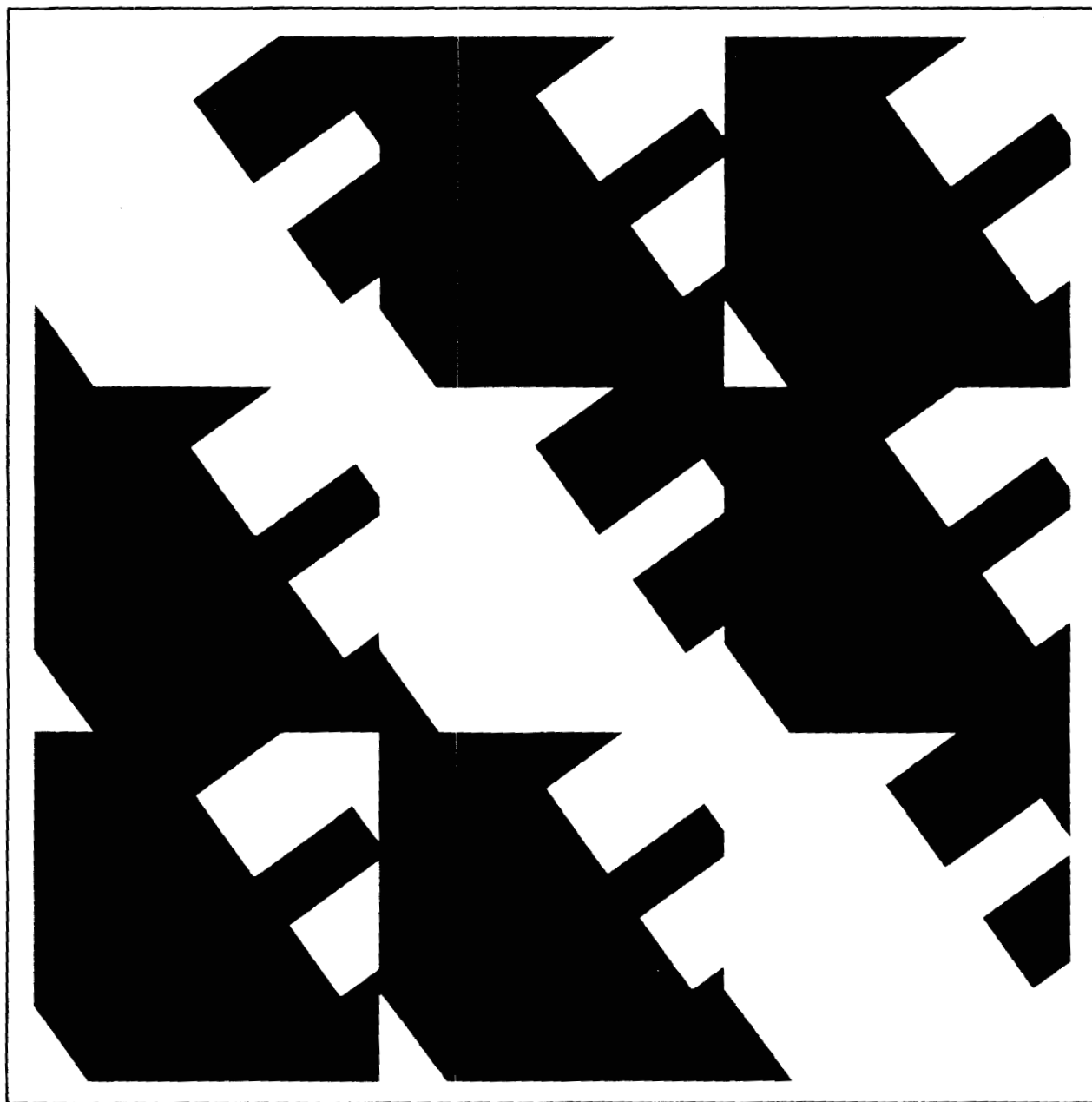


IEEE Guide to Software Requirements Specifications

ANSI/IEEE Std 830-1984



Published by The Institute of Electrical and Electronics Engineers, Inc 345 East 47th Street, New York, NY 10017, USA
February 10, 1984

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An American National Standard

**IEEE Guide to Software
Requirements Specifications**

Sponsor
Software Engineering Technical Committee
of the
IEEE Computer Society

Approved September 30, 1983
IEEE Standards Board

Approved July 20, 1984
American National Standards Institute

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Foreword

(This Foreword is not a part of IEEE Std 830-1984, IEEE Guide to Software Requirements Specifications.)

