MICROCOMPUTER-BASED DECISION SUPPORT FOR FACILITIES PLANNING AND MANAGEMENT

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Facilities and buildings require large amounts of capital, but do not themselves produce goods and services. Therefore, decisions to build, lease, buy, renovate, or relocate must be made very carefully. According to a recent report by the International Facility Management Association, a quarter of a corporation’s budget is spent on tracking of information about equipment and people as they move about. The same report states that the use of computer-aided facilities management systems enables managers to realize increased productivity and significant cost savings. This paper examines the nature of decision support required for facilities planning and management, and presents a design for a generic facilities planning and management decision support system. Several commercially available microcomputer-based systems in support of facilities planning and management are evaluated in light of the proposed design.

Picture, if you will, the following scenarios.

**Scenario 1.** The Engineering department has requested an office for a consultant for six to nine months. They need this space in two weeks. They request that the space be near the department and have 110V electrical, telephone, and 120-200 square feet of space, enough for a desk and workstation. How do you find the suitable space? (Lilly, Haigh, & Ehman, 1985)

**Scenario 2.** Suppose a building adjacent to your site is going to come on the market. The building has 3000 square feet of high quality office space and another 1000 square feet of storage space. It has excellent access to your site. The CEO has long thought that you should acquire the building and move some support and non-manufacturing departments from the main building to allow for expansion of a new product group. What is your recommendation? (Lilly, et al., 1985)

**Scenario 3.** Two departments reorganize, affecting 2,000 people currently on 20 floors in three buildings. Because of this, 1,000 people need to move from one building to another which is already full. Who do you relocate in order to make room for them? What is the estimated cost of the

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moves involved? How do you schedule the moves? (Saunders, 1987)

**Scenario 4.** A tenant wants to take over an additional floor at the end of the year. If that is not possible, the tenant wants to be released from the lease agreement two years early. Can you find an additional floor for the tenant by the end of the year? (Saunders, 1987)

**Scenario 5.** The owner of the building where the regional office of the national company is located does not want to extend the lease. A new location and a new lease are needed. During the past five years in which the current lease was in effect, the operations of the regional office have changed greatly. Both the company and its use of office automation have grown. The automation equipment itself has changed drastically as well, from punched cards and one large computer to a multi-terminal computer system. Satellite data transmission to the home office is also being considered. The regional office director must know what is really needed for his company so he can look for a new office facility that will be suitable for the next five years. What is needed? (Brauer, 1986)

These scenarios provide only a glimpse of the constant challenge faced by facility planners/managers. The challenge of knowing what space is available and how best to use it. Increasingly, facility planners/managers are turning to automation as a way of supporting their decision making tasks (Cortes, 1989; Kimmel, 1991). This paper examines the nature of facilities planning and management activities, and proposes a design for a generic facilities planning and management decision support system. The paper also presents an evaluation of several commercially available microcomputer-based facilities planning and management decision support systems in light of the proposed design.

**Facilities Planning and Management**

The definition of facility management as filed with the Library of Congress is:

The practice of coordinating the physical workplace with the people and work of the organization; integrates the principles of business administration, architecture, and the behavioral and engineering sciences.

The knowledge required by a facility manager as defined in the Spring 1983 issue of Facility Management News is:

The core of a facility manager’s competence must include knowledge of the technical aspects of built environments--their structure, equipment, service systems and maintenance; legal aspects, including laws and regulations for protection of the public and contracting and business procedures; the use of design as both visual and graphic language and as a means of evaluating how facilities work; and management concerns, financial, personnel and corporate planning, facility project strategy, and human and organizational behavior. Most important of all, a facility manager must know how to discriminate, balance, and integrate the wealth of knowledge in these areas.

In practice, job descriptions and tasks performed by facility professionals vary widely amongst organizations, and the requirements for facilities planning and management differ considerably between organizational types (e.g., manufacturing versus institutional, or government versus banking and insurance). Nevertheless, the International Facility Management Association (IFMA) has determined through polling its members that there are nine functional areas which represent the job responsibilities of between 80% and 95% of facility professionals. These nine functional areas along with their related sub-functions are (Sena, 1987):