



Joint IEEE Computer Society and Association for Computing Machinery Steering Committee for the Establishment of Software Engineering as a Profession

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Background



IEEE Computer Society BoG Motion (5/93)

ACM Council Resolution (8/93)

Initial Recommendations (11/93)

- Rationale
- Approach
- Organization chart

Status

Proposed by the IEEE Computer Society Board of Governors to the IEEE Computer Society Board of Governors, December 1994.

Notes:

In May 21, 1993, the IEEE Computer Society Board of Governors approved a motion to establish a steering committee for evaluating, planning, and coordinating actions related to establishing software engineering as a profession.

In August 1993 the ACM Council endorsed the establishment of a Commission on Software Engineering to address a number of questions relating to 1) the terminology used to describe software engineering and those who work in the software area; 2) the identification of generally accepted and desired standards of good software practice; and 3) our ability to identify, educate, and train individuals who are competent with software engineering and design.

An ad-hoc committee of the Computer Society, with participation of the ACM worked during the Fall of 1993, defining a process and initial recommendations to accomplish these tasks.

In January 1993 the President of the Computer Society made a proposal to the President of the ACM to streamline the steering committee and to include equal numbers of members appointed by the society presidents. The ACM agreed to the proposal and we have been operating as a Joint Steering Committee.



Mission Statement



"To establish the appropriate sets(s) of standards for professional practice of software engineering upon which industrial decisions, professional certification, and educational curricula can be based."

Notes:

Notes from the IEEE Computer Society's Board of Governors meeting held in New York City, NY, USA, on October 18, 1993.

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Initial Recommendations(11/93)



Notes:

Rational for recommendation suggested by definition of "Profession".

As defined by Webster's New Collegiate Dictionary:

- **profession:** A calling requiring specialized knowledge and often long and intensive academic preparation; a principal calling, vocation or employment; the whole body of persons engaged in a calling.
- **professions¹:** (1) Relating to or characteristic of a profession; engaged in one of the learned professions; characterized by or conforming to the technical or ethical standards of a profession. (2) participating for gain or livelihood in an activity or field of endeavor often engaged in by amateurs; engaged in by persons receiving financial returns.
- **professionals¹:** (1) The conduct, aims or qualities that characterize or mark a profession or a professional person. (2) The following of a profession (as athletics) for gain or livelihood.

Recommendation 3: Define Ethical Standards

Recommendation 4: Define Educational Curricula for (a) undergraduate, (b) graduate (MS), and (c) continuing education (for retraining and migration).

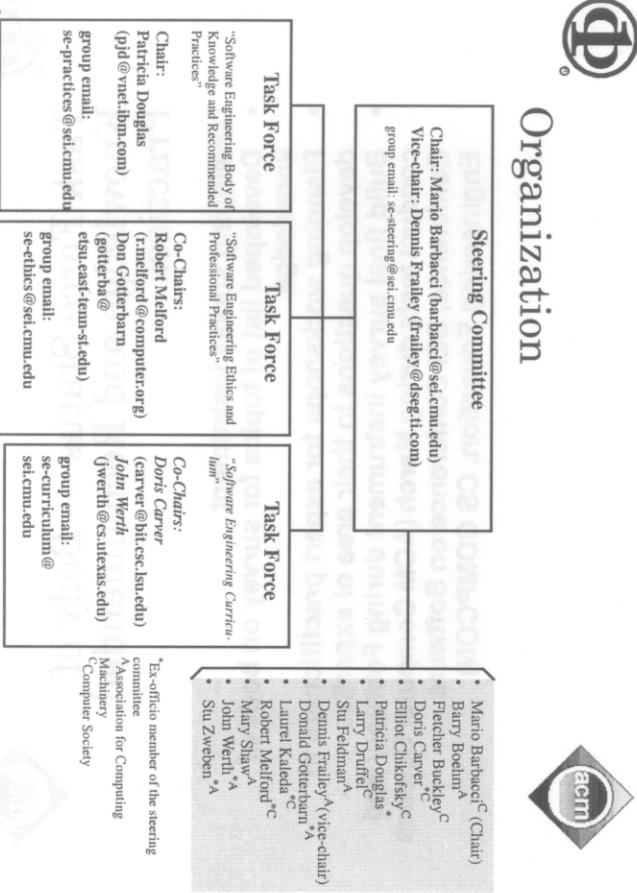
- As defined in IEEE Standard 610.12:
 - Software Engineering: (1) The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software. (2) The study of approaches as is (1).
 - This definition of software engineering focuses on acquisition and application of technical standards. It does not address the application or ethical standards. We covered this issue with a specific recommendation.



Rationale

The recommendations have implied dependencies and should be implemented in the order suggested.

To implement these recommendations we will establish and appoint working committees and task forces as necessary to accomplish the steering committee's work.



Notes:

The definition of the required body of knowledge and recommended practices should be driven by industry needs and should be developed first.

Curricula recommendations must be consistent with the required body of knowledge and recommended practices.

Licensing, certification, and other such regulatory instruments will be addressed next. This is a natural continuation to our first set of recommendations:

We need to identify the body of knowledge, practices, and education required of competent software engineers before we define required levels of competence

The logo of the Association for Computing Machinery (ACM) is located in the bottom right corner. It consists of the lowercase letters "acm" in a white circle, which is itself centered within a larger diamond-shaped frame.

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Task Force Status — Body of Knowledge and Recommended Practices

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The required body of knowledge and recommended practices are not static because technology evolves and the professionals should keep up with the field.

• The development and maintenance of the set of recommended practices should be structured like a technical standard; adopted by consensus and subject to periodic revision.

Initial version to be developed by survey of practitioners.

Developing survey instrument

Developed list of topics for survey on body of knowledge

- Planning workshops for expert practitioners to develop questions in their area of expertise
- Build final survey instrument during February and conduct tests during March (ACM Computer Science Conference, SEI Conference on Software Engineering Education, CS COMPCON)

Outcomes

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Notes:

The initial recommendation was to study and customize, if necessary, existing codes already adopted by IEEE, ACM, registration boards, and other relevant organizations.

It is not clear that we need something terribly different or specific to software on the grounds that the standards of ethics and professional practices of people building antennas, processors, or databases should be different.

However, due perhaps to the rapid expansion of the field, software developers sometimes do things that might be considered unethical in other fields (e.g., indiscriminate copying of software in violation of copyrights or licenses.)



Task Force Status — Ethics and Professional Practices

Working groups

- Institutional support
- Intellectual property
- Professional competence
- Professional relationships
- Privacy
- Reliability and safety
- Security
- Social justice



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Call for participation in wide circulation

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Task Force Status — Software Engineering Curriculum



Task force leadership appointed and ready to start working with task force developing survey of body of knowledge

Survey results will be important input to developing curricula for SE (education and training)



Future Steps



Notes:

Have received inquiries and expressions of interest from other professional societies

- Briefing IEE and BCS on December 7-9
- Should consider involving others e.g. DPMA

Briefing to ACM Executive Committee and ACM Council

Briefing CS Boards the following week (San Francisco)

Published COMPUTER Standards column early in 1994

Published article in ACM Software Engineering Notes (Barry Boehm)

SEN article reprinted in CS Software Engineering Technical Council Newsletter

Notes:

There is a debate as to whether Software Engineering is a part of Computer Science or vice versa. We should not be distracted by this debate from the goal of meeting the needs of industry.

The objective is to seek agreement on the curricula that should be taught and not necessarily on which departments teach it.