

FOREWORD

In this Guide, the IEEE Computer Society establishes for the first time a baseline for the body of knowledge for the field of software engineering, and the work partially fulfills the Society's responsibility to promote the advancement of both theory and practice in this field. In so doing, the Society has been guided by the experience of disciplines with longer histories but was not bound either by their problems or their solutions.

It should be noted that the Guide does not purport to define the body of knowledge but rather to serve as a compendium and guide to the body of knowledge that has been developing and evolving over the past four decades. Furthermore, this body of knowledge is not static. The *Guide* must, necessarily, develop and evolve as software engineering matures. It nevertheless constitutes a valuable element of the software engineering infrastructure.

In 1958, John Tukey, the world-renowned statistician, coined the term *software*. The term *software engineering* was used in the title of a NATO conference held in Germany in 1968. The IEEE Computer Society first published its *Transactions on Software Engineering* in 1972. The committee established within the IEEE Computer Society for developing software engineering standards was founded in 1976.

The first holistic view of software engineering to emerge from the IEEE Computer Society resulted from an effort led by Fletcher Buckley to develop IEEE standard 730 for software quality assurance, which was completed in 1979. The purpose of IEEE Std 730 was to provide uniform, minimum acceptable requirements for preparation and content of software quality assurance plans. This standard was influential in completing the developing standards in the following topics: configuration management, software testing, software requirements, software design, and software verification and validation.

During the period 1981-1985, the IEEE Computer Society held a series of workshops concerning the application of software engineering standards. These workshops involved practitioners sharing their experiences with existing standards. The workshops also held sessions on planning for future standards, including one involving measures and metrics for software engineering products and processes. The planning also resulted in IEEE Std 1002, Taxonomy of Software Engineering Standards (1986), which provided a new, holistic view of software engineering. The standard describes the form and content of a software engineering standards taxonomy. It explains the various types of software engineering standards, their functional and external relationships, and the role of various functions participating in the software life cycle.

In 1990, planning for an international standard with an overall view was begun. The planning focused on reconciling the software process views from IEEE Std 1074 and the revised US DoD standard 2167A. The revision was eventually published as DoD Std 498. The international standard was completed in 1995 with designation, ISO/IEC 12207, and given the title of Standard for Software Life Cycle Processes. Std ISO/IEC 12207 provided a major point of departure for the body of knowledge captured in this book.

It was the IEEE Computer Society Board of Governors' approval of the motion put forward in May 1993 by Fletcher Buckley which resulted in the writing of this book. The Association for Computing Machinery (ACM) Council approved a related motion in August 1993. The two motions led to a joint committee under the leadership of Mario Barbacci and Stuart Zweben who served as cochairs. The mission statement of the joint committee was "To establish the appropriate sets(s) of criteria and norms for professional practice of software engineering upon which industrial decisions, professional certification, and educational curricula can be based." The steering committee organized task forces in the following areas:

1. Define Required Body of Knowledge and Recommended Practices.
2. Define Ethics and Professional Standards.
3. Define Educational Curricula for undergraduate, graduate, and continuing education.

This book supplies the first component: required body of knowledge and recommend practices.

The code of ethics and professional practice for software engineering was completed in 1998 and approved by both the ACM Council and the IEEE Computer Society Board of Governors. It has been adopted by numerous corporations and other organizations and is included in several recent textbooks.

The educational curriculum for undergraduates is being completed by a joint effort of the IEEE Computer Society and the ACM and is expected to be completed in 2004.