

CHAPTER 1

Introduction

Why are equipment inventories critical? The bottom line: They are the basic requirement for every aspect of facility management. Equipment inventories affect facility safety as well as how the facility is operated, maintained, and forecasted. They also have a direct impact on facility costs. If the equipment inventory is not accurate, the facility and the organization will not be as effective. One adage is you cannot manage what you do not know. If the equipment inventory is not accurate, it is costing the organization time, manpower, and money.¹

This guide was written to give facility managers, owners, and the industry personnel the tools they need to understand, capture, and properly set up equipment inventories.

In 2004, the National Institute of Standards and Technology (NIST) estimated the cost of inadequate interoperability in the U.S. capital facilities industry to be approximately \$15.8 billion per year.

A building's performance will decline because of its age, the use it receives, or functional adaptation to new uses, but its performance will decline at an optimized rate with proper maintenance. Without appropriate maintenance, or with the owner's decision to defer required maintenance, the building's usefulness will decrease at an accelerated rate.

The total cost of ownership is the total of all expenditures an owner will make over a building's service lifetime. Failure to recognize these costs and to provide adequate maintenance, repair, and renewal results in a shorter service life, more rapid deterioration, higher operating costs, and possible mission degradation over the life cycle of a building. With available data on facility subsystems, an estimate can be made regarding maintenance, repair, and renewal requirements during the remaining asset lifetime. Managing this data is of critical importance to effectively provide optimum services to the facility owner and users.²

To reiterate, that's a \$15.8 billion annual loss because the industry is unable to transfer data and information in a usable format from design and construction to facility management. Most of that cost is absorbed by the owner of the facility. Equipment information in the form of equipment inventories is one of the major data losses resulting from this failure of interoperability of systems. Chapter 2, "Financial and Resource Impact of Equipment Inventories on Facilities," will cover a lot of the costs related to this poor or missing data. Figure 1.1, from the NIST report *Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry*, gives a very good indication of what happens to facilities with poor equipment inventories. Without the equipment information, you cannot set up a normal maintenance program; therefore, you have premature aging of your facility, and that will be a significant cost to any organization.

What would happen if all of the related facility management organizations, industries, and owners in the nation sent personnel to a single location for a year, to define and agree upon the format for all the data related to the operation of a facility? They would define the format, decide how to transfer the data, agree upon a solution, and so forth. Pick an insane and absurd cost for this conference—counting salaries, hotels, and food. Say it costs \$100 million to come up with an agreed-upon solution. The simple payback for that \$100 million solution to the industry would be 2.3 days! Meanwhile, the industry loses \$15.8 billion in 2002 dollars every year there isn't a solution. That is the thought process behind this book. In this book, I try to define all of the information that is related to equipment and inventories and explain how all that information is interrelated.

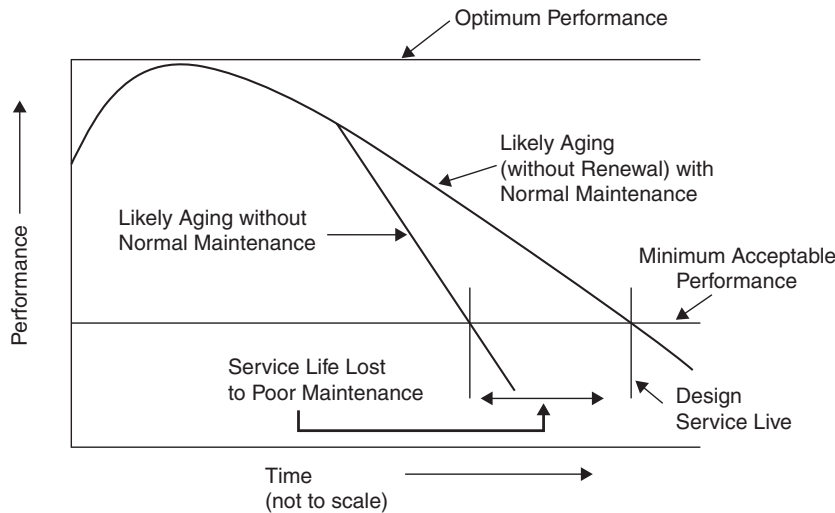


FIGURE 1.1 Maintenance Effect on Facility Performance (Source: *Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry*, Michael P. Gallaher, Alan C. O'Connor, John L. Dettbarn, Jr., and Linda T. Gilday, NIST GCR 04-867, August 2004.)

