

# ACM Education Board Annual Report FY2004

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## Executive Summary

In this document, we report on our significant accomplishments of the last year. Sixteen of them are enumerated and summarized. We also focus on three areas in which we need to improve: serving the profession, doing work that fully acknowledges that computing education is international in scope, and modernizing our own Board. We summarize our plans for addressing each of these areas. We hope you will be pleased about our accomplishments and supportive of our efforts to improve.

While we have reported only on those things that we think important, not everything is of equal importance. If you find yourself too busy to read this report, or if you find yourself able to support only a single recommendation from it, we ask you to focus on section 3.4. Of course, we hope you will read the entire report, as it will provide you with a more complete picture. But if you read only one small part of it, we ask that you make it section 3.4.

## 1. Summary of FY2004 Activity

### 1.1. K-12 education

Changes in the role of computing throughout society have triggered changes in what computing education means at the K-12 level. Unfortunately, a central feature of this evolution has been a widespread abandonment of substantive pre-college computing education in favor of superficial training that emphasizes basic operation of popular software packages. Society faces important costs and risks due to two consequences of this abandonment:

- Key learning needs of students are ignored. Students now require computing-related problem-solving skills as basic preparation for entering the workforce and pursuing higher education. They also require a foundation in basic computing-related knowledge to permit them to be informed citizens and consumers. On both counts, student needs are ignored, which implies negative downstream effects for the future of those students and for society.
- The ability of our educational system to provide adequate computing education is debilitated. The number of pre-college educators should be growing, and the efforts of those teachers to prepare themselves to provide high-quality computing education should be supported, but the opposite has been occurring. School systems are reducing the number of computing teachers and ignoring the professional needs of those who remain. This guarantees that inadequate computing education will continue well into the future.

Over the past year, ACM has responded to this state of affairs with four accomplishments:

1. Publishing a model curriculum for mainstream K-12 CS education.
2. Creating an organization of K-12 computing educators.
3. Expanding Java training workshops for K-12 teachers.
4. Establishing a conference for K-12 computing educators.

Each of these four responses is described below.

#### 1.1.1. Publishing a model curriculum for K-12 computer science

Before the 1990s explosion of computing, computer science was generally taught in K-12 only at the high school level, and only as an Advanced Placement course for pre-college students. The K-12 Task Force Curriculum Committee, led by Allen Tucker, recently produced *The ACM Model Curriculum for K-12 Computer Science*. It provides a new model for K-12 curricula that integrates education in computing fluency and computer science competency, targets a wider mainstream audience, and includes courses for both primary and secondary schools. Developed in consultation with many educators, and incorporating feedback obtained at conferences and meetings of state-level educators, it was published by ACM in October 2003.

#### 1.1.2. Creating an organization of K-12 computing educators

The K-12 Task Force, in the person of Chris Stephenson, has led a successful effort to establish a grass roots organization of educators focused on improving the K-12 state of affairs in the United States and Canada. With timely and critical support from ACM, the *Computer Science Teachers Association* (CSTA) has been formed. With considerable formative, planning and development work completed, CSTA expects to be membership-ready by January. While its name explicitly mentions “computer science” (due to factors local to the K-12 community), its purpose includes substantive education across the range of computing disciplines. For more information, consult Ms. Stephenson’s recent report to the Executive Committee and Council.

### 1.1.3. Expanding JETT workshops for K-12 teachers.

JETT (Java Engagement for Teacher Training) is the result of a partnership between the K-12 Task Force and the College Board. It was developed to help high school educators adapt to the Advance Placement (AP) program's recent language change from C++ to Java. JETT provides professional development workshops and networking opportunities for high school teachers at nearby colleges and universities at little or no cost to attendees. Over 50 JETT workshops have been held or are upcoming. During the spring of 2003, pilot workshops were held at a handful of east coast universities. Following the pilot phase, another 21 workshops have taken place at campuses all over the country. Additional workshops are open for registration. New evaluation procedures are being developed to better enable ongoing improvement of JETT.

### 1.1.4. Establishing a conference for K-12 computing educators.

Early this year the *CS&IT Symposium*, created for K-12 computing teachers, was offered for the first time in conjunction with SIGCSE. The event's planned capacity was taxed, with more than 100 in attendance. Evaluation data obtained from attendees were exceedingly positive. Future events will be able to accommodate larger groups. Planning is now underway for two Symposia to occur in 2005: one in conjunction with SIGCSE in February and another in conjunction with NECC (National Educational Computing Conference) in June.

## **1.2. College education**

As announced by *Computing Curricula 2001* (CC2001), the evolution of undergraduate computing education has achieved a point of critical mass and critical change. No longer can we issue a single report on computer science curriculum and have it suffice for a decade or more. It is now necessary to provide curriculum guidelines for a growing family of computing disciplines and to update curricula guidelines more frequently. This dramatically increases the total level of effort required. In place of a single periodic effort, we must now maintain a network of similar-but-different ongoing efforts that are virtually endless.

