The answers to all these questions do not have to be documented in the SQA plan. They may be explained verbally or perhaps documented in other respects. But however they are communicated, they must be made clear to the project manager if he is to support the SQA plan.

**Engineering staff.** The engineer needs to know from Section 4 what documents he must produce. Telling the engineer what documents to produce involves much more than just itemizing names of the documents and providing outlines for them. An engineer wants to know how to write a document that his peers will consider "good." This means the SQA plan must describe the characteristics of "good" documentation for the different sections of each document. Then the engineer will be able to find in Section 4 (or in standard document descriptions) the names of the documents he is to produce, outlines of those documents, and criteria for evaluating the contents of each section. The engineer, like the project manager, needs to know how his documents will be evaluated for completeness, correctness, and consistency. If the engineer has this information before he starts work, he probably will support Section 4.

Section 13. Section 13 often gives the SQA plan writer a great deal of trouble. Section 13 provides a description of record collection, maintenance, and retention. This can include any measurements or metrics or the software development process and product. The difficulty lies in that every audience wants to use the measurements a different way.

**Corporate managers.** Corporate managers want to have measurements of the software development process and products for all job functions on all tasks. The process measurements typically include effort expended on each task, time spent on each task, and number of failures discovered in the product created in each task. The product measurements usually include factors regarding size, complexity, and quality of the products developed in each task. Corporate managers would like to use these measurements to evaluate the productivity of software development. If measurement documentation is collected on a project, it could be used to make improvements on the next project.

If the person writing the SQA plan includes this information to satisfy the corporate manager, he probably will have trouble with the technical staff. Typically, the technical staff will be concerned that the measurements will be used to evaluate individual performance. Actually, the measurements can be used only to evaluate the support elements (management policies, techniques, standards, metrics, tools, and training). Any attempt to use the measurements for individual performance evaluations will prove impractical. There are too many other factors affecting individual performance to consider these metrics useful for that purpose. Some of these additional factors include interaction with and dependency on others.

The measurements in Section 13 should be included to satisfy the corporate manager's needs. At the same time, the corporate manager must be aware of the limited applicability of the information.

**Project manager.** The project manager is obligated to meet a schedule. The schedule is derived from estimates of time and effort required and resources available to complete the project. Accurate estimates are based on a thorough understanding of the product to be built and on histories of previous projects. The project manager tracks progress day-to-day and week-to-week against the estimates monitoring the measurements defined in Section 13. He will continue to use those measurements if he can see clearly how they help him make updated estimates and enable him to adjust resources to meet his schedule.

**Engineering staff.** Engineering staff members will support the measurements if they understand how the measurements serve them. The measurements can help the engineer by enabling him to evaluate the environment in which he works. For example, if the process and product measurements indicate that an investment in tools would increase productivity, the engineer can justify improvements in his working environment.

Section 13 also can provide important evaluation information for the engineer. A comparison of a product's measurements against the standard measurements provided in Section 13 gives the engineer a quality index for his work. The engineer, like the corporate manager, must understand that these measurements are not meant to be used in individual performance reviews. With that understanding established, the engineer is likely to support the measurements documented in Section 13.

Many people have written SQA plans. Most of those plans are not being used. Perhaps we can increase the use of SQA plans by documenting a list of concerns that should be considered in their creation. We have touched on some of these concerns here, but we have just scratched the surface. We need to continue to add to our list. As always, we welcome ideas from our readers.