

The Israel ESPINODE

Software Process Improvement Series

Part I

THE SOFTWARE QUALITY PROGRAM¹

The software quality program is an overall approach to influence and determine the level of quality achieved in a software product. It consists of the activities necessary to:

- Establish requirements for the quality of a software product.
- Establish, implement, and enforce methodologies, processes and procedures to develop, operate, and maintain the software.
- Establish and implement methodologies, processes, and procedures to evaluate the quality of a software product and to evaluate associated documentation, processes, and activities that impact the quality of the product.

The following figure illustrates the elements of a Software Quality Program.

¹ Adapted from the book by Kenett and Baker: **SOFTWARE PROCESS QUALITY: Management and control**, M. Dekker Inc., 1999

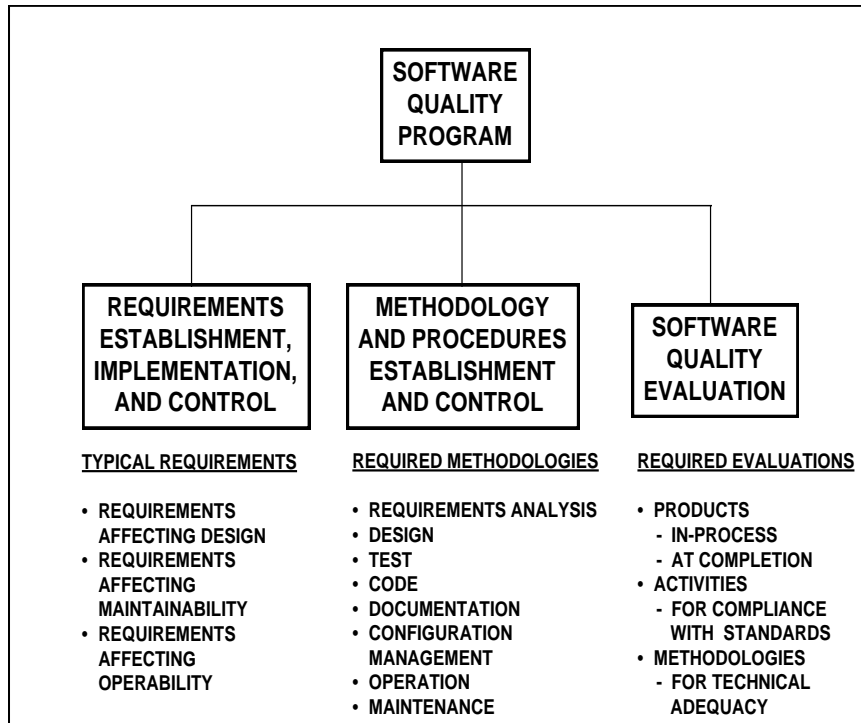


Figure 1: Elements of a Software Quality Program

The foundation of a software quality program is not how well one can measure product quality nor the degree to which one can assess product quality. While these are essential activities, they alone will not attain the specified quality. Quality can only be built in during the development process. Software quality cannot be tested, audited, evaluated, measured, or inspected into the product. This is a concept that is not well understood by many software development organizations, whether these be organizations that develop software for sale, develop software only for in-house use, or develop software under a contractual arrangement. Furthermore, it is not sufficient to pay attention to only the development aspects of the software enterprise. Once the quality has been built in, the operating and maintenance processes must not degrade it. It is that understanding that lays the basis for the software quality program.

Figure 2 illustrates the elements of the software quality program and how it affects software quality. The interaction of the software quality program with the other parts of the project elements, as depicted in the figure, is necessarily complex. That involvement is at all levels of the project organization and takes place throughout the project's life. In some cases, the software quality program directs the other activities; in other circumstances, it can only influence those activities. In any case, all the project activities, in some way, affect software product quality.

The software quality program includes both technical and management activities. For instance, if we look at the element of the software quality program concerned with methodologies for software development, enforcing these methodologies (in order to build quality into the software) is a management activity, while the specification of the methodologies is a technical activity.

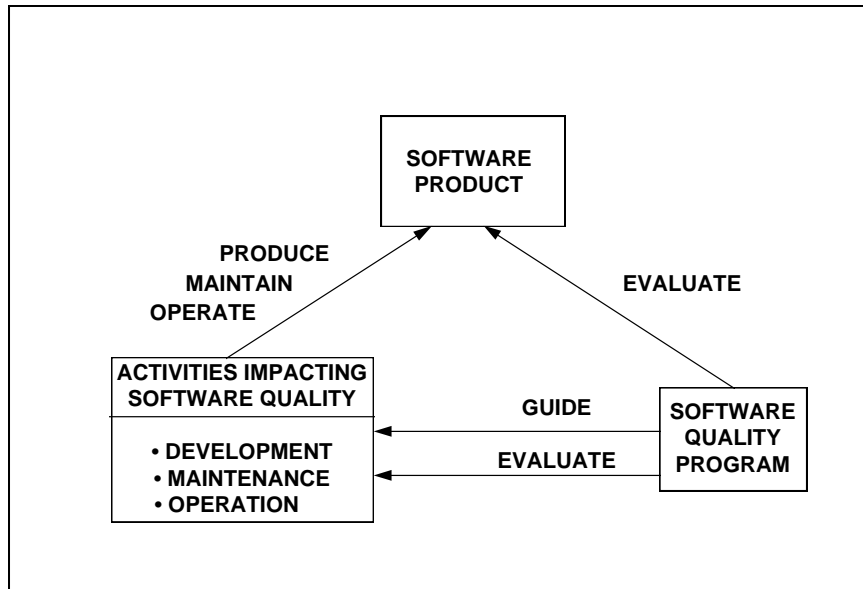


Figure 2: What Creates Quality Software?

In part II of this series we will discuss the Software Quality Evaluation Program.