This new reality demands that we improve our ability to work in close cooperation and harmony with other societies. It also challenges us to devise practices that permit us to leverage parallel work and reduce redundancy. Heretofore, we have not had to do these things; at present, we are learning how to do them within the constraints implied by total reliance on volunteer labor.

During the past year, we have responded to these challenges with eleven activities.

1. Publishing *SE2004*, the Software Engineering volume of the *Computing Curricula Series*.
2. Completing *CE2004*, the Computer Engineering volume of the *Computing Curricula Series*.
3. Completing the Body of Knowledge for *IT2005*, the Information Technology volume of the *Computing Curricula Series*.
4. Completing a first draft of *CC2004*, the Overview volume of the *Computing Curricula Series*.
5. Working on *MS-IS2006*, the curriculum reference model for graduate IS programs.
6. Working towards *TYC-Cybersecurity* guidelines for Associate Degree programs,
7. Publishing *TYC-IS* guidelines for Associate Degree programs in Information Systems.
8. Initiating work on *TYC-SE* guidelines for Associate Degrees in Software Engineering.
9. Initiating work on *TYC-CE* guidelines for Associate Degrees in Computer Engineering
10. Initiating work on a framework for reducing redundancy in developing curriculum guidelines.
11. Improving relations with other professional societies in computing.

Each of these accomplishments is summarized below.

### 1.2.1. Publishing SE2004, the Software Engineering volume.

The *SE2004* volume of the *Computing Curricula Series* provides curriculum guidelines for undergraduate degree programs in Software Engineering. It has been approved by the sponsoring societies and publication is imminent. *SE2004* began as a joint effort by members of the ACM Education Board and members of the IEEE-CS Educational Activities Board (EAB). It was the first attempt by the ACM and IEEE-CS to cooperate on SE education in the aftermath of a previous effort that failed in a way that left negative residue for all concerned. Not only did the SE2004 Task Force succeed at overcoming this unfortunate context, it also established two new benchmarks for the development of curriculum guidelines:

- The SE2004 Task Force grew to include the involvement of the British Computer Society, the Information Processing Society of Japan, and the Australian Computer Society. The *SE2004* volume is sponsored by all five societies. This sets a new standard for international involvement in the development and sponsorship of curriculum guidelines. We intend to expect all next-generation ACM-sponsored curriculum guidelines to achieve a comparable (or greater) level of international participation if sufficient international interest exists.
- In keeping with standard practice for ACM-sponsored curriculum guidelines, *SE2004*'s development process included dissemination of draft versions and feedback acquisition at major conferences. In addition, the SE2004 Task Force deployed online tools to invite, acquire, catalog, and respond to public comment. This sets a new standard for acquiring and responding to public comment. We intend to require comparable practices as part of the development process for future generation ACM-sponsored curriculum guidelines.

### 1.2.2. Completing CE2004, the Computer Engineering volume.

The *CE2004* volume of the *Computing Curricula Series* provides curriculum guidelines for undergraduate degree programs in Computer Engineering. It is a joint effort by members of the ACM Education Board and members of the IEEE-CS Educational Activities Board (EAB). Its development process has been completed and the final draft is now being prepared. We expect it to be available for approval by the sponsoring societies in time to permit publication in 2004.

### 1.2.3. Completing the Body of Knowledge for IT2005, the Information Technology volume.

The *IT2005* volume of the *Computing Curricula Series* will provide curriculum guidelines for undergraduate degree programs in Information Technology. It is an effort begun by members of the Society for Information Technology Education (SITE). In July 2003, SITE joined ACM and at that time became the Special Interest Group on Information Technology Education (SIGITE). The development process for the *IT2005* volume is well underway. The IT Body of Knowledge is virtually complete, and a preliminary draft of its pedagogy-related content is nearing completion. We expect opportunities for public comment to expand and continue into 2005, with a final version available for approval and publication in 2005.

### 1.2.4. Completing a first draft of CC2004, the Overview volume.

The *CC2004* volume of the *Computing Curricula Series* will provide an overview of the various discipline-specific curriculum guidelines, based on examination and synthesis of the Body of Knowledge from each of *CC2001 (CS2001)*, *IS2002*, *SE2004*, *CE2004*, and *IT2005*. It consists of two parts: a longer document (~50pp) aimed at academics, and a shorter document (~15pp) aimed at students, parents, and high school guidance counselors. In addition, a brochure containing key portions of the latter document will be prepared for widespread distribution to high schools. The development process is well underway and has included presentation and

feedback acquisition at various conferences. We expect a final version to be available for approval by the sponsoring societies in time to permit publication by the end of 2004

1.2.5. Working towards MSIS 2006, the curriculum reference model for graduate IS programs.

The only curriculum guidelines for graduate programs in a computing discipline come from the Information Systems community. The current curriculum reference model for graduate programs is *MSIS 2000*. Work is underway on updating it. We anticipate publication in 2006.

