



Standard Guide for Laboratory Information Management Systems (LIMS)¹

This standard is issued under the fixed designation E 1578; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide describes computer systems used to manage laboratory information. The term Laboratory Information Management Systems (LIMS) describes this class of computer systems.

1.2 This guide covers LIMS ranging from small laboratories with simple requirements to large multi-site laboratories with complex requirements. The elements of the LIMS guide may be selected based on specific laboratory requirements.

1.3 The audience of this document includes: (1) end users of LIMS, (2) implementers of LIMS, (3) LIMS vendors, (4) instrument vendors, and (5) individuals who must approve LIMS funding.

1.4 The purpose of this guide includes: (1) help educate new users of Laboratory Information Management Systems (LIMS), (2) provide standard terminology that can be used by LIMS vendors and end users, (3) establish minimum requirements for primary LIMS functions, (4) provide guidance for the specification, evaluation, cost justification, implementation, project management, training, and documentation, and (5) provide an example of a LIMS function checklist.

1.5 Information contained in this guide will benefit a broad audience of people who work or interact with a laboratory. New LIMS users can use this guide to understand the purpose and functions of LIMS. The guide can help prospective LIMS users in understanding terminology, configurations, features, design, and costs. Individuals who are purchasing a LIMS can use this guide to identify functions that are recommended for specific laboratory environments. LIMS vendor Research and Development staffs can use the guide as a tool to evaluate, identify, and correct areas that need improvement. LIMS vendor sales staffs can use the guide to accurately represent functions of their LIMS product to prospective customers. This guide does not define laboratory instrument interfaces.

1.6 This guide can be used by laboratories of all sizes. The guide addresses complex issues that impact primarily large LIMS implementations. Small laboratories should review issues that may impact their environments. The implementation times and recommendations listed in this guide are directed at medium and large laboratories.

2. Referenced Documents

2.1 *ASTM Standards:*

- E 622 Generic Guide for Computerized Systems²
- E 625 Guide for Training Users of Computerized Systems²
- E 627 Guide for Documenting Computerized Systems²
- E 730 Guide for Developing Functional Designs for Computerized Systems²
- E 731 Guide for Selection and Acquisition of Commercially Available Computerized Systems²
- E 792 Guide for Computer Automation in the Clinical Laboratory²
- E 919 Specification for Software Documentation for a Computerized System²
- E 1013 Terminology Relating to Computerized Systems²
- E 1029 Guide for Documentation of Clinical Laboratory Computer Systems²
- E 1340 Guide for Rapid Prototyping of Computerized Systems²
- E 1381 Specification for Low-Level Protocol to Transfer Messages Between Clinical Laboratory Instruments and Computer Systems²
- E 1394 Specification for Transferring Information Between Clinical Instruments and Computer Systems²

2.2 *IEEE Standards:*

- 100—Standard Dictionary of Electrical and Electronic Terms³
- 610—Standard Glossaries of Computer-Related Terminology³
- 729—Glossary of Software Engineering Terminology³
- 730.1—Standard for Software Quality Assurance Plans³
- 730.2—Guide for Software Quality Assurance Plans³
- 828—Standard for Software Configuration Management Plans³
- 829—Standard for Software Test Documentation³
- 830—Guide to Software Requirements Specifications³
- 1008—Standard for Software Unit Testing³
- 1012—Standard for Software Verification and Validation Plans³
- 1016—Recommended Practice for Software Design Descriptions³
- 1028—Standard for Software Reviews and Audits³

¹ This guide is under the jurisdiction of ASTM Committee E01 on Analytical Chemistry for Metals, Ores and Related Materials and is the direct responsibility of Subcommittee E01.25 on Laboratory Data Interchange and Information Management.

Current edition approved Oct. 15, 1993. Published December 1993.

² *Annual Book of ASTM Standards*, Vol 14.01.

³ Available from IEEE, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331.