HW & SW Selection

There are several factors to consider prior to system selection :

1. Define the system capabilities that make sense for business. Computers have proven valuable to business in the following areas :

- Cost reduction includes reduction of the inventory, savings on space and improved ability to predict business trends
- Cost avoidance includes early detection of problems and ability to expand operations without adding clerical help.
- Improved service emphasizes quick availability of information to customers, improved accuracy and fast turnaround
- Improved profit reflects the bottom line of the business and its ability to keep receivables within reason.

2. Specify the magnitude of the problem, that is, clarify whether selections consist of a few peripherals or major decision concerning the mainframes

3. Assess the competence of the in-house staff. This involves determining the expertise needed in areas such as telecommunications and data base design. Acquiring a computer often results in securing temporary help for conversion. Planning for this help is extremely important.

4. Consider hardware and software as a package. This approach ensures compatibility. Infact, software should be considered first, because often the user secures the hardware and then wonders what software is available for it.

5. Develop a schedule for the selection process. Maintaining a schedule helps keeps the project under control

6. Provide user indoctrination. This is crucial, especially for first-time users. Selling the system to the user staff, providing adequate training, and preparing an environment a conductive to implementation are pre- requisites for system acquisition.

Major phases in selection

The selection process should be viewed as a project, and a project team should be organized with management support. In larger projects, the team includes one or more user representatives, an analyst and EDP auditor, and a consultant. Several steps make up the selection process.

1. Requirements analysis
2. System specifications
3. Request for proposal(RFP)
4. Evaluation and validation
5. Vendor selection
6. Post-installation review

Requirements analysis

The first step in selection is understanding the user's requirements within the framework of the organization's objectives and the environment in which the system is being installed. Consideration is given to the user's resources as well as to finances.

In selecting software, the user must decide whether to develop it in house, hire a software company or contract programmer to create it, or simply acquire it from a software house. The choice is logically made after the user has clearly defined the requirements expected of the software. Therefore, requirements analysis sets the tone for software selection.

System Specifications

Failure to specify system requirements before the final selection almost always results in a faulty acquisition. The specifications should delineate the user's requirements and allow room for bids from various vendors. They must reflect the actual applications to be handled by the system and include system objectives, flowcharts, input-output requirements, file structure and cost. The specifications must also describe each aspect of the system clearly, consistently and completely.

Request for Proposal

After the requirements analysis and system specifications have been determined, a request for proposal is drafted and sent to selected vendors for bidding. Bids submitted are based on discussions with vendors. At a minimum, the RFP should include the following

1. Complete statement of the system specifications, programming language, price range, terms and time frame.
2. Request for vendor's responsibilities for conversion, training and maintenance
3. Warranties and terms of license or contractual limitations.
4. Request for financial statement of vendor
5. Size of staff available for system support

Evaluation and validation

The evaluation phase ranks vendor proposals and determines the best suited to the user's needs. It looks into items such as price, availability and technical support. System validation ensures that the vendor can match his/her claims, system performance. True validation is obtained verified by having each system demonstrated. An outside consultant can be employed for consulting purpose.

Vendor selection

This step determines the winner – the vendor with the best combination of reputation, reliability, service record, training, delivery time, lease finance terms and conversion schedule. Initially a decision is made which vendor to contact. The sources available to check on vendors include the following

1. Users
2. Software houses
3. Trade associations
4. Universities
5. Publications/Journals
6. Vendor software lists
7. Vendor referral directories
8. Published directories
9. Consultants
10. Industry contacts

Post- installation Review

Sometime after the package is installed, a system evaluation is made to determine how closely the new system conforms to plan. System specifications and user requirements are audited to pinpoint and correct any differences

Software selection:

Software selection is a critical aspect for system development. There are 2 ways of acquiring the software.

- Custom -made
- Packages

Criteria for Software selection:

Reliability – It is the probability that the software will executed in a specific period of time without any failures. It is important to the professional user. It brings up the concept of modularity, or the ease which a package can be modified.

Functionality – It is the definition of the facilities, performance and other factors that the user requires in the finished product.

Capacity – Capacity refers to the capability of the software package to handle the users requirements for size of files, number of data elements, and reports. All limitations should be checked.

Flexibility – It is a measure of effort required to modify an operational program. One feature of flexibility is adaptability.

Usability – This criteria refers to the effort required to operate, prepare the input, and interpret the output of a program. Additional points considered here are portability and understandability. Portability refers to the ability of the software to be used. Understandability is the purpose of the product.

Security – It is a measure of the likelihood that a system's user can accidentally or intentionally access or destroy unauthorized data.

Performance – It is a measure of the capacity of the software package to do what it is expected to do. This criteria focuses on throughput or how effectively a package performs under peak load.

Serviceability –This criteria focuses on documentation and vendor support.

Ownership – Who owns the software ,and to consider whether he has the right to access the software, or he can sell or modify the software.

Minimal costs – Cost is a major consideration in deciding between in-house and vendor software.

Evaluation process:

There are three process for evaluating hardware and software.

1. Benchmark programs: It is a sample program for evaluating different computers and their software. It is necessary because computers often uses the same instructions, words of memory or machine cycle to solve a problem. Benchmarking includes the following

- Determination of the minimum hardware.
- An acceptance test
- Testing in an ideal environment to determine the timings and in the normal environment to determine its influence on other programs.

2. Experience of other users: Benchmarking only validates vendors' claims. Experience of other users with the same system software is essential.

3. Product reference manuals: These evaluate a system's capability. These reports elaborate on computer products, services and prices.

Evaluation of proposals:

After all proposals are evaluated, the final vendor is selected using any of the 3 methods

1. adhoc refers to the user's inclination to favor one vendor over others.

2. Scoring. In this method the characteristics of each system are listed and score is given in relation to the maximum point rating. Then each proposal is rated according to its characteristics.

3. Cost value approach. In this method a dollar credit method is applied to the proposal that meets the user's desirable characteristics. This credit is subtracted from the vendor's quoted price. The proposal with the lowest price is selected.

Performance evaluation:

Hardware selection requires an analysis on the following criteria

1. System availability
2. Compatibility
3. Cost
4. Performance
5. Uptime
6. Support
7. Usability

For the software evaluation, the following are considered

1. The programming language and its suitability to the applications
2. Ease of installation and training
3. Extent of enhancements to be made prior to installation.

In addition to hardware and software evaluation, the quality of the vendor's should be examined. Considerations to ensure vendor quality are as follows **1.Backup , 2. Conversion ,3. Maintenance , 4. System development.**