CHAPTER 5
OVERALL SYSTEM DESIGN SPECIFICATION DOCUMENT

5. Overall System Specification Document

The overall system specification is an important document. Contained in the document is a summary of the data and analysis obtained in the data collection and analysis stage. The document outlines what is required of the system and the hardware and software constraints on the system. This is important for the designers, because it gives them a formal guide as to how the system should be, and it should prevent a system being produced that does not meet the expectations of management or meet the requirements of company. The document is also important to the project team, because it communicates the requirements to everybody, so everyone will have the same idea about the system.

5.1. System Requirements

- To automate the process of material requirements planning for production units 1, 2 and 3 in the TKM department. This is because the current system is done manually, and it is not done correctly. The manual system produces gross requirements, but it does not check against inventory to calculate net requirements and offset purchasing according to leadtime.

- To provide a component order schedule that will show what needs to manufactured by ABC subsidiary and to highlight the components that need to be ordered at the current time.

  The component order schedule should show the following:

  - Component code
  - Component name
  - Lot-sizing technique

- Estimated leadtime
- Gross requirements
- Projected inventory
- Net requirements
- Order schedule

The list of components that need to be order at the start of the week should contain the following information:

- Component code
- Description
- Quantity
- Supplier
- Order Date
- Expected Date of Delivery

This has been decided by management, as it is considered sufficient information for the inventory and purchasing departments.

- To operate on a weekly time period. This is considered appropriate by the production manager.

- To plan at least two months into the future. This is a long enough time horizon, because it covers the total leadtime of all the products.

- To have a time fence of four weeks, where no editing of the MPS can take place. This is to stop last minute changes to the MPS, which would make the system unstable.

- To be sufficiently simple, so people with limited computer experience can operate the system. Some of the employees that will operate the system have limited computer experience, and this will simplify training once the system is implemented.

- The system's MPS needs to contain all the information that would have been available on the old, paper version of the production schedule, so it can be used as a substitute.

- The option should be available to save and load different versions of the MPS. This is important because draft versions of the MPS will have to be fed into the MRP system to check if production is feasible, and the user may need to refer back to a previous draft.

- The LFL lot-sizing technique is to be used, because the LFL technique helps to maintain stability and minimises the amount of material tied up, while dynamic lot-sizing techniques tended to produce system nervousness if changes were made at the top level, and caused exaggerated responses at component levels (Wemmerlov 1979).

5.2. Hardware & Software Constraints

- The system should utilise the existing inventory database, which is on the main company server. This is because the existing database contains most of the information that is required for MRP system operation.

- The existing database has been programmed in Microsoft Fox Pro 6.0.

- The system is to be installed on two desktop computers (one for the production manager and one for the stock department).

- Development tools available include:
    - Microsoft Visual Studio 6 (This includes: Visual Basic 6, Visual C++ 6 and Visual Fox Pro 6)
    - Microsoft Office 2002
    - Visual Basic for Applications

5.2.1. Existing Database

The company was just finishing the implementation of a computerised inventory system at the time the MRP project commenced. Much of the data that is required for the MRP system is contained in the inventory system database. Figure 5.1 shows the inventory system tables that are relevant to the MRP system.

The Bill of Materials in this database is split into two tables; these are *bom* and *bomitems*. The *bom* table provides descriptive information on each end item model and also assigns a key (BOM_ID). This key is then used to look up component information in the *bomitems* table such as the component code (PRODUCT_ID) and the quantity of each component required.

The *inventory* table contains information such as component descriptions (PRODUCT_NAME and ENGLISH_NAME), unit cost, units in stock, and units on order, safety stock levels and the leadtime to order a batch of components.

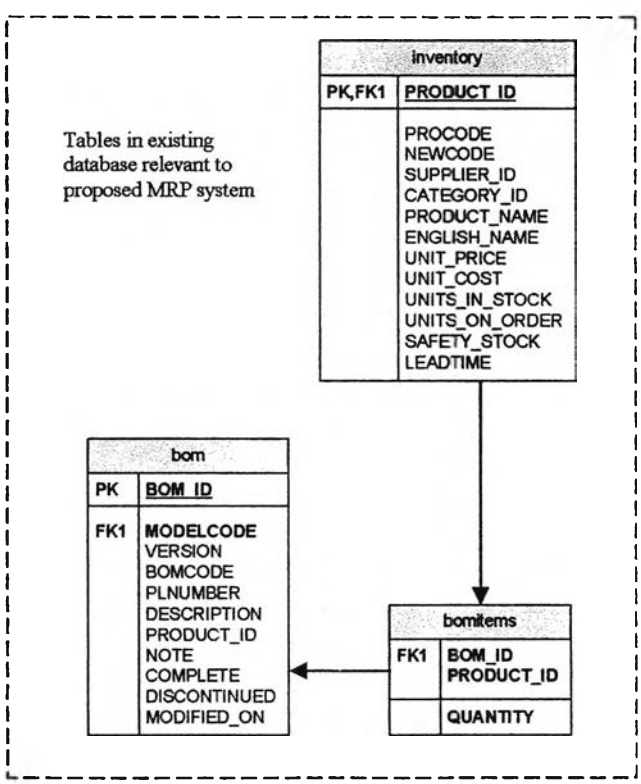

Figure 5.1 Tables in the Existing Inventory Database relevant to the MRP system.

5.2.2. Hardware

The system is expected to run on two personal computers, one being the production manager's PC, and the other being the stock department terminal. The production manager's PC is part of a ring network, which is connected to the main server via an Ethernet connection. The stock room terminal is also connected to the main server via the Ethernet connection (Figure 5.2).

The two PCs have the following specifications:

- Pentium 3 - 800MHz
- 64MB RAM
- 800 x 600 pixel maximum display resolution

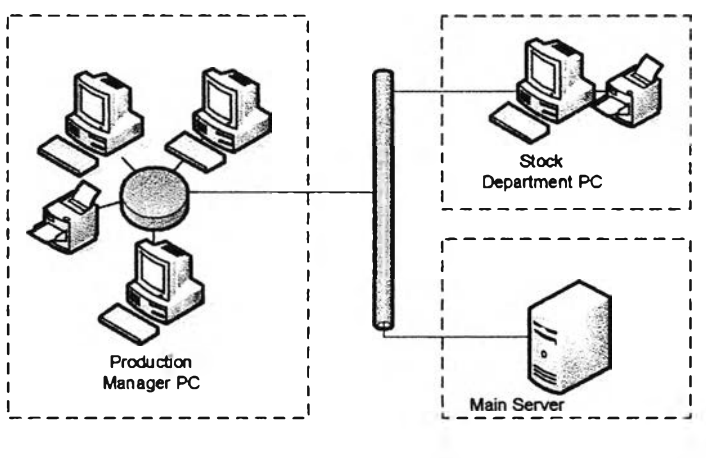

Figure 5.2 Layout of hardware within concerned departments