

Chapter 1. Getting Started

1.1 How This Manual Is Organized

This manual is organized to serve two different audiences:

- Newcomers who need a thorough introduction to the classification system, how it is built, how to use and apply it properly, and how to enhance an institution's management of its facilities by using this system.
- Experienced users who already know the facilities classification system and are interested in using this document primarily as a reference tool.

Newcomers should read this document thoroughly before embarking on any efforts to classify their space inventories. Experienced users are likely to be most interested in the section describing changes since the last edition; chapter 4, Space Use Codes, the core of the system; and chapter 6, Emerging Issues. For a quick start to this new edition, refer to the Changes Since the Last Revision section of the Introduction.

This document is organized as follows: chapter 1 covers getting started/orientation; chapter 2, basic database principles; chapter 3, area measurement; chapter 4, room and space use codes; chapter 5, data analysis and reporting; and chapter 6, emerging issues. Chapters 3, 4, and 5 contain a set of questions and answers that relate to the content of the particular chapter. It should be noted that some of the questions and answers appear in more than one chapter. This was done deliberately if a question pertained to the content of more than one chapter so that all relevant questions and answers would be available in the appropriate chapters.

The topic chapters are followed by several appendixes. The appendixes provide more detail than was warranted in the main body of the manual. In particular, appendix A provides guidance in using the FICM for data reporting and interinstitutional data exchange; appendix B provides additional detail on the NACUBO and OMB functional categories; appendix C provides additional detail on the Classification of Instructional Program codes for academic disciplines; appendix D provides a suggested method for classifying infrastructure; appendix E provides a detailed method for describing the maintenance level of facilities; appendix F provides an integrated number coding structure that encompasses assignable and nonassignable space and infrastructure classifications; and appendix G contains a glossary.

Many institutions already maintain sophisticated facilities inventories; others may not have collected facilities data or may find their inventories so out of date that they will wish to start over. Chapter 1 is provided primarily for those who are unfamiliar with facilities inventory methods or with the FICM system.

1.2 Designing the Database

According to the basic principles underlying the organization and use of the FICM classification system, some items of information are described as *required* (e.g., a unique space identifier, the square-foot area of the space, the organizational unit to which it is assigned, and the space use category), while others are *optional* (e.g., physical characteristics of the space, legal ownership, age, condition). In designing the facilities database, it is good practice to provide fields for both the required and the optional data elements, even though not all types of data may be collected at the outset. Even if some fields are ultimately not used, it is usually more cost-effective to program extra space than to add fields after the database is already in use.

Individual Spaces Are the Building Blocks of the Facilities Inventory. The most basic discrete spatial unit to be measured, inventoried, and tracked is an individual *space*. While the terms *room* and *space* are commonly used interchangeably, they are individually defined for purposes of this manual. A *space* is an area bounded by walls and/or an imaginary boundary line (a “phantom wall”) that accommodates a single use. A *room* is defined as a contiguous area enclosed by walls on all sides; it may consist of one or more *spaces*. As discussed in chapter 3, where clear distinctions between the two terms are made, some rooms may be subdivided into several discrete *spaces* because they accommodate multiple uses.

For purposes of this manual, the term *space* will be used wherever both terms could be used interchangeably, primarily regarding the use codes defined in chapter 4.

Database Technology. Database software has become much more user-friendly, inexpensive, powerful, and customizable in recent years, making data storage, maintenance, analysis, and reporting of inventory data far more practical and cost-effective, even for the smallest institutions. Software to support inventories is available and can be modified for particular institutional uses. Decentralization of computing resources through departmental, campus, regional, and national networks has become a common and effective means of making inventory information widely available.

The facilities inventory information for virtually any institution can usually be stored in a desktop computer, using commercially available database software. Some software vendors have designed interfaces that enable exchange between computer-aided design (*CAD*) drawings and computer-aided facilities management (*CAFM*) system databases.

1.3 Data Collection

Walking the Campus. An essential step in an inventory is to field check the configuration and use of each space. This task should be performed by a qualified individual, usually someone with the institution's central administration, who thoroughly understands the FICM definitions and the importance of consistently applying them. As there may be discrepancies between the floor plans and the actual spaces, this step provides an opportunity to update the floor plan drawings. Furthermore, required and optional space data (e.g., the space use category, academic discipline category, number of stations, suitability for current use) should be ascertained or verified by inspection.

Updating facilities inventory data is also essential. This task is especially important when organizational moves or space renovations take place. While overall building dimensions may not change frequently, space use, assignments, and geometry are more likely to do so with greater frequency.

Working From Drawings. On most campuses, a department of facilities planning or management will have access to architectural drawings of most buildings, whether or not they have responsibility for maintaining those drawings. An initial set of building, floor, and space data can be compiled from these drawings as a basis for creating an initial space inventory or for maintaining an existing one. Four data elements are required for each space in a basic space inventory: unique identifiers for each building, floor, and space; organizational assignment(s); actual space use(s); and confirmed locations of walls to accurately determine the area and other basic building features such as door, window, and column locations within each space.

Many institutions also use electronic technology to collect their facilities data. Options include developing and using machine-readable data collection forms, entering the data directly using hand-held devices while conducting the physical inventory, and recreating scaled floor plans.

A growing number of institutions are setting up and maintaining building drawings in CAD systems and digitizing existing drawings to set up electronic space inventory files. In electronic form,

these drawings can be kept current with subsequent renovations. These electronic files can be linked with the inventory files so that both files can be updated simultaneously.

Accuracy of Drawings and Measurements. Scaling of drawings is not recommended as a method for determining the area of a space or a building. Drawings are frequently out of scale; if they are drawn to a small scale (e.g., 1/16" = 1'0" or smaller), significant errors can result from manual measurements taken directly from drawings. A word of caution: If there is no alternative but to determine space areas from drawings (i.e., it is impossible to measure the actual space), remember that photocopies of drawings may alter their scale. A sample of actual spaces should be physically measured to ensure the drawings are accurate to scale.

Computer-Generated Area Calculations. Computer-generated calculation of spaces or building areas from electronic "as-built" record plans of a building is the most accurate method for calculating area. This assumes, however, that the building was actually constructed as shown on the plan documents. Field verification of building and space dimensions is advisable, as very few organizations track all the minor alterations made to their buildings and many of these changes go unreported to the campus facilities department.

Physical Measurements. Even if field dimensions are taken to verify building and space dimensions or to establish the base drawing data, there may be a difference between the field measurements and the actual drawing; however, such differences are typically marginal within an overall building inventory.

Acceptable Margin of Error. When taking physical measurements to update or verify drawing data, a 2 percent margin of error is acceptable for the purposes of facilities data values.

Partial Inventories. An incomplete building and space inventory is better than no inventory, provided it is accurate. Institutions beginning the inventory process may be wise to plan initially on collecting less information and increasing the scope of the inventory in subsequent updates to facilitate successful implementation.

There are several logical approaches:

1. Collect only the required data—space identifiers (building/floor/space number), space use categories, organizational assignments, and area in the first inventory—leaving other (optional) elements for a later survey.

2. Collect data by class of facility, perhaps starting with academic and research buildings, then administrative ones, then auxiliary and residential facilities.
3. Plan an ongoing program that will inventory or update a portion of all facilities each year, especially the academic and research facilities, in which changes can have significant impacts on educational and research programs.

Combining the Inventory With a Facilities Condition Audit. For some institutions, it may be cost-effective and advisable to combine the initial facilities inventory, and certainly any subsequent updates, with an audit of the condition of the facilities. The standard procedures for a facilities condition audit¹ closely follow those suggested in this manual and are intended to collect related information. Many of the building condition codes and space suitability codes suggested in this manual relate closely to facilities condition audit information.

1.4 Practical Tips

1. Compile the building information first, even though some variables or elements (such as assignable area) will not be available until the space inventory is completed.
2. Inventory all spaces in a particular building at one time. Interrupting the inventory process, even for short breaks, increases the chances of omitting spaces.
3. Try to schedule the space inventory shortly after the beginning of the term or some other time when space uses have stabilized.
4. In counting the number of stations in a space, remember that the intent is to count the appropriate number of occupants who can be accommodated in the space.
 - The number of stations in a laboratory is often determined by the fixed equipment in the space, such as sinks and counter space, or fume hoods. Where a station is designed to accommodate two or three students rather than just one, count the number of students who could be served.
 - For classrooms with movable seating, the number of stations is determined by the design intent, not by the number of chairs that happen to be in the space at the moment the inventory is taken. For instance, a space may be designed to hold 15 student stations but currently has only 12 chairs; the number of stations would be 15. Conversely, if current

¹ See, for instance, H.H. Kaiser, *Facilities Audit Workbook* (Alexandria, VA: Association of Higher Education Facilities Officers (APPA), 1987).

safety codes limit occupancy to 15 and there are 20 chairs, the station count should be 15.

5. In conducting and maintaining the facilities inventory, remember that the intent is to provide the best information possible with a reasonable expenditure of effort. A modest level of error is tolerable (indeed, inevitable) as uses and assignments change over time. A regular process for updating the inventory can keep its information current enough to be continuously useful.

6. Wherever possible, use the building and space identifiers to link the facilities file to other data files, such as those for fixed and movable assets, classroom scheduling, financial accounting, insurance tracking, and maintenance scheduling. (For more information, please refer to section 2.4, Links to Other Systems.)

1.5 The Facilities Database and Institutional Management

Once a database has been designed and the building and space information has been collected, a variety of reports can be provided for institutional use and, where appropriate, for inter-institutional, systemwide, or national surveys. The database also can support a variety of ad hoc inquiries to support space management and facilities management activities. For many purposes, graphical presentations can convey the intended message more effectively than tabular arrays of data. (A detailed discussion of data analysis and reporting is provided in chapter 5.)