Subject: Thoughts regarding relationships between education project, ethics project and BOK Project Date: 1/6/99 6:08 PM **From:** "Dennis J. Frailey" <d-frailey@ti.com>

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Dennis Frailey writing to selected members of the SWEBOK project, IAB, SWECC, and various related efforts.

This is a white paper outlining my thoughts on an issue that is of considerable importance to the software engineering projects being sponsored by SWECC: Body of Knowledge (SWEBOK), education, ethics and professional practices, and (to be established) performance norms. I also propose some possible solutions. I invite comment and critique from all affected parties. I intend to propose implementing something along these lines at the SWECC meeting in Austin on January 28-29, so timely response is of the essence.

The issue:

It has become clear in recent communcation that there is somewhat of a disconnect over defining certain parts of the body of knowledge for software engineering. Specifically, although the BOK project has clear plans for identifying and documenting those knowledge areas that are unique to software engineering, it is not clear how we will identify what knowledge areas within computer science and other disciplines are part of what a software engineer must know. These form the foundation upon which a software engineer must be educated, just as a solid "pre med" program is the foundation on which medical doctors are educated. While those who define the body of knowledge for a medical doctor do not define chemistry, they certainly identify what parts of chemistry a medical doctor must know.

Upon reflection, it seems to me that this problem is a direct result of the relative autonomy of the various projects. I would like to see that change and, since SWECC's role is to coordinate, I am proposing a way that we could coordinate a closer form of work

among the projects.

The goal:

It is clear that we must eventually define all that a software engineer should know in order to properly define curricula, establish accreditation criteria, and prepare licensing examinations. It is also clear that all of our projects have both interest and expertise to contribute to this. Therefore I would like to offer some ideas that might lead to a strategy for accomplishing what we all hope will be accomplished.

The approach:

My suggestions involve two elements: an agreement regarding division of responsibility and an agreement for cooperative activity among the various projects. Speaking from the SWECC perspective, I propose that SWECC coordinate and facilitate these cooperative activities once the projects agree on what they would be.

As an example of a cooperative activity, the education project has recently discussed a possible workshop that would deal with certain issues about what must be in the core curriculum of a software engineer. I believe this is an excellent example of an activity that could be cooperative among the projects, because it would address key issues that affect all of them.

Division of Responsibility

I propose that the BOK project accept full responsibility for the following:

- identifying the knowledge areas that are unique to software engineers and identifying, within each knowledge area, identifying and providing reference material to definitive sources on the topics that are essential to a software engineer. They have already produced a baseline set of such knowledge areas and I believe this part of their activity is well underway - identifying other disciplines that contain knowledge areas that are important for a software engineer. This too has already been done in a baseline manner.

I propose that the BOK project and the Education project accept joint responsibility (and include tasks in both of their plans) for: - identifying those knowledge areas within other disciplines (computer science, computer engineering, math, science, etc) that are necessary for a software engineers. Examples might include

data structures from computer science or computer architecture from computer engineering or discrete mathematics

I propose that the Education project accept full responsibility for identifying and providing authoritative references for the topics within each knowledge area from "other" disciplines that are necessary for software engineers. I believe this has already been started, and as a SWECC member I would endorse further work in this area

I propose that the (not yet formed) performance norms project work jointly with the Code of Ethics and Professional Practices project to identify the tasks that a software engineer would be expected to perform. Perhaps the other two projects should also be involved in this. This would be based on the knowledge areas defined by the other two projects and would probably not commence for about a year. At that time, the two projects should further define how this can be subdivided, but it seems to me that the Code of Ethics and Professional Practices project would concentrate on defining the professional practices that would be considered essential for a software engineer and the performance norms project would focus on the skills and the performance standards associated with these.

Cooperative activity:

Each project would have an (at least) annual review of its progress, to which each other project and SWECC should be invited to send representatives. This review might occur during a SWECC meeting or might occur separately, depending on the magnitude of the project and the amount of work to be reported on. SWECC can attempt to schedule its meetings to adjoin major project reviews so as to minimize travel for all concerned. Since SWECC must report to its sponsoring societies (ACM and IEEE-CS) on an annual basis, we can also coordinate the timing to fit their annual schedules.

For all responsibilities that are joint, the affected projects should plan and budget for appropriate joint activities and should keep SWECC and the other projects informed of these.

I invite comments and suggestions.

Regards, Dennis J. Frailey
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