ None

Also Note

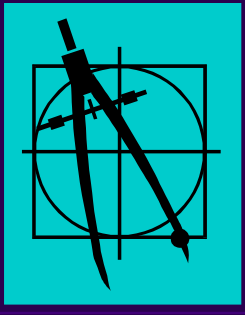
- ◆ SW-CMM is a de facto standard
- ◆ CMMI may become a de facto standard
 - ◆ (CMMI claims consistency with TR 15504.)

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for S2ESC

- ◆ None



Possible cooperation: Process construction

SC7 Resources

- ◆ None

IEEE CS Resources

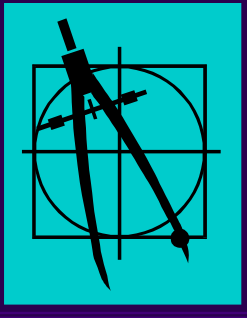
- ◆ IEEE 1074, Developing SW life cycle processes
- ◆ IEEE has improved the “fit” of IEEE 1074 with 12207.

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
- ◆ Revision underway

IEEE CS Resources

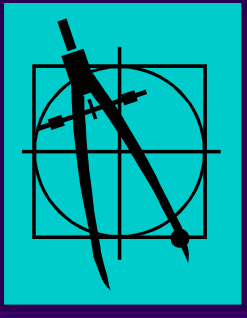
- ◆ IEEE 1228, SW safety planning

Appropriate Actions for SC7

- ◆ *Continue revision*

Appropriate Actions for S2ESC

- ◆ *IEEE may adopt 15026 when completed.*
- ◆ IEEE plans to broaden 1228 to deal with 15026, IEC 61508 and others.



Possible cooperation: Documentation-LC Data

SC7 Resources

- ◆ FDIS 15289, Sys and SW LC process information products

IEEE CS Resources

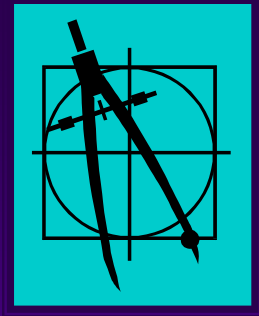
- ◆ IEEE 12207.1, Guide to life cycle data

Appropriate Actions for SC7

- ◆ Complete 15289.

Appropriate Actions for S2ESC

- ◆ IEEE has provided 12207.1 to the SC7 project editor as a base document.
- ◆ IEEE will consider adoption of 15289 when completed.



Possible cooperation: User Documentation

SC7 Resources

- ◆ *New series of user documentation standards*

IEEE CS Resources

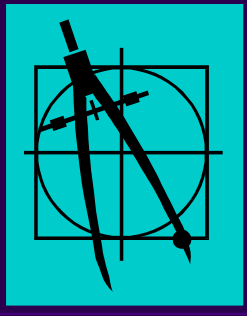
- ◆ IEEE 1063, SW user documentation

Appropriate Actions for SC7

- ◆ *Continue work on new series.*

Appropriate Actions for S2ESC

- ◆ *IEEE has contributed IEEE 1063 as a base document.*



Possible cooperation: Functional size measurement

SC7 Resources

- ◆ IS 14143-1, Functional size measurement
- ◆ 4 documents elaborating 14143-1
- ◆ 3 documents for particular methods
- ◆ Corrigendum to 14143-1 is being developed

IEEE CS Resources

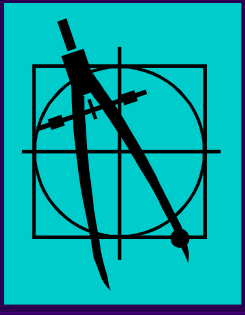
- ◆ IEEE 14143.1 (Adoption of 14143-1)
 - ◆ IEEE recently reaffirmed its adoption.
- ◆ IEEE 1045, SW productivity metrics

Appropriate Actions for SC7

- ◆ Incorporate IEEE “exceptions” into corrigendum of 14143-1

Appropriate Actions for S2ESC

- ◆ IEEE revises 1045 to make appropriate reference to 14143.1 and to other SC7 resources.
- ◆ IEEE considers adoption of corrected 14143-1.



Possible cooperation: CASE tools

SC7 Resources

- ◆ IS 14102, Evaluation and selection of CASE tools
- ◆ TR 14471, Adoption of CASE tools
- ◆ WG2 is developing 15940, SEE Reference Model

IEEE CS Resources

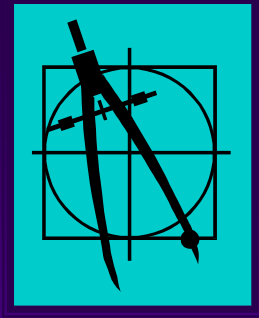
- ◆ IEEE 1462 (Adoption of IS 14102)
- ◆ IEEE 1348, Adoption of CASE tools

Appropriate Actions for SC7

- ◆ SC7 has authorized revision of 14102 and 14471.

Appropriate Actions for S2ESC

- ◆ IEEE should adopt results of SC7 revisions of 14102 and 14471.
- ◆ IEEE should offer comments on 15940.



Possible cooperation: Notations

SC7 Resources

- ◆ DIS 19501-1, UML
- ◆ Others

IEEE CS Resources

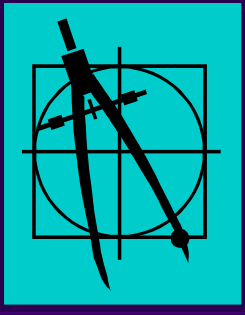
- ◆ 1320.1 and 1320.2, IDEF

Appropriate Actions for SC7

- ◆ None

Appropriate Actions for S2ESC

- ◆ *None*



Updated

Possible cooperation: Body of Knowledge

SC7 Resources

- ◆ *TR 19759, Adoption of IEEE CS SWEBOK Guide*
- ◆ *Project 24773, Certification of software engineers*

IEEE CS Resources

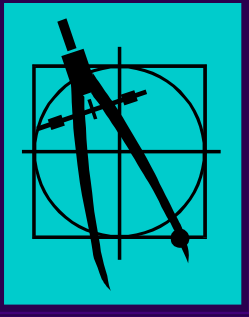
- ◆ 2004 version of SWEBOK Guide is available
- ◆ Certified Software Development Professional (CSDP)

Appropriate Actions for SC7

- ◆ *None*

Appropriate Actions for SWEBOK

- ◆ *Consult with SC7 experts during revision of SWEBOK Guide*



Possible cooperation: Internet best practices

SC7 Resources

- ◆ *IS 23026, Adoption of IEEE 2001*

IEEE CS Resources

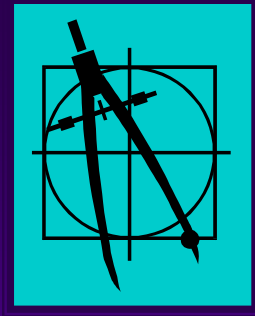
- ◆ IEEE 2001, Web page engineering

Appropriate Actions for SC7

- ◆ *None. Project is completed.*

Appropriate Actions for S2ESC

- ◆ *None. Project is completed.*



Updated

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

- ◆ *IEEE Std 830 and 1028 have been provided for study.*