Chapter XIII
Software Engineering Accreditation in the United States

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ABSTRACT

This chapter provides a brief history of the accreditation of software engineering programs in the United States and describes some of the experiences encountered by programs in achieving their accreditation and by program evaluators in reviewing those programs. It also describes how the accredited programs have addressed the most difficult issues that they have faced during the accreditation process. The authors have served as leaders of the accreditation efforts at their own institutions and as ABET program evaluators at several other academic institutions that have achieved accreditation. The objective of this chapter is to provide those software engineering programs that will be seeking accreditation in the future with some of the experiences of those who are familiar with the process from both the programs' and the evaluators' points of view. Leaders of programs that are planning to request an accreditation review will be well prepared for that review if they combine the information contained in this chapter with the recommendations contained in Chapter XIX of this text.

INTRODUCTION

The history of software engineering education dates to the generally accepted origin of the software engineering discipline in 1968. This year is associated with the first NATO conference on software engineering in Garmisch, Germany. Tomayko (1998) points out, however, that the same year also marked what is apparently the first offering, by Douglas Ross at the Massachusetts In-

stitute of Technology, of an academic course with the term "software engineering" in its title. For a variety of reasons, considerable time passed before courses with significant software engineering content became more common (Tomayko, 1998; Duggins 2002). Beginning in 1977, a number of graduate programs in software engineering were developed and began operation, including those at Seattle University, Texas Christian University, and the Wang Institute of Graduate Studies (Tomayko, 1998). At the undergraduate level, a number of computer science and computer engineering programs incorporated one or two courses in software engineering, typically taught using survey textbooks that offered reasonable breadth but relatively little depth. Although undergraduate software engineering programs began to emerge internationally as early as 1985 (Joint Task Force on Computing Curricula, 2004), it was not until 1996 that the Rochester Institute of Technology initiated what was to become, in 2003, one of the first four software engineering programs to receive accreditation in the United States; the other programs in this group were offered by Clarkson University, Milwaukee School of Engineering, and Mississippi State University.

While we recognize that software engineering programs in other countries have been accredited by accrediting agencies in those countries, this chapter addresses only the history and experiences of software engineering programs that have achieved accreditation in the United States. It is hoped that the material presented here will be of value to software engineering educators in both the United States and around the world.

ABET AND ENGINEERING PROGRAM ACCREDITATION

ABET, Inc., formerly known as the Accreditation Board for Engineering and Technology, is the recognized accreditation body in the United States for college and university programs in applied science, computing, engineering, and technology. It is a federation of professional and technical societies (28 at present) representing those fields. ABET accreditation activities are managed by four commissions; the two most directly related to software engineering are the Engineering Accreditation Commission (EAC) and the Computing Accreditation Commission (CAC). Like other engineering disciplines, software engineering falls under the EAC, while the CAC is responsible for computer science, information systems, and information technology. In possible contrast to some other disciplines, accreditation has historically been an expected attribute of United States engineering programs, and is thus an important concern for software engineering educators.

Each discipline has an associated "lead society", which is one of the member societies of ABET. This society has primary responsibility for defining discipline-specific accreditation criteria, as well as for selecting, training, and evaluating program evaluators. Initially, the lead society for software engineering was the Institute of Electrical and Electronic Engineers (IEEE), which prepared the original version of the software engineering program criteria (Engineering Accreditation Commission, 1999, p. 47), discussed later in this chapter.

With the integration of ABET and the Computing Sciences Accreditation Board (CSAB) in November 2001, CSAB took over the role of lead society for software engineering, and the IEEE became a "cooperating society." Unlike the IEEE and most other member societies of ABET, CSAB is not itself a membership society. Instead, the current members of CSAB are three other professional societies: the Association for Computing Machinery (ACM), the IEEE Computer Society (IEEE-CS), and the Association for Information Systems (AIS).

From the point of view of a software engineering program seeking initial accreditation, the process begins with a request for evaluation,