1.2.6. Working towards TYC-Cybersecurity guidelines for Associate Degree programs,

The Two Year College Committee, led by Bob Campbell, in cooperation with and funded by the American Association of Community Colleges (AACC), held a Fall 2002 workshop, *The Role of Community Colleges in Cybersecurity*. This year, a project to disseminate the conclusions of that conference (funded by AACC) was completed. A proposal to NSF and AACC for funding the development of *TYC-Cybersecurity* curriculum guidelines is now pending.

1.2.7. Publishing TYC-IS, guidelines for Associate Degree Information Systems programs.

The Two Year College Committee produced *TYC-IS* which provides curriculum recommendations for Associated Degree programs in Information Systems. It is based on the *IS2002* volume of the *Computing Curricula Series*, and was published by ACM in March 2004

1.2.8. Beginning TYC-SE guidelines for Associate Degree Software Engineering programs.

The Two Year College Committee initiated a project to develop *TYC-SE* which will provide curriculum recommendations for Associated Degree programs in Software Engineering, based on the *SE2004* volume of the *Computing Curricula Series*.

1.2.9. Beginning TYC-CE guidelines for Associate Degree Computer Engineering programs.

The Two Year College Committee initiated a project to develop *TYC-CE* which will provide curriculum recommendations for Associated Degree programs in Computer Engineering, based on the *CE2004* volume of the *Computing Curricula Series*. We expect this to be the first joint effort with the IEEE-CS's new Two Year College committee.

1.2.10. Initiating work on a framework for reducing redundancy

As we adapt to the new demand that we maintain current volumes for each of several computing disciplines, we are exploring ways to leverage parallel work and reduce redundant effort. To this end, the *Computing Ontology Project* is focused on creating a map of the superset of the various bodies of knowledge to permit cross-discipline analysis and to support more efficient means of achieving frequent curriculum updating via better coordination of effort. Lillian (Boots) Cassel leads this effort and has obtained NSF support for the project. The Education Board supports non-US-based participants, who are ineligible for NSF travel support.

1.2.11. Improving relations with other professional societies.

We have acted to improve cooperation between ACM and other societies in two ways:

- Relations between organizations such as ACM and IEEE-CS can be harmonious and cooperative or strained and competitive, and often may feature some combination of the two. Strain became quite evident in the aftermath of disagreements which led to ACM's decision to withdraw from earlier joint ACM/IEEE-CS projects on Software Engineering (the SWECC project, which focused on the SE profession, and the related SWEEP project, focused on SE

education). Last year, in an effort to establish a more constructive tone, the Education Board established an agreement with the IEEE-CS Educational Activities Board (EAB) that calls for each board to invite a representative of the other board to attend its meetings. Since then, the ACM Education Board chair has attended each EAB meeting, and the IEEE-CS Vice President of Educational Affairs attended the December'03 Education Board meeting. This has contributed to better communication in various ways, including frequent informal contact between the leaders of each board to deal with issues informally as they arise.

- As mentioned in section 1.2.1, the SE2004 Task Force expanded its membership to include not only representatives from the ACM Education Board and the IEEE-CS EAB, but also representatives from the British Computer Society, the Information Processing Society of Japan, and the Australian Computer Society. All five societies are sponsors of the resulting *SE2004* volume. This sets a valuable precedent for expanding the scope of ACM's projects to include a global range of societies, in keeping with ACM's intention to function as an international society. We will expect next-generation volumes to emulate this precedent.

### 1.3. Teaching support materials

In the last decade, standard practices in introductory education in computer programming at both the college and high school levels have abandoned the use of small, relatively simple programming languages and adopted the use very complex production languages. This shift presents a range of pedagogical problems. In response, in October 2003 the Education Board launched the ACM Java Task Force chaired by Eric Roberts. The Task Force's charge is:

To review the Java language, APIs, and tools from the perspective of introductory computing education and to develop a stable collection of pedagogical resources that will make it easier to teach Java to first-year computing students without having those students overwhelmed by its complexity.

The Java Task Force was given startup funding by the Education Board and subsequently received an additional funding from the SIGCSE Special Projects Fund and a National Science Foundation grant of over \$40,000. The proposed deliverables include:

1. Definition of a subset of the standard Java APIs appropriate for first-year computer science.
2. A web site containing an updated javadoc reference manual for the approved Java subset.
3. A set of pedagogically sound APIs that have been evaluated and approved by the task force.
4. A survey and evaluation of existing noncommercial materials and tools for teaching Java.
5. A proposal for sustaining the activity begun by this task force.

The Java Task Force is on schedule toward the publication of a first public draft in December 2004 and a final report in June 2005.

### 1.4. Professional development

For more than 30 years, ACM has been a constituent society of the Institute for the Certification of Computing Professionals (ICCP). For the last several years, ACM has maintained minimal involvement in ICCP while ACM's stance about Certification has been ambivalent and uncertain.

