In Chapter 1 we examined the value of information. In Chapter 3 we will consider laboratory automation in terms of laboratory information management. The purpose of this chapter is to review some concepts and definitions, as well as future considerations of information management in the laboratory. Considerations which are important to information management in this environment are laboratories, laboratory information, and computers.

**Laboratories**

Laboratories whose sole purpose is to perform controlled tests on samples, exist under a variety of names such as analytical, control, production control, physical testing, quality assurance, and materials testing laboratories. These laboratories may differ immensely in size, complexity, instrumentation, automation, etc., but they have several similarities related to samples processing:

1. Samples are usually not generated in the laboratories; instead, they are delivered.
2. Testing produces results (data) which must be delivered outside the laboratory.
3. The laboratory’s customers want results as soon as possible.
4. Information concerning similar samples is similar.
5. Samples are somehow tracked through the laboratory.
6. Counts of sample throughput are maintained to assist in resource allocation, budgeting, and billing.

Other laboratories, such as some research laboratories, differ only in that they may produce and analyze their own samples, with the test
results used internally. Thus, the lab personnel are their own customers when it comes to analyzing samples. Maintaining sample counts is probably not necessary because the lab’s output is not related to the number of samples processed.

Physical and analytical testing laboratories all have another factor in common: They are in a constant state of change. New models of instruments are announced regularly. New models are purchased either to add capacity and capability or to replace old units. Employees earn promotions and move out, they retire, and they quit. But regardless of their reason for leaving, the result is the same — change. Job openings are filled by either transferring personnel internally or hiring from the outside. New employees have different skills. The rules and regulations which govern day-to-day operations change. The only thing that is consistent about lab operation over a 1- to 2-year period is change. But even the rate of change is increasing, mostly due to advances in computing technology.

"Computers, robotics, and networks may or may not play a role in your laboratory at the moment, but there is no doubt that they will in the very near future" (37). Let’s try to imagine a laboratory in the year 2000, or even 1995. How do we predict samples will be handled? How many instruments will print out results which must be manually entered into the LIMS? Will there be a LIMS in every laboratory? It is difficult for some of us to imagine operating a lab without taking advantage of the latest computing technology. By the year 2000, all laboratories will be making effective use of computing. This is said with almost complete certainty, because if they aren’t, they won’t be in business.

The laboratory manager must be able to manage the changes that the laboratory is facing. Coping with change is a major responsibility and time requirement for the manager. A potential danger is apparent. The application of computing technology to all phases of lab operation is in full swing, and all signs indicate that we can expect this trend to continue. We must make sure that laboratory managers embrace computing technology and strive to become leaders in implementation and promotion. A manager who is inclined to resist change might resist the inclusion of a new computer-based technology, and this tendency is dangerous. Time lost in the computing renaissance which our labs are undergoing equates to a loss of experience which can never be recovered. The efficiency of our laboratories cannot be jeopardized by the mismanagement of change.

Staffing laboratories with information systems specialists is becoming commonplace. Computing support staff from within the laboratory who report directly to lab management will be needed in the future. Laboratory computing cannot be managed from a central corporate Information Services (IS) department. The experience, needs, and goals of