

An Effective Capacity Planning & Project Estimation

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Abstract:

The determination of production capacity for an organization is called capacity planning. Capacity planning is beneficial for both IT and business field. Sometimes, there is discrepancy between the demands of customers and capacity of an organization. The main objective of capacity planning is to minimize this discrepancy. Capacity can be maximized by introducing new techniques or methods. The accurate estimates are the basis of project planning. Many processes have been developed for making accurate estimates, such as parametric estimation, cost estimation and Delphi methods etc.

Keywords:- Capacity planning, project estimation, cost estimation etc.

I. INTRODUCTION

System capacity refers to the number of files that can be stored and the amount of each file will be hold. To show complete capacity it may be necessary to consider the specific hardware on which the software will be used. Capacity also depends on the language in which software is written. Capacity is also determined by the following:-

- The maximum size of each record measured in no. of bytes.
- The maximum size of each file measured in no. of fields per record.
- The number of files that can be active at a time.
- The number of files that can be registered in a file directory.

Capacity planning provides both IT and business benefits. It can reduce the resource expenditure, improve application infrastructure availability and help align IT with business priorities. When implemented as a continuous process, capacity planning becomes a business resource capable of helping assure business community. Capacity planning gives IT a mechanism for providing business managers with insight into the technology resources on which they depend. The understanding capacity issues puts IT and business management in control of optimizing resource allocation, ending complaints from end users and stretching the IT budget.

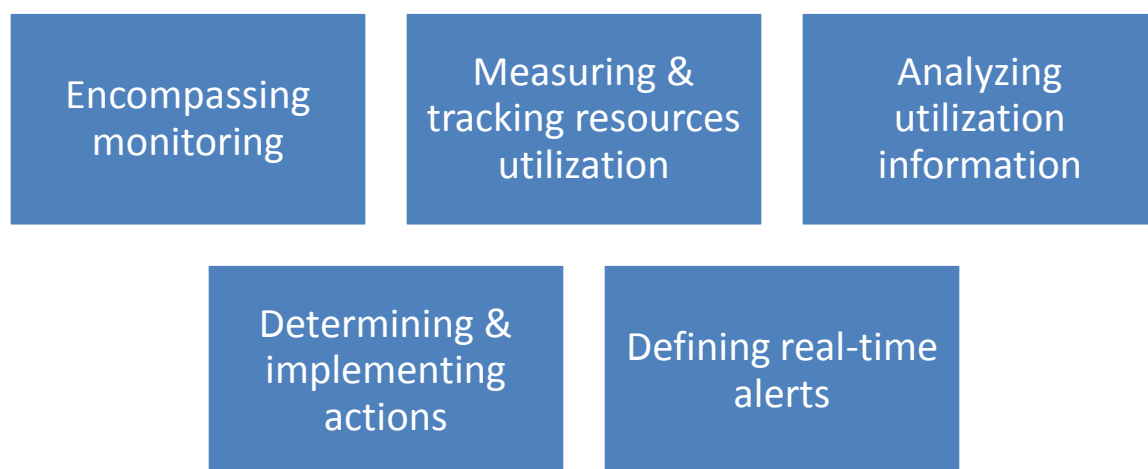


Fig:- Capacity planning process

Capacity planning is a 5 phase process:-

- Encompassing monitoring
- Measuring and tracking resources utilization
- Analyzing utilization information
- Determining and implementing actions
- Defining real-time alerts

Capacity planning represents an opportunity for IT to significantly reduce IT operating costs.

II. Estimating-What it takes to do the job

Estimation:-

Estimation is the process of reliably predicting the various parameters associated with making a product. For example, effort, cost, time and quality etc.

Estimate:- Estimate is the outcome of estimation process.

Need for software project estimation:-

1. Confidence:-

- Provides a basis for an agreement between all concerned (content, quality and estimates)
- Gains confidence of all concerned. The confidence of all concerned is very important for any software project.

2. Content:-

- Clearly defines the product. Without content you can not estimate the software project.
- Defines non-functional requirement to estimate the software project.

3. Feasibility:-

- Checks for time and budget constraints. Time and budget are suitable or not should also measure for software projects.
- Compares alternatives to estimate the software project.

4. Trade-off:-

- Provides an envelope for all project trade-offs and adjustments.
- Provides a basis for comparing alternatives due to which it provide accurate results for any software to be managed.

5. Control:-

- Enables better control over project. It is very important to control the whole process of software project.
- Facilitates re-planning. The requirements are changed within the time so control is necessary for project estimation.

Problems with software project estimation:-

Sr. no.	Reasons	Problems
1	Uniqueness of software projects	One off rather than mass production Very large human involvement. Intangibility of product
2	Customer requirements	Unclear customer requirements. Feature creep
3	Resources	Identification and availability. Compelling with other projects
4	Productivity	Level of productivity Variations in productivity
5	Change of scope/technology	Platform changes Use of new technology Absence of metrics
6	Constraints	Pressure of time Development method Use of standard

III. Prerequisites for estimation:-

1. Identify all system components

- Functions:- Beta, decision support, new release, software comparison, Software Evaluation, Software Selection, special access key, vendor data, TEC, Technology Evaluation, Technology Evaluation Centers, Technology Evaluation Centers Inc., blog, analyst, enterprise software etc.
- Data areas:- local data, global data and parameter data areas should be identified.
- Interfaces:- Commands, codes and technologies should be identified.

