SOFTWARE ENGINEERING AS A PROFESSION

Fletcher J. Buckley
Board of Governors Member

"MOVED, that the IEEE Computer Society Board Of Governors appoint an ad hoc committee to initiate the actions to establish software engineering as a profession. This work should include:

a. "Determining, in coordination with the Standards Activities Board, appropriate definitions and establishing those definitions as approved standards in accordance with IEEE Standards Board policies and procedures.

b. "Determining, in coordination with the Educational Activities Board. the body of knowledge required for a four-year undergraduate curriculum for a Bachelor of Science in Software Engineering and establishing this as an approved curriculum at the Accreditation Board For Engineering Technology (ABET).

c. "Determining, in coordination with the Membership Activities Board (MAB), a set of software engineering ethics.

d. "Encouraging, in coordination with the MAB and the EAB, states to establish software engineering as a registered engineering field consistent with current practices in civil and electrical engineering."

"Members shall he appointed by the chair of the ad-hoc committee. Membership on the committee shall be open to all interested parties including non-members of the Board of Governors. the Computer Society. and the IEEE.

"The committee is authorized to initiate its work immediately."

Report of

COMMITTEE ON PUBLIC POLICY

Robert J. Melford
Chair, Committee on Public Policy

Chair's Personal Note: I wish to extend my thanks and gratitude to Paul Davis for his tireless efforts as my predecessor and for his 9 years of service to COPP. I am most grateful that Paul will continue to favor COPP with his Chairmanship of our Software Engineering Licensure Subcommittee. I am also pleased to welcome to COPP, Suzanne Weisband and Paula Albrecht, who have agreed to Chair COPP's Computing Ethics and Education/Computer Literacy Subcommittees, respectively.

Revised COPP Charter: The Society's Board of Governors approved the revised COPP Charter at its February meeting. The new charter specifically broadens COPP's international responsibilities and clarifies its representational duties for the Society towards governmental bodies in the international community.

Globalized Perspective: In specific response to the Board of Governors charges, COPP will include Representatives for the several IEEE Regions. Priority has been placed in securing a Representative from each of the Regions 7 through 10. There will be one Representative for Regions 1 through 6.

International Technology Issues: Subcommittee shall continue to write about IT-related public policy issues in countries other than the U.S. Prospective candidates include: Brazil, Egypt, South and Sub-Saharan Africa, India, etc.

Foreign Engineers: Survey to bring forth concerns of foreign engineers who are working in the engineering and computing science areas in the U.S. nearing completion. Desire to expand analysis to ex-patriot engineers working in other countries should initial U.S. directed survey prove valuable.

Computer Mediated Communications and Conferencing: Effort initiated to more effectively incorporate use of computer-based communications resources to facilitate improved work completion. COPP also reviewing proposal from Board of Governors member Guylaine Pollock to initiate computing network-based public policy issue identification and analysis function to support the Society.

Graduate and Undergraduate Student Participation: Effort initiated to recruit volunteers to support various COPP missions from appropriate Collegiate populations. Activities intended to be mutually supportive of Student Chapters

Additional Action Items:

* Bluckley Proposal on Software Engineering Profession
* Standards of Practice for Computing Professionals
* Licensure of Safety Critical Software Engineering
* Second-order Consequences of International Technology Transfer

Gary Ford wa... 18 out of 9042 Length: 11:02:54 PM
H33 ford@sei cmu edu (Gary Ford) Additional Information on NJ Licensing of Software Engineers

Several weeks ago, Bob Holibaugh posdd the text of a bill in the New Jersey General Assembly requiring state licensing of software engineers.

The Ueergraduate Curriculum Project has been researching issues of certification and licensing, because we expect that, inthe future. undergraduate SE education will have to prepare software engineers for certification and/or licensing I have contacted the legislators in New Jersey who are leading this effort and have found some additional inforation.

1. The bill passed the General Assembly on June 24, but it has not yet been considered by the state Seate. The Senate will return from its summer recess shortly, at which time the bill will be considered.

2. Alhough the bill was debated for more than five months before passage. almost no one outside the legislature paid an attention. After passage. a furor arose (much of it coming from Computer Sciences Corporation and AT&T Bell Labsttwo of the largest employers of software professionals in New Jersey). .misc.news
Subjecmore(42%) ? (? ( ) s y f bn q p m S P ^H " " LF Ret ^L ^Z)
Date: 6 Sep 91 17:24:05 GMT
Alt-Z FOR HELP3 ANSI 3 FDX 3 1200 E71 3 LOG CLOSED 3 PRINT OFF 3 OFF-LINE

18 out of 9042 Length: 11:03:40 PM
H33 ford@sei cmu edu (Gary Ford) Additional Information on NJ Li in New Jersey).ware Engineers

3. The sponsors f the bill have been meeting with concerned parties, and expect that appropriate amendments to the bill will be inroduced in the Senate.