This guide describes alternate approaches to good practice in the specification of software requirements. The requirements may be explicitly stated by the user or they may be allocated to computer software (that is, programs) by the system requirements analysis process. This guide does not suggest that a hierarchy of software requirements specifications exists, of which each, in turn, defines a smaller subset of requirements.

As a guide, this document should help:

- (1) Software customers to accurately describe what they wish to obtain.
- (2) Software suppliers to understand exactly what the customer wants.
- (3) Individuals to accomplish the following goals:
 - (a) Develop standard software requirements specifications (SRS) outline for their own organizations.
 - (b) Define the form and content of their specific software requirements specifications.
 - (c) Develop additional local supporting items such as an SRS quality checklist, or an SRS writer's handbook.

To the customers, suppliers and other individuals, a good SRS provides several specific benefits. It will accomplish the following goals:

- (1) Establish the basis for agreement between the customers and the suppliers on what the software product is to do. The complete description of the functions to be performed by the software specified in the SRS will assist the potential user, to determine if the software specified meets their needs or how the software must be modified to meet their needs.
- (2) Reduce the development effort. The preparation of the SRS forces the various concerned groups in the customer's organization to consider rigorously all of the requirements before design begins and reduces later redesign, recoding, and retesting. Careful review of the requirements in the SRS can reveal omissions, misunderstandings, and inconsistencies early in the development cycle when these problems are easier to correct.
- (3) Provide a basis for estimating costs and schedules. The description of the product to be developed as given in the SRS is a realistic basis for estimating project costs and can be used to obtain approval for bids or price estimates. The SRS also provides a clear description of the required software and makes it easier to estimate and plan the necessary resources. The requirements which, together with a development plan, can be used to measure progress.
- (4) Provide a baseline for validation and verification. Organizations can develop their validation and verification plans much more productively from a good SRS. As a part of the development contract, the SRS provides a baseline against which compliance can be measured. (However, that the converse is not true; a standard legal contract cannot be used as an SRS. Such documents rarely contain the detail required and are often incomplete.)
- (5) Facilitate transfer. The SRS makes it easier to transfer the software product to new users or new machines. Customers thus find it easier to transfer the software to other parts of their organization, and suppliers find it easier to transfer it to new customers.
- (6) Serves as a basis for enhancement. Because the SRS discusses the product but not the project that developed it, the SRS serves as a basis for later enhancement of the finished product. The SRS may need to be altered, but it does provide a solid foundation for continued production evolution.

This guide is based on a model in which the result of the software requirements specification process is an unambiguous and complete specification document. In principle, the SRS can be mechanically translated into the specified software program directly. As such, the resulting SRS document itself is the specified software, and the supplier's only duty (after completing the SRS) would be the mechanical compilation of the SRS into machine code for the target computer. The present state of the art does not support such a compiler with an optimizer of such efficiency to make it practical but this limitation need not, and should not, restrict the intermediate objective of an unambiguous SRS.

This guide is consistent with IEEE Std 729-1983, IEEE Standard Glossary of Software Engineering Terminology; ANSI/IEEE Std 730-1981, IEEE Standard for Software Quality Assurance Plans; and IEEE Std 829-1983, IEEE Standard for Software Test Documentation. This guide may be used in conjunction with those standards or separately.

This guide was prepared by the Software Requirements Working Group of the Software Engineering Standards Subcommittee of the Technical Committee on Software Engineering of the IEEE Computer Society.

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