In December 2003, the Education Board appointed a Task Force consisting of Eric Roberts (chair), Boots Cassel, Gordon Davies, and John Impagliazzo to study the relationship between the ACM and the Institute for the Certification of Computing Professionals (ICCP). A draft of that report was presented to the Education Board meeting in March 2004, and was followed in May by a revised report. The summary recommendations of the report were:

1. That the ACM Council designate a committee to consider ACM's mission as it relates to computing as a profession. That committee might be the Education Board's current Task Force on Certification, a new ACM committee convened for that purpose, or a standing body with authority over ACM's professional activities, along the lines of the proposed Professional Board. That committee should, over the course of a year, evaluate all aspects of ACM relationship to its professional members and make recommendations that include, but are by no means limited to, a recommendation about the ongoing relationship between ACM and ICCP.
2. That in the interim, while that committee is deliberating, ACM continue in its role as a constituent society of ICCP. During that time, the ACM representatives to ICCP's board should be advised to be actively engaged in the deliberations by serving both as sources of expertise on certification and as liaisons between ICCP and the committee.
3. That in the event that ACM is unable to convene such a committee or the committee is unable to produce a suitable report, that ACM withdraw from ICCP rather than continue its historical low-level involvement.

Except for the report of this Task Force, the Education Board has no accomplishments to report in the area of Professional Development. We believe significant accomplishments in this area are critical to the health and relevance of ACM, and we are troubled to be at a standstill.

In previous years, our Professional Development Committee worked with ACM staff to establish access to Sun's online educational catalog as a member benefit available via ACM's online Professional Development Centre. This has proven to be quite successful, and many ACM members rate it as having high value.

This first phase of PD Centre success sets the stage for future ACM accomplishments in developing professional development programs for its members. Unfortunately, significant substantive accomplishments have not been forthcoming. We believe the reasons for this extend beyond the Education Board, and we are eager to help ACM establish a more constructive stance in this crucial area.

See Section 2.4 for a discussion of key factors, and Section 3.4 for a summary of the solution strategy we recommend.

### **1.5. Defining the field**

Our field is now 60 years old and, despite much growth and accomplishment, it is still widely regarded by professionals in other fields and by the public as immature. It has had huge impact, but some perceive that we have not created much science and that there are no guiding principles beyond Moore's Law. These perceptions are hurting our relations with other fields and, most importantly, hurting recruitment of new scientists and engineers to our discipline.

The *Great Principles of Computing* project, chaired by Peter Denning, is developing a framework for the principles of computing, showing the large number of original discoveries of computer science and engineering. The framework will show that there is much more to the field than programming, and help demonstrate the excitement and joys of working in the field. We believe it can lay the groundwork for reversing the problems above.

To date, Denning had assembled a team of 20 leading computer scientists to develop the framework. Every member of the group holds at least one major award from ACM or another society, including five Turing Award winners, five Karlstrom Award winners, and two SIGCSE Award winners. Any consensus reached by this group should carry considerable weight.

## 2. Risks and Challenges

### 2.1. An aging Education Board

The Education Board is showing its age in two respects.

#### 2.1.1. The age of its members.

The composition of the Board features a dearth of volunteers under the age of 50. This presents two threats.

- It puts us at risk of being less aware than we should be of the perspectives of a younger generation;
- It puts us at risk of facing massive turnover in the years to come without any adequate group of younger members who will be primed to lead the Board into the future.

#### 2.1.2. Its obsolete internal structure

The formal internal structure of the Board is little more than a historical artifact that represents how the Board used to function. It does not reflect how the Board currently operates.

Section 3.1 contains our plans for modernizing the Board.

### 2.2. Accreditation

With the exception of engineering programs, most American computing degree programs are not subject to any substantive evaluation that determines whether they meet minimum quality standards. Those non-engineering programs that do seek accreditation do so voluntarily. The voluntary nature of accreditation in the US means that most low-quality programs simply avoid the accreditation process. This is dramatically different from the situation in countries such as the U.K., where there is a national quality assurance process and nearly all universities undergo program accreditation by the BCS, and Australia which has an attitude to accreditation that is similar to that of the U.K.

Recent trends show an increased interest in the accreditation of computing degree programs in the U.S. Not only is there increased demand for accreditation of CS programs, but new criteria are suddenly enabling the accreditation of IS, IT, and SE programs for the first time. This is a positive trend, and ACM should do all it can to maximize the reach and impact of accreditation.

Ironically, now that the potential impact of accreditation of computing degree programs is greater than ever before, the body which drives the accreditation of computing degree programs faces a fundamental threat to its very survival. As part of the merger by which CSAB became part of ABET a new financial model was imposed upon CSAB, and this change is the source of the threat.