4. A campaign by the American Society of Mechanical Engineers was successfulnn setting the phrase "software engineer" changed to "software designer" throughout the bill. ASME seems not to objet to the term "software engineer" per se, but want to reserve it for engineers that have satisfied existing reqirernents(education, experience, passing a test) for licensed engineers.

5. The bill seems to look upon sfftware designers more in the category of other regulated professions(including, in New Jersey, architecture, cometology and hairstyling, electrical contracting, dentistry, mortuary science, marriage counseling, optometry, ophtllmic technology, professional planning, psychology, plumbing, shorthand reporting, radiologic technology. ciropractic, acupuncture, real estate appraisal, and social work) than in the category of Professional Engineers
Subjecmore(84%) ? (? ( ) s y f bn q p m S P ^H " " LF Ret ^L ^Z)
Date: 6 Sep 91 17:24:05 GMT
Alt-Z FOR HELP3 ANSI 3 FDX 3 1200 E71 3 LOG CLOSED 3 PRINT OFF 3 OFF-LINE

18 out of 9042 Length: 11:04:18 PM
H33 ford@sei cmu edu (Gary Ford) Additional Information on NJ Li in the category of Professional Engineers.

6. Similar legislation has been considered, but not passed, in Texs, California, Ohio, and Tennessee.

I have copies of the bill, the ASME position statement, and sme newspaper clippings related to the controversies created by the bill. See me for copies.

what other things were software controlled. I plugged mains power to the unit so that I would not loose this crashed state and tried opening the hatch door. As I was expecting the safety switch was also, apperently, software controled because the unit remained on. Now, I was faced with a unit turned on, with full power applied to it and with an open door hatch.

Moral: Software emulation of safety interlocks is not a good idea. Even with formaly proven correct software, we would still need hardware that was formaly proven to correctly function under all probable conditions to implement a safe product. Direct control methods (such as a switch connected to the power supply in this case) are more appropriate.

Diomidis Spinellis, Department of Computing, Imperial College

---

Parnas Not object to Licens

Date: Tue, 22 Oct 91 12:59:10 EDT
From: parnas@qusunt.eng.McMaster.CA (David Parnas)
Subject: Re: Licensing of Software Engineers (RISKS-12.52)

There seems to be a false assumption in some of the comments made by those who fear this concept. They assume that the body that issues the licenses is the government. That is not the case for other engineers. In many jurisdictions there is a professional body that is charged with this task. In Ontario it is the APEO, Association of Professional Engineers of Ontario. In Australia there is an "Institution of Engineers". Thus, it becomes the job of professionals to set the standards for their own profession and to enforce them. Why should the software field be different?

Date: Tue, 22 Oct 91 11:20:02 -0700
From: Mark Seecof <marks@capnet.latimes.com>
Subject: Law requiring bug fixes (Hanlon, self-regulation, RISKS-12.52)

In RISKS-12.52 Richard Hanlon suggests:

> ..with a minimal intrusion by the government, by making it a law to
> provide free bug fixes (there's ALWAYS at least one more bug).

such a law might have horrible consequences for software vendors. Fred Brooks in _The Mythical Man Month_ (Addison-Wesley, Menlo Park, 1982) reports (in Ch. 11, adducing evidence which I've elided here) that:

> The fundamental problem with Program maintenance is that fixing a defect has a substantial (20-50 percent) change of introducing another. so the whole process is two steps forward and one step back.

and

> ...All repairs tend to destroy the structure of the softwareo, to increase the entropy and disorder of the system. Less and less effort is spent on fixing original design flaws; more and more is spent on fixing flaws introduced by earlier fixes. As time passes, the system becomes less and less well-ordered. Sooner or later the fixing ceases to gain any ground. Each forward step is matched by a backward one. Although in principle usable forever, the system has worn out as a base for progress. F...o systems program building is an entropy-decreasing process, hence inherently metastable. Program maintenance is an entropy-increasing process, and even its most skillfull execution only delays the subsidence of the system into unfixable obsolescence.

so I suggest that any law interfering with the allocation of resources to maintenance or development (often of a replacement system) by the presumably