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.

Ilene

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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.

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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".