Date: Mon, 26 Aug 1996 10:17:35 -0500 (CDT)
From: CSBURNSTEIN@minna
To: weil@charlie.cns.iit.edu

Vivian,

I received this via e-mail. I will send you and Michael a hard copy in campus mail. It is very interesting and relevant.

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Certify, License or Register Software Professionals?

by Larry Bernstein, President NSC

TO: Friends of the National Software Council

RE: NSC Forum on Licensing of Software Professionals

Here are notes from the National Software Council Forum on the Licensing of Software Professionals and my proposal for action.

The NSC sponsored a Forum to debate the need to provide a certification and licensing program for software professionals, specifically, software engineers. This issue is very hot within university and government circles. The meeting, held in St. Louis on 21 and 22 June 1996, involved leading persons from academia, industry, and government who lead the debate on certification.

The ACM was represented by Steward Zweben, President of the ACM and the IEEE by Elliot Chikofsky, Chair of the Technical Activity Group on Software Engineering of the IEEE Computer Society.

Mary Shaw of Carnegie Mellon University spoke on "Should US Software Engineers be licensed?" She argued against licensing. She said that software engineering is immature compared with civil or chemical engineering. For software engineering to mature requires a consolidation and validation of its body of knowledge. She asked if software engineering was closer to mathematics than engineering? She suggested that the software engineering knowledge base is not stable enough to support licensing and certification. Before we embark on any certification or licensing program she demands that we develop and adopt

a robust software engineering body of knowledge.. Industry, government, professional societies and universities must accept a single software engineering taxonomy, which only then would be the basis for a certification or licensing program. Shaw does not believe that today's body of knowledge is sufficient. Shaw also discussed the need for standards. She called for a codification of our body of software engineering knowledge.

Norm Gibbs of Guilford College, North Carolina, (and recently headed the software education program of the SEI) spoke about the software engineering curricula in the United States. He proposed that the medical profession's certification and licensing program become the model software engineering. Gibb's insisted that we must leverage on the investment that industry is making in training programs. He implored us to agree on a practice. Gibbs contrasted current engineering certification and licensing programs. He concluded that the while certification assures a level of education, licensing is aimed at accountability

Most of the debate was in favor of certification and licensing with the lack a sufficient body of knowledge being the stumbling block. Don Gotterbarn of the Tennessee State University argued that such a body of knowledge existed and disagreed with Shaw. Gotterbarn went on to give his views on the lack of accepted ethics of software engineering practice. He warned that if the software engineering community does not step certify and license its professionals, the professional engineering community will. Today's state licensing examinations have little relevance to software engineering.

Nancy Mead of the Software Engineering Institute discussed their initiatives to improve software engineering education.

Stewart Zweben called for a more compelling reason for certification and licensing than just the good of the profession. Professional societies must make the case for how certification and licensing will benefit society.

Pat Douglas, of IBM, has been working on a survey of software engineering. This effort under the guidance of the joint IEEE/ACM steering committee needs support and leadership.

Michael Berens, representing the ASQC, argued for certification and urged the NSC to make it happen.

Perhaps the most revealing dialogue took place in the summary session. These are the findings from the Forum: 1. There is a lack of high level industry participation or interest. 2. The leaders of the profession are silent. 3. Why should the NSC become involved? Can it be a forcing function to set a national agenda and help the various factions coalesce? 4. Gibbs endorsed the concept of certification (versus licensing). More work is needed on the mechanics of such a program. 5. There is a consensus for certification within specialties 6. The goal is to have a program in place by October 1997.. 7. The NSC should be active in the IEEE/ACM steering committee activity, perhaps even chairing the committee. 8.. The NSC should participate in IEEE/ACM/STC conferences on this subject.

There is a consensus for a certification program in software engineering, and that the NSC should provide leadership in bringing such a program to realization.

Larry Bernstein's Proposal for Registration: The National Software Council registers systems as "Safety Critical" ones. These are systems that can effect human health and welfare, privacy, financial controls, national security or trade secrets. Any customer or supplier can register their request for a system, their working system or their developing system as "Safety Critical" with the NSC if and only if:

1. They are a member of the NSC.
2. There is a named NSC registered software architect responsible for all technical decisions.
3. There is a named NSC registered software project manager responsible for the trade-offs between features/functions, schedule, costs, through-put, response time and availability. This person may be the same as the software architect.

4. They advocate and practice code of software engineering ethics for
safe systems:

a. Systems will not de-humanize
b. Systems will be tested.
c. Software Engineers will be current with technology and
practices.
d. Risks and confidence levels for successful operation will be
identified.
e. Efforts used to make the system safe will be explicitly
identified.

Safe systems are those that have been verified to perform their
functions properly and can sense when they are about to fail and recover
or shut down in an orderly way.

To be a registered safety-critical software architect or project manager
one must:

a. Be endorsed in writing by two others registered safety-critical
software architects or project managers.
b. Be a member in good standing of the NSC.
c. Be an advocate and practitioner of a code of ethics
d. Be current in the field
e. Provide a written rationale for decisions
f. Follow a defined process

When these conditions are met the system, architect or project manager
may use a 'NSC Safety Assured' seal.

Thanks to Walt Ellis and John Marciniak for preparing these notes and to
Rick Linger for chairing the NSC Forum in St. Louis.

Please send your comments nsc@nscusa.org or to me at "lbernstein@worldnet.att.net".