IEEE Computer Society and
Certified Software Development Professional
Vision Statement

...to be the leading provider of technical information, community services, and personalized services for the world’s computing professionals
Professional Member Educational Background

- Doctorate: 30%
- Master’s: 43%
- Bachelor’s: 16%
- Less than Bachelor’s: 2%
- Some grad. school: 9%
- Less than Bachelor’s: 2%

Source: 2001 Member Survey
Largest Publisher of Peer-Reviewed Computing Publications

Innovative Technology for Computing Professionals

The flagship magazine of the IEEE Computer Society

IEEE computer society
60th anniversary
Welcome to ICSE 2006 in Shanghai!

The International Conference on Software Engineering (ICSE) is the premier software engineering conference, providing a forum for researchers, practitioners, and educators to present and discuss the most recent innovations, trends, experiences, and concerns in the field of software engineering.

ICSE 2006 was held May 20-28, 2006 in Shanghai, China at the Shanghai International Convention Center. We hope that you all had a fantastic time at ICSE 2006 and we will see you in Minneapolis for ICSE 2007.
Global Authority on Patent Citations

IEEE is 1st!

Source: CHI 2004
Standards Groups

Standards Activities

The objective of the Standards Activities Board (SAB) is "to provide an organizational framework and conducive environment within which to develop broadly accepted, sound, timely, and technically excellent standards that will advance the theory and practice of computing and information processing science and technology."

Standards Committees & Working Groups

- Design Automation Standards Committee P&P
- Foundation for Intelligent Physical Agents P&P
- Information Assurance Standards Committee P&P
- Learning Technology Standards Committee P&P
- Local Area Networks/Man Standards Committee (802) P&P
- Microprocessors & Microcomputers Standards Committee P&P
- Portable Applications Standards Committee P&P
- Simulation Interoperability Organization/SAC P&P
- Software & Systems Engineering Standards Committee P&P (Joining S2ESC PDF)
- Storage Systems Standards Committee P&P
- Test Technology Standards Committee P&P

SAB Sponsored Projects P&P

- EPEAT
- Standard Upper Ontology Working Group
- Musical Applications Using XML

Computer Standards Column

"to develop broadly accepted, sound, timely, and technically excellent standards that will advance the theory and practice of computing and information processing science and technology."
Over 40 international networks of professionals who create the society’s activities within a technical discipline and directly influence society standards development, conferences, publications, and educational activities.
Professional Certification - CSDP

- Vendor-neutral, professional practice-based
- Founded on professional norms such as:
  - A set of professional practice standards: IEEE and international standards on software engineering
- Intended for a mid-level Software Engineer
- Education - Baccalaureate or equivalent university degree
- 9,000 hours of experience
- Supported by appropriate training programs and materials

11 Knowledge Areas
- Requirements
- Design
- Construction
- Testing
- Maintenance
- Configuration Mgmt
- SE Management
- Tools & Methods
- Process
- Quality
- Business Practices & Engineering Economics
Why CSDP?

- Speed of change in technology combined with the relative young age of Software Engineering profession
  - Few IT organizations are able to continuously upgrade the capability of their workforce with accepted global practices
  - Universities also face the challenge of maintaining program comprehensiveness in the face of these changes
- Workforce development - needs a model of the software engineering discipline that can remain current
CSDP Can Help

• Harmonizing of a global profession – Software Engineering
• Improving the standards for qualification of software engineer
• Promoting replicable quality assurance in the global enterprise
• Enhancing globalization and competitiveness by embracing accepted practices
• Providing a measure (exam) and the tools (local training) to establish and maintain qualifications
What that means to the Employer and Employee?

- SWEBOK Guide and the CSDP provide a structured collection of knowledge areas, competencies and measures to assess competencies along accepted practices.
  - Organizations can use the list to determine that an organization has all of the necessary competencies among its collective staff.
  - Program managers can use the list to ask which competencies are needed in a particular project.
  - Employers and software engineers can measure knowledge and experience against a globally recognized set of qualifications in those competencies.
  - Management can set up a training and development program organized around the list of competencies to support the development of needed skills among less capable staff.
CSDP Candidates Must

- Possess *fundamental knowledge and understanding of computing principles and concepts* and their *application* to the definition, design, construction, and testing of software
- Provide *appropriate design* with *technical and economic tradeoffs* of modules, subsystems, and systems *in accordance with standards of practice, specifications, and principles of behavior* of software as required to perform the functions as stated in the software requirements
- Possess the IEEE CS CSDP education, experience, and examination requirements
Foundation of CSDP is the Software Engineering Body of Knowledge

