CENTRALIZED DATABASE MANAGEMENT SYSTEMS

A datafile consists of a set of records arranged and defined for a single application system. Relational information between items in a record or between records is not explicitly described or available to other application systems. For example, a file of project activity durations and scheduled times might be assembled and manipulated by a project scheduling system. This datafile would not necessarily be available to the accounting system or to corporate planners.

A centralized DBM has several advantages over such stand-alone systems:

• Reduced redundancy good planning can allow duplicate or similar data stored in different files for different applications to be combined and stored only once.

• Improved availability information may be made available to any application program through the use of the DBM

• Reduced inconsistency if the same data is stored in more than one place, then updating in one place and not everywhere can lead to inconsistencies in the database.

• Enforced data security authorization to use information can be centralized.

For the purpose of project management, the issue of improved availability is particularly important. Most application programs create and own particular datafiles in the sense that information is difficult to obtain directly for other applications. Common problems in attempting to transfer data between such special purpose files are missing data items, unusable formats, and unknown formats.

As an example, suppose that the Purchasing Department keeps records of equipment rental costs on each project underway. This data is arranged so that payment of invoices can be handled expeditiously and project accounts are properly debited. The records are arranged by individual suppliers for this purpose. These records might not be particularly

useful for the purpose of preparing cost estimates since:

• Some suppliers might not exist in the historical record.

• Finding the lowest cost supplier for particular pieces of equipment would be exceedingly tedious since every record would have to be read to find the desired piece of equipment and the cost.

• No direct way of abstracting the equipment codes and prices might exist.

An alternative arrangement might be to separately record equipment rental costs in (1) the Purchasing Department Records, (2) the Cost Estimating Division, and (3) the Company warehouse. While these multiple databases might each be designed for the individual use, they represent considerable redundancy and could easily result in inconsistencies as prices change over time. With a central DBM, desired views for each of these three users could be developed from a single database of equipment costs.

A manager need not conclude from this discussion that initiating a formal database will be a panacea. Life is never so simple. Installing and maintaining databases is a costly and time consuming endeavor. A single database is particularly vulnerable to equipment failure. Moreover, a central database system may be so expensive and cumbersome that it becomes ineffective; we will discuss some possibilities for transferring information between databases in a later section. But lack of good information and manual information management can also be expensive.

One might also contrast the operation of a formal, computerized database with that of a manual filing system. For the equipment supplier example cited above, an experienced purchasing clerk might be able to immediately find the lowest cost supplier of a particular piece of equipment. Making this identification might well occur in spite of the formal organization of the records by supplier organization. The experienced clerk will have his (or her) own subjective, conceptual model of the available information. This subjective

model can be remarkably powerful. Unfortunately, the mass of information required, the continuing introduction of new employees, and the need for consistency on large projects make such manual systems less effective and reliable.

Databases and Applications Programs

The usefulness of a database organization is particularly evident in integrated design or management environments. In these systems, numerous applications programs share a common store of information. Data is drawn from the central database as needed by individual programs. Information requests are typically performed by including predefined function calls to the database management system within an application program. Results from one program are stored in the database and can be used by subsequent programs without specialized translation routines. Additionally, a user interface usually exists by which a project manager can directly make queries to the database. Figure illustrates the role of an integrated database in this regard as the central data store.

Illustration of an Integrated Applications System

database and DBM:

Database: Database is a collection of stored operational information used by themanagement and application systems of some particular enterprise.

DBM:DBM is the software program that directors the storage, maintenance,manipulation and retrieval of data users retrieve or store data by issuing specificrequest to the DBM. The objective of introducing a DBM is to free the user from thedetail of exactly how data are stored and manipulated,