Controlling third-party testing vendors

by RUSSELL R. SPRUNGER

Graphic Software Systems
Wilsonville, Oregon

ABSTRACT

In today's fast-paced microcomputer world, getting a high-quality product to market in a timely fashion can make the difference between long-term success and mere survival for a company. Independent laboratories can provide valuable testing, easy mechanisms for managing project costs, and access to experts not available in a developing organization. This paper outlines the benefits of using independent testing organizations, proposes a method for selecting such an organization, and describes effective mechanisms for their use.
INTRODUCTION

In today’s fast-paced microcomputer world, getting a high-quality product to market in a timely fashion can make the difference between long-term success and mere survival for a company. How to test products adequately is a crucial consideration in the development process. Independent hardware-testing labs have existed for many years, but independent labs to test software have become a reality only in the past few years. Independent laboratories can offer professional services, enable effective project cost management, and provide access to experts who would not normally be available to developing organizations. This paper outlines the benefits of using outside testing organizations and describes effective use of their resources.

BACKGROUND

In the summer of 1983, Graphic Software Systems (GSS) was preparing for the fall introduction of a series of new graphic software products. At that time, GSS had devoted most of its resources to developing software products and had not established a formal testing organization. The challenge was to develop and implement a plan for testing the new products. The testing had to be prompt, comprehensive, inexpensive, and reliable under repetitive use.

At the base of the product series to be tested was GSS-DRIVERS, a device-independent graphics extension to MS-DOS and Unix. Therefore, the proposed tests had to exercise a wide variety of functions that take into account the device-dependent attributes of each device. In addition, this variety of test functions had to address the devices then supported by GSS as well as software developed in the future to support additional graphics devices. Because GSS products are designed to be usable on different operating systems, the tests also had to be portable between operating systems.

Having outlined the goals and constraints for software testing, GSS began to investigate ways to implement the tests. One possibility was to hire full-time employees, thereby establishing the foundation for a quality assurance group within the company. Other possibilities included using qualified customers or outside contractors.

Finding qualified people to staff a new department immediately was a task that presented more difficulties than advantages. Using qualified customers had provided valuable feedback, but historically had failed to result in comprehensive, well-documented, portable testing. Therefore, GSS began searching for an established group that could satisfy our requirements. We began our search with several organizations referred to us by our colleagues.

EVALUATING TESTING VENDORS

The next step was to determine how to qualify and select the right organization. Initial qualification consisted of contacting several organizations and requesting company background, specialization, and general business terms. This process resulted in two organizations who advertised product testing or installation. Each had some experience in testing graphics products.

Next, each organization was visited to evaluate the personnel, previous work, and the work environment itself. This activity also involved discussing the product to be tested and providing the test organizations with enough product material to allow them to provide GSS with a formal quote.

DEVELOPING THE FORMAL QUOTE

From this evaluation process, we determined that the formal quote should contain at least the following items:

1. Detailed description of work
   a. Overview
   b. Number of tests
   c. Language of implementation
   d. Test methodology
2. Schedule
   a. Start and end date of project
   b. Deliverables by developer by date
   c. Deliverables by contractor by date
   d. Number and location of meetings
3. Costs
   a. Personnel
   b. Travel
   c. Equipment (hardware and software)
4. Business terms
   a. Payment terms
   b. Ownership of deliverables

Following on-site evaluation and receipt of a quote, GSS selected the International Bureau of Software Test (IBST) of Sunnyvale, CA.

MANAGING THE TESTING VENDOR

Once the contract had been awarded, technical and management representatives were designated and regular meetings were scheduled. Weekly meetings were determined appropriate for projects of up to three months duration. Owing to the distance between GSS and IBST (about 600 miles), many of
these meetings were conducted over the phone. On-site visits to the test location were conducted every three weeks. As with any testing effort, it was important to define an effective means of addressing each product error and of informing the testing organization about new releases of the product. IBST provided weekly reports in addition to the meetings. The reports included project status and detailed software error accounting. Detailing and then following up on each error has been addressed in subsequent releases of software. This was a significant task, both in its importance and in the resources expended.

At the end of the project, GSS had a complete, documented set of tests that could be run regularly as new installations occurred.

BENEFITS OF INDEPENDENT TESTING

The use of outside testing resource has revealed several benefits:

1. Easy management of the highly variable demand for human resources
2. Well documented testing of first-time user situation
3. Complete, documented test suites
4. Good user interface feedback
5. Verification of product conformance to stated documentation
6. Verification of product conformance to standards

The earlier in the product's development that the testing organization can be involved, the greater the potential for finding design errors before they become ingrained product deficiencies. Simple economics dictates that correcting problems at the design stage is much less expensive than having to rebuild the product, because testing is relegated to the final stages of product development.

An additional advantage of earlier involvement of the testing organization is that the laboratory will have time to learn about the product, thus enabling them to be more expansive in the design of their procedures. This goes beyond simply ensuring that the product conforms to the primary level of usage suggested by the documentation. Providing the organization with the opportunity to perform in-depth testing permits optimization of the testing process.

STEPS FOR CONTROLLING TESTING VENDORS

The following steps outline the process of using outside organizations to perform product testing:

1. Designate a project leader
2. Determine what you hope to obtain by using an outside organization
3. Locate available outside testing organizations
4. Determine the business procedures of these organizations
5. Specify what you need to have tested
6. Obtain quotes for services
7. Evaluate test proposals on the basis of
   a. Cost
   b. Staff applied to task
   c. Types of testing performed (validation, stress, destructive, ease of learning, ease of use)
   d. Length of test cycle
   e. Amount of retest
   f. Test deliverables
   g. Completeness of test cases
8. Negotiate the contract
9. Begin the contract
10. Monitor the project
    a. Weekly for multimonth projects
    b. Monthly for multiyear projects
    c. Evaluate test procedures
    d. Acceptance of project deliverables
    e. Face-to-face vs. long-distance monitoring (face-to-face preferred at least 4 times during contract)
    f. Start test acceptance, following each major deliverable
    g. Final presentation of test findings
11. Study test deliverables

SUMMARY

Outside test organizations can provide many benefits. To use these valuable services effectively, the product-developing organization should assess its testing needs accurately, involve the testing organization as early as is practical, and demonstrate proficient project management skills—particularly the ability to manage projects long distance.