- Mission is to provide an authoritative guide to the knowledge areas that is "generally accepted"
- ISO has adopted it as ISO/IEC Technical Report 19759
- Growing adoption by industry and universities
- Promotes a consistent view of software engineering worldwide
- Clarifies the place and the boundary of software engineering with respect to other disciplines
- Provides a foundation for curriculum development and individual certification and licensing material
Over 500 reviewers from 41 countries and over 10,000 comments were gathered.
Global Acceptance of SWEBOK

- ISO has adopted the SWEBOK as a framework for software engineering knowledge.
- ISO Working Group (ISO/IEC JTC1 SC7 WG20) is currently developing a standard for certifying software engineering professionals.
  - ISO wants to establish a standard where any software engineering certification program would need to be based on a body of knowledge that aligns to SWEBOK as a reference model.
  - CSDP is seen as a prime example of a certification program that would conform to this standard.
- Among Universities
  - Schools are rationalizing their curriculum around the SWEBOK, e.g. SMU, NTU.
  - SWEBOK Guide was used as a major accreditation tool at Monash University in Australia.
- SWEBOK provides the taxonomical basis for VISEK, a software engineering portal financed by the German government.
- SWEBOK contributed to provincial licensing programs of the Canadian Council of Professional Engineers.
- Translated (or translating) into Japanese, Chinese, Spanish, French, Russian, Hungarian.
- Between 1999-2002: 32 conferences and workshops based on SWEBOK.
- Industry is beginning to rewrite position descriptions and structuring professional development around SWEBOK.
- A professional development program at SIAC was developed on SWEBOK.
- SWEBOK Guide was used to assess the software engineering industry in Turkey.
Over 600 CSDP Holders In 4 Years

Companies Include:
- Intel
- IBM
- Lockheed Martin
- Raytheon
- HP
- FedEx
- NASA
- Motorola
- Honeywell
- Northrop Grumman
- Boeing
- L3 Communications
- Microsoft
- BAE Systems
- General Dynamics
- The Document Company
- Xerox
- Shell
- United States Army

Logos of various companies and government agencies are displayed.
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Proves our team members can demonstrate their software engineering proficiency across 11 SE knowledge domains. No other certification exam provides the direct mapping to the Software Engineering Body of Knowledge (SWEBOK).

Currently 70% of our qualifying technical staff in Huntsville are CSDP certified. They have applied this knowledge into their projects and apply it to the CMMI process, improving process areas and procedures.

CSDP has helped to focus attention on the continued pursuit of software engineering excellence within our organization.

On Saturday, July 15, Northrop Grumman christened the amphibious transport dock ship Green Bay (LPD 20) in Avondale, La. Above, sponsor Rose Mary Magnus smashes a champagne bottle across the bow of the ship. Joining her (l-r) are George R. Yount, sector vice president of ship construction, Northrop Grumman Ship Systems; Commander Burt L. Espe, USN, Prospective Commanding Officer of the ship; and James J. Schmitt, mayor of Green Bay, Wisconsin.
The CSDP and SWEBOK offered us a stable and credible reference point for curriculum development embraced by the CSDP community as a benchmark. We are able to more confidently market our program as a comprehensive and relevant educational opportunity for software practitioners, managers, and acquisition professionals. Our program is an official registered CSDP educational provider, and all of our instructors obtain CSDP certification. We believe that achieving these milestones has enriched the prestige and marketability of our program and our school.
- Make CSDP a required career hurdle for 3,000 Samsung SDS developers (Complete)
- Develop IEEE Computer Society/Samsung SDS course and cadre of internal trainers (3Q ’06)
- Offer CSDP training to the rest of the companies in the Samsung family and Samsung SDS corporate customers (4Q ’06)
- Drive CSDP as a nationally approved certification in Korea (1Q ’07)
Conclusions

• SWEBOK and CSDP is helping to build knowledge areas, competencies and measures to assess competencies along accepted practices to help industry and academia continuously upgrade the capability of the local workforce with accepted global practices.

• Software Engineering has rapidly developed into a young global profession but to meet its potential we must further improve by:
  • Harmonizing the global professional job skills of Software Engineering
  • Promoting “generally accepted practices” among global enterprises and schools
  • Enhancing the globalization and qualification of software engineers

• SWEBOK and CSDP are making significant efforts to help through advanced practical education (certification exams and local training)

• We seek partners to develop local training and information to align local efforts to SWEBOK and CSDP
  • Government
  • Academia
  • Industry
Thank you!
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