

# IEEE Guide to Classification for Software Anomalies

Sponsor

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**Abstract:** This guide provides supporting information to assist users applying the IEEE Std 1044-1993, IEEE Standard Classification for Software Anomalies, to decide whether to conform completely to or just extract ideas from IEEE Std 1044.1. This guide will enable users of IEEE Std 1044-1993 to implement and customize IEEE Std 1044-1993 for their organization in an effective and efficient manner.

**Keywords:** anomaly, category, classification, software, supporting data item

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The Institute of Electrical and Electronics Engineers, Inc.  
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## Introduction

(This introduction is not a part of IEEE Std 1044.1-1995, IEEE Guide to Classification for Software Anomalies.)

On most projects, some formality in reporting anomalies allows you to record the facts and impressions about an anomaly when it is encountered so that it can be understood by someone at a later date. Typically, information about what happened, how it happened, and the environment in which it happened are put into the anomaly reports. IEEE Std 1044-1993 calls this information “supporting data items.” Armed with this information, the anomaly can be reproduced, a fix can be applied, and the new program can be verified not to have the same anomaly symptoms. Many anomaly tracking information systems of this type are well documented, have been used successfully for years, and are thought of as good anomaly tracking systems.

However, when an organization begins to mature, the universal software quality question is asked: “How best can we get rid of the bugs in our products or prevent them from happening?” To effectively answer this question, you need more information about the anomalies that have been found in the software. Knowing the date, submitter, software version, and module an anomaly was reported against usually does not point in the direction of problem areas. The information that will facilitate the discovery of “common errors made,” “most effective activity to find anomalies,” “the place where anomalies were first introduced,” and other telling facts about your development process comes from classification analysis of each anomaly reported. This is where application of the IEEE Std 1044-1993 classification scheme will prove invaluable.

Implementing IEEE Std 1044-1993 can lead to better project management decisions, increased depth of data analysis, and improved software development processes. The consistent historical data allows trend analysis through several releases of the same project, several projects, and/or organizations. This historical consistency of data makes it possible to measure the effects of any process changes you implement from release to release, project to project, or organization to organization. Additionally, using a database and change control procedure reduces the labor of tracking changes, analyzing data, and providing an audit trail. This guide provides the alternatives and methods for getting the most out of IEEE Std 1044-1993.

Many benefits of using IEEE Std 1044-1993 could be obtained by using any classification scheme. However, the big advantage of IEEE Std 1044-1993 is the effort saved by not re-inventing and debating yet another bug taxonomy. Also, wide-spread use of IEEE Std 1044-1993 means that eventually industry-wide information will be available to use for comparative purposes or to benchmark the process(es) used in software development.