16.0 The Need for a Testing Maturity Model

The organizing framework behind this text is the Testing Maturity Model (TMM) which was developed by a research group headed by the author at the Illinois Institute of Technology [1–5]. The TMM was designed to be used by software development organizations to assess and improve their testing processes. It is also useful as a model that illustrates in stages how a testing process should grow incrementally in proficiency. This property makes it useful as an educational tool to introduce testing concepts, principles, and best practices in an evolutionary manner. Chapter 1 describes several aspects of the TMM including its basic structure and maturity levels. Chapter 14 offers more details on the maturity levels and their relationship to the tools in the Testers’ Workbench.

It this chapter additional aspects of the TMM are described for those readers interested in implementing test process assessment and improve-
ment efforts in their organizations. Among the areas discussed are the history of TMM development and the TMM assessment process. A comparison between the TMM and other existing process improvement models is made, and relationships between the models are described. Finally, some applications of the TMM in industry are given with implications for future work.

The development of the TMM was driven by the need for high-quality software and the important role that quality software systems play in our society. The central role of software-based systems has made it imperative that quality issues relating to both the software product and process be addressed. The TMM is focused on process, specifically, on the software testing process. Testing as defined in the TMM is applied in its broadest sense to encompass all software quality–related activities. Improving the testing process through application of the TMM maturity criteria has the potential to make a positive impact on software quality, software engineering productivity, and cycle time reduction efforts.

16.1 Approach to Model Development

A principle objective for developing the Testing Maturity Model was to make available a model that could be used by software development organizations to evaluate and improve their testing processes. The intended use of the TMM is to support assessment and improvement drives from within an organization. Test process assessment and improvement efforts can be carried out as an independent set of activities, or performed in conjunction with general software process improvement efforts driven by other models. In these contexts the TMM can be used by:

- an internal assessment team to identify the current testing capability state;
- upper management to initiate a testing process improvement program;
- software quality assurance engineers to develop and implement test process improvement plans;