#### 2.2.1. The nature of the CSAB problem:

Prior to the merger, CSAB's financial model was based on revenue from three sources: (1) fees paid by applicant schools to support visits by CSAB personnel, (2) annual maintenance fees paid by accredited programs, and (3) annual subsidies from both the ACM and the IEEE-CS. CSAB projections indicated that the first two sources would soon be sufficient to permit the subsidies from ACM and IEEE-CS to be abandoned. With the merger, that model was immediately abandoned and the replaced by the existing ABET model. In the ABET model,

ABET receives the fees for visits, not CSAB. In addition, ABET does not permit the billing of an annual maintenance fee to accredited institutions. The new financial model thus eliminated two of CSAB's three sources of revenue, leaving subsidy by ACM and other member organizations as CSAB's only source of funding. Worse yet, the ABET model not only prevents CSAB from charging each accredited program an annual fee, it also requires CSAB to subsidize each accredited program by paying part of each school's fee to ABET. Thus, a revenue stream has not only been removed, but has been converted into an expense stream.

### 2.2.2. The scope of the CSAB problem:

The immediate effect was to increase the subsidy expected ACM from ~\$70,000 to ~\$100,000 at a time when CSAB had forecast the imminent elimination of subsidies. ACM's subsidy has since increased further to \$125,000. With the emergence of IT degree programs and the anticipated demand for the accreditation of such programs, the future looks bleak. The change in the financial model means that (a) CSAB will lose money on each accredited program (primarily due to shifting the maintenance expense from accredited programs to CSAB), and (b) the anticipated demand for IT accreditation means that the number of accredited programs for which CSAB is expected to provide an annual maintenance subsidy will rise significantly. Furthermore, the fact that IT programs have ties to ACM but not to IEEE-CS makes it possible that IEEE (which controls IEEE-CS) will question the wisdom of its participation in CSAB on an equal basis with ACM. Should IEEE reduce its share, the percentage of subsidy expected of ACM could rise significantly.

### 2.2.3. Resolution of the problem:

The core problem is the adoption of the ABET financial model without due consideration of the highly significant differences between (a) the tightly coupled relationship between the engineering community and the engineering degree programs traditionally associated with ABET, and (b) the loosely couple relationship between the computing community and computing degree programs associated with CSAB. We believe the only viable solution is to persuade ABET to acknowledge that its traditional financial model for accreditation is suitable for the engineering community but is not viable for the community of CSAB constituents. With such an acknowledgement, we can then seek to negotiate a revised financial model that restores the funding previously provided to CSAB by the nominal annual maintenance fee charged to accredited programs. If this fails, then ACM will have to support significantly higher CSAB subsidies in perpetuity and may be forced to accept a larger portion of subsidies as well.

The Education Board has been, and will continue to be, glad to participate in efforts to resolve the problem. However, the budgetary nature of this problem means that it must be addressed at the highest level of ACM management. The next meeting with ABET is scheduled for Oct 1. White and Shackelford will represent ACM

## **2.3. International impact**

ACM intends to be an international organization but the overwhelming majority of its activities are U.S.-based and oriented to a U.S. audience. The same is true of the Education Board. For some time, we have been struggling with how to best broaden our scope and influence to be more in keeping with ACM's international aspirations.

In the past, we did little relatively little to incorporate an international perspective. For example, the ACM contingent of the CC2001 Task Force included two participants from the UK, but while those individuals were members of both ACM and the British Computer Society (BCS), they did not formally represent the BCS. The CC2001 volume itself articulates the need for an

international perspective and international participation as a basic principle, yet the content of the CC2001 curriculum recommendations are clearly oriented to US colleges and universities. This is typical of how we have done things: we recognize the importance of internationalism at an abstract level but fail to translate that recognition into actions that have adequate impact on either our processes or our products.

As described in Section 1.2.1., the *SE2004* volume established a high water mark for international cooperation. We hope to continue this positive momentum in various ways. Section 3.3 contains our plans for improving Education Board performance in this area.

## **2.4. ACM's standing among professionals**

We welcome the findings of the ACM consultant who investigated appropriate targets for ACM branding. The key message delivered to ACM is that we must not only continue to prosper in those areas that are traditional ACM strengths, we must also refocus our branding message to enable us to expand our standing and influence among computing professionals. We think these findings are insightful, highly relevant, and quite important to the future health and relevance of ACM. We hope to see substantive action follow. However, we think it is critical for a revised branding message to be backed up with substance.

These issues are directly relevant to the Education Board because Professional Development is one of the Education Board's three primary focus areas (together with K-12 and College education). The Education Board should be accomplishing significant work with respect to Professional Development. The sad truth is that we are not.

In previous years, Gordon Davies, chair of our Professional Development Committee, worked with now-retired ACM staffer Fred Aronson to establish access to Sun's online educational catalog as a member benefit available via ACM's online Professional Development Centre. This has proven to be very successful. Many ACM members rate it highly, and some have reported that it is a significant factor in their decision to renew their membership.

This first phase of PD Centre success sets the stage for future ACM accomplishments in developing professional education programs for its members. Unfortunately, significant substantive accomplishments that build on this success to establish a more adequate response to professional development needs have not been forthcoming.

The reasons for this extend beyond the Education Board. We believe that the reasons are not that "something has gone wrong" but instead are rooted in the dramatic changes that computing has helped bring to society over the past ten or fifteen years. We think it inevitable that an organization of the size and scope of ACM will quite naturally have a somewhat difficult time adapting to such changes.

We are eager to help ACM adapt and establish a more constructive stance in this crucial area. To establish a constructive stance re: Professional Development, we believe ACM must overcome four factors:

### 2.4.1. Satisfaction with the status quo.

Current ACM PD offerings reflect a tacit belief that providing pass-through access to the commercial products of others, without any rigorous evaluation of quality or sufficiency, satisfies ACM's responsibility to support the professional development needs of its membership.

We believe such a stance is severely inadequate. When a society with the pedigree and stature of ACM creates a Professional Development Centre, the Centre's very name implies that ACM

is working to provide resources that will aid its members define and achieve meaningful and coherent professional development goals. At present, the PD Centre does nothing of the kind. While we believe many of the current PD offerings have positive value, we think it important to recognize that in its current form the PD Centre is, in effect, essentially a discount online bookstore for interactive training media. While it bears ACM's name and may generate some revenue for ACM, ACM is not involved in determining its own store's inventory or in vetting that inventory for quality and sufficiency. It is clear that the ACM PD Centre is functioning as a discount sales outlet for the products of others, and that this constitutes a valuable member benefit. However, in a world where "ACM" still stands for integrity and rigor, this role falls dangerously short of meeting any reasonable minimum standard for what anything that bears the name "ACM Professional Development Centre" can and should be.

#### 2.4.2. A void in capability and responsibility

At present, there is a critical absence of capability and responsibility within ACM: there is no ACM board, committee, task force, or other body that is qualified and motivated to (a) define and articulate what the professional education needs of ACM members might be, and (b) gauge the adequacy of the Education Board's efforts to satisfy those needs.

We believe this state of affairs is contrary to best interest of ACM and its members. The absence of such a body is, in and of itself, a barrier that effectively prevents the Education Board from identifying, generating, or providing members with products and services that meet their professional development needs. The core problem is simple and fundamental: the Education Board is populated by educators, not practicing IT professionals. To put it another way, the Education Board is not qualified to map out any coherent picture of what the education needs of ACM's professional members (and potential members) might be. We do not believe the Education Board should attempt to do things that are outside its core expertise. Rather, we require the help of some complementary body within ACM that is qualified to do those things.

Given the existence of a complementary body within ACM, such as a Professions Board, the Education Board would be well positioned to contribute in important and substantive ways. We would receive as input from the Professions Board coherent specifications which describe various sets of professional educational needs. Based on that input, we would identify or generate products and services that address those needs. Following some experience with those products and services, we would then receive feedback from the Professions Board as to the adequacy of those offerings. Within a reasonably short period, a cyclical process of specification-development-deployment-evaluation can develop that will establish, improve and maintain ACM responsiveness to its professional members.

Successful implementation requires a friendly tension between two bodies: the Education Board and another complementary body within ACM, such as a Professions Board. In the absence of that other body, the Education Board remains one-half of the necessary equation. Of necessity we are on hold. The best we know to do is to urge ACM's leadership to recognize that (a) meeting the needs of professionals is important, and (b) doing so requires the creation of the other half of that equation.

#### 2.4.3. Unrealistic expectations

While no one seems particularly invested in this position, there have been indications of some wishful thinking to the effect that the still-forming Membership Board is (or soon will be) able to serve the function of the Professions Board as described above.

We believe that any plan which expects the Membership Board to fill not only its own role but also that of a Professions Board is simply impractical and unrealistic. At the same time, we recognize that ACM has no experience with either a Professions Board or a modern version of a Membership Board. This probably guarantees that there will be some initial confusion about the roles appropriate to each board. Both the Education Board and the Membership Board are on record and in agreement that it is not reasonable to expect the Membership Board to fulfill the functions of a Professions Board.

#### 2.4.4. Ambivalence about Certification

Any meaningful discussion of an appropriate ACM stance towards Professional Development invariably returns to the issue of Certification. Certification is not a single issue, but rather an umbrella label that covers a wide range of potential activities. Perhaps because of the breadth of the term, and perhaps because Certification can be confused with the very different issue of Licensure, Certification has become a troublesome topic that elicits both ambivalence and strongly conflicting responses.

As reported in Section 1.4, it is clear that ACM's current posture towards Certification is neither helpful nor useful. What remains unclear is whether ACM should increase or eliminate its involvement in Certification. Certification is one of a handful of issues that are inherent elements of any thorough consideration of ACM's stance towards the profession. We believe it is fruitless to consider either certification or professional development apart from the other. We believe a sound strategy, whatever it might be, can be formed only after a thorough look at ACM's relationship to the profession, with certification being one element of that examination.

Over the past two years, we have repeatedly raised the issue of ACM's lack of a coherent stance towards the professional community at the several meetings of the Executive Committee. At the March'04 EC meeting in Prague, then-President Klawe authorized the creation of a Task Force to investigate what posture ACM should adopt towards the profession and to make recommendations to the EC.

No meetings of this Task Force have ever been initiated.

Our recommendation for constructive action is provided in Section 3.4.

### 3. Initiatives for the Coming Year

#### 3.1. Modernizing the Education Board

The Education Board needs to make internal changes in two respects:

##### 3.1.1. Involving younger ACM educators.

During the August 25 conference call, new President Patterson raised the issue of the age of ACM volunteer leadership. He expressed concern that the group of active ACM volunteers does not include enough younger people who will be available and prepared to lead ACM activities in the future. It requires only a brief moment of reflection to determine that this concern certainly applies to the Education Board, where those of us in our early 50s seem to be the youngsters of the group. In the coming year, we will endeavor to enlist at least a handful of younger members while maintaining a solid group of experienced veterans. Adding several younger members now will provide the opportunity to discover which of those younger volunteers might be best able to assume leadership positions in the not-too-distant future.

##### 3.1.2. Streamlining the Education Board's internal structure.

For some several years now, the formal internal structure of the Education Board has borne very little relation to how our mainstream activities are undertaken. On the one hand, we have a legacy of various standing committees, some of which are virtually dormant. On the other hand, most activity is undertaken by motivated individuals, often participating in *ad hoc* Task Forces. In recent years, we have made the explicit choice to ignore our legacy structure and concentrate on getting things done by whatever means seem most suitable. This year, we will streamline our internal structure so that it will better reflect the way accomplishments are actually achieved.

#### 3.2. Achieving frequent curriculum updates

With the publication of *SE2004*, *CE2004*, and *CC2004*, we will have completed the set of curriculum volumes called for by *CC2001*. With the publication of *IT2005*, we will have completed the first instance of expanding that set of volumes to include a new computing discipline as anticipated by *CC2001*.

Completion of the multi-volume *Computing Curricula Series* will be something of a landmark. It will signify successful completion of the most ambitious agenda for undergraduate curriculum development ever undertaken by ACM or, to the best of our knowledge, any other organization.

Not only have we have partnered with other societies in developing most of these volumes, but ACM is the only society involved in each and every volume of the *Computing Curricula Series*. This gives current support to the history-based claim that ACM is “the first society in computing”, and is an accomplishment of which we think ACM can be proud.

Completion of this series does not give us room to relax or pause. Rather, it clears the stage for us to work on satisfying a second part of the *CC2001* prescription: the rapid pace of change in computing dictates that we must update our curriculum guidelines much more frequently than once per decade. To date, only the Information Systems community has a track record of updating their guidelines more frequently (*IS2002* replaced *IS'97*, and work is underway on developing *MSIS 2006* to replace *MSIS 2000*). The immediate challenge is to establish frequent updates as the norm rather than the exception.

In the coming year, we plan to begin work on developing updated versions of:

- The subset of the *CC2001* volume that contained curriculum guidelines for Computer Science. Until we begin, we cannot know what publication date might be reasonable. For the time being, we will refer to it as *CS2006*.
- The *IS2002* volume, which was a quick update of *IS'97*. Until we begin, we cannot know what publication date might be reasonable. For the time being, we will refer to it as *IS2007*.
- The *TYC-Computing in a Networked Environment* report, published in 2000. Until we begin, we cannot know what publication date might be reasonable.

For the updates to both *CC2001* and *IS2002*, we believe that the *CC2004* experience of examining and comparing the various volumes will permit us to improve certain aspects of both process and content. We also plan to ask the both the *CS2006* and *IS2007* Task Forces to emulate *SE2004* with respect to both increased international participation and improved processes for acquiring and responding to public comment.

We will also consider how to better incorporate the various TYC curriculum reports into the *Computing Curricula Series*.

### **3.3. Building international relationships**

Section 2.3 summarizes the difference that has existed between what we say about the importance of international involvement and what we have actually done. Our immediate plans for bringing our actions in line with our statements consist of three elements:

#### 3.3.1. Building on the international success of *SE2004*.

As reported in Section 1.2.1. the *SE2004* volume of the *Computing Curricula Series* set a new standard of international participation and sponsorship. Beginning with the *CS2006* project, we intend to push all next-generation *Computing Curricula* volumes to meet or exceed what *SE2004* accomplished in this regard. In addition, we will establish a standard practice of presenting draft recommendations and obtaining feedback at international conferences.

#### 3.3.2. Expanding the scope of our Two Year College activities

Our Two Year College Committee has done an exemplary job of producing curriculum guidelines to serve American two year colleges. Recent years have seen various changes to the landscape of higher education internationally, including a dramatic expansion of two year computing degree programs throughout the European Union. We have asked our TYC people to formulate strategies for increased internationalism. They plan to begin such work in Fall 2004.

#### 3.3.3. Expanding our ties to non-US-based computing societies

Currently, two members of the Education Board are also members of the BCS. They bring a broader perspective that has proven valuable in many respects. We plan to pursue three avenues for expanding the degree to which we are influenced by an international perspective:

- While we benefit from the participation of two BCS members, we have not made use of the potential opportunities they provide to build relations with the BCS itself. In the coming year, we will try to establish a more concrete relationship with the BCS to explore of how ACM and BCS might cooperate for mutual benefit. In addition, we are motivated to learn from BCS experience with various aspects of serving the computing profession. To this end, we are holding a preliminary meeting in December to plan for an Education Board meeting to be held in the UK next March in conjunction with the second Grand Challenges Conference.

- Over the coming year, we will consider increasing the number of Education Board members who are also members of computing societies from other nations. Obvious candidates include members of the Japanese and Australian societies who co-sponsored *SE2004*, as well as comparable organizations from the EU and elsewhere.
- Traditionally, the Education Board has not only held monthly conference calls but has also held what amounts to “one-and-a-half” meetings per year. In addition to one dedicated meeting late in the year, we have also tried to meet early in the year at SIGCSE where many Education Board members can be found. The latter meeting has proved to be not very successful (the “half meeting” mentioned above) because SIGCSE events leave insufficient time for a full meeting during the conference, and work demands prevent members from extending their stay either before or after SIGCSE. We intend to correct this by scheduling a distinct Education Board meeting in the spring at a time that does not conflict with SIGCSE. Holding a second legitimate meeting will permit us to periodically hold joint working meetings with members of other societies in their home countries.

### **3.4. Helping ACM address professional issues**

Both the ACM as a whole, and the Education Board in particular, lack a coherent posture for addressing the needs of the diverse community of computing professionals. As discussed in Section 2.4., the Education Board requires help with two key challenges in this arena, challenges that we cannot resolve alone:

- To become effective at meeting the needs of the professional community, the Education Board requires input from some other body within ACM that is qualified to identify and describe various sets of professional needs, and to evaluate the degree to which Education Board contributions are adequate to those needs.
- To adopt a useful stance towards professional Certification, the Education Board requires ACM to clarify its position with respect to professional Certification. Certification is not a single-parameter issue, but rather is a label that covers a wide range of potential targets. We believe that Certification cannot be adequately considered via sporadic conversations at meetings of the EC or Council, nor can it be adequately considered in a vacuum. Rather, it must be considered as part of a broader look at professional needs.

Over the past two years, we have repeatedly raised the issue of ACM’s lack of a coherent stance towards the professional community at several meetings of the Executive Committee. At the March’04 EC meeting in Prague, then-President Klawe authorized the creation of a Task Force to formulate and evaluate possible positions that ACM might adopt. No meetings of this Task Force have ever been initiated.

We ask that a “Task Force on ACM and the Computing Profession” be reconstituted. We ask that it include a representative from each of the Education Board and the Membership Board, as well as one or more members of the Executive Committee whose career is clearly in the realm of professional and industry activity. In addition, we ask that past-President Steve Bourne and recent Presidential candidate Fran Allen are not only invited but are also encouraged to serve. Finally, we ask that the charge of the Task Force be “to thoroughly evaluate all aspects of ACM’s relationship to its professional members, to explore and consider how ACM can best serve the needs of its professional members and the computing profession as a whole, to formulate specific recommendations for ACM policy and action in this area, and to submit such recommendations to the Executive Committee no later than the end of FY05”.

### **Roster of the *Education Board*- FY2004**

Chair:	Russell Shackelford (previous Vice Chair)
Vice Chair:	Peter Denning (previous Chair)
Board Members:	Robert Aiken Lillian (Boots) Cassel Gordon Davies Marvin Israel Bruce Klein Eydie Lawson Richard LeBlanc Andrew McGettrick Eric Roberts Larry Snyder
Headquarters Liaison:	Caryn Francis Lillian Israel (de facto)
Standing Committees:	
Accreditation:	(dormant)
College:	Russell Shackelford
Pre-College:	Robert (Corky) Cartwright
Professional Development:	Gordon Davies
Self Assessment:	(dormant)
Two-Year College Curriculum:	Robert Campbell
Task Force leaders:	
K-12	Chris Stephenson
CIS (ref: IS2002)	John Gorgone
SE2004	Richard LeBlanc
CE2004	Andrew McGettrick
CC2004	Russell Shackelford
Representatives:	
CSAB:	Don Bailes (Director, 2002-2005) Della Bonnette (Director, 1998-2004; term expiring) John Gorgone (Director, 1999-2005) Lawrence Jones (Director, 2003-2006) Barbara Price (Alternate Director, 2002-2004) Gayle Yaverbaum (Alternate Director, 2002-2004) John Impagliazzo (Rep. to the PEPC Committee)
ICCP Directors:	Joyce Currie Little Terry Linkletter