A lot of data must be transferred and formatted between design and construction and facility management; this guide focuses on defining only the data set related to equipment.

Currently, the equipment inventory solutions found throughout the industry are typically company or organization specific; they do not follow industry standards, they are inconsistent in their application, and they are not even typically applied uniformly within those organizations that do have some sort of partial solution. Because of this, there is a vital need for industry standards. It is interesting to note that there are numerous energy manuals, facility operation manuals, and other books on equipment maintenance planning. All these books usually have two sentences in common, concerning equipment inventories: “You have to have an equipment inventory,” and “Equipment inventories are important.” Truth be told, equipment inventories are not “sexy.” But equipment inventories and information are the core data, the foundation, for almost every task performed by facility management teams.

Imagine that your organization installed a state-of-the-art thermal storage system, upgraded all of the motors to high-efficiency motors with variable frequency drives, and installed solar heating units on the roof. The organization is utilizing high-end energy strategies. The company gets applauded in the news. This is cutting-edge technology. That same organization, however, does not capture the equipment inventory and therefore does not include the equipment in its maintenance contracts. The high-end energy equipment is not maintained, and within a few years all those predicted savings do not materialize. The ripple effect is that the executive board is very likely to stop

supporting the installation of energy-saving equipment in future facilities, and that impacts the company's sustainability and possible future savings. Yes, this is exactly what happens every day throughout the industry. This is a key reason that some energy savings contracts have a bad reputation. It is hard to perform measurement and verification on equipment that does not exist in your maintenance databases.

Equipment inventories are not sexy, but they are critically important to organizations. This book provides the reasons they are important, an explanation of the different types of inventory systems, suggested data points important to equipment information, and methods of identifying and tagging equipment. The ultimate concept (Figure 1.2) of this guide is defining the core information needed for equipment, and defining the boxes—using industry standards where available—to place that equipment data into. These definitions would ensure that everyone in the industry is using the same terminology and concepts, allowing everyone to cross-communicate and integrate equipment information.

There are many ways to identify equipment information, and there is always room for improvement. Developing a list of these improvements and applying those to the next project can significantly improve the process, thus reducing costs and saving valuable resources. The important thing to remember is that, in this world of ever-increasing competition, where everyone is striving to increase efficiency while reducing the use of dwindling resources, any improvement to any process, no matter how small, improves this world for everyone.

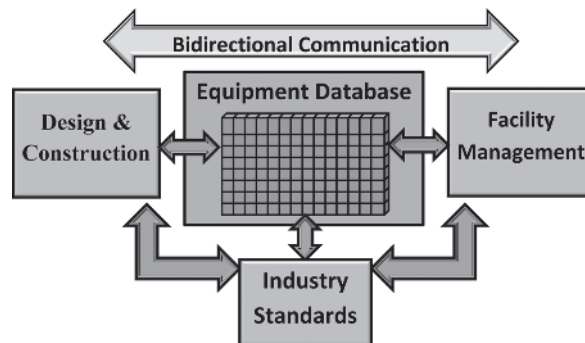


FIGURE 1.2 Equipment Guide Concepts

ENDNOTES

1. “Financial Impact and Analysis of Equipment Inventories,” by Robert Keady, *Facility Engineering Journal*, Association of Facility Engineering, Nov–Dec, Jan–Feb, 2009–2010.
2. *Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry*, Michael P. Gallaher, Alan C. O’Connor, John L. Dettbarn, Jr., and Linda T. Gilday, NIST GCR 04-867, August 2004. Pages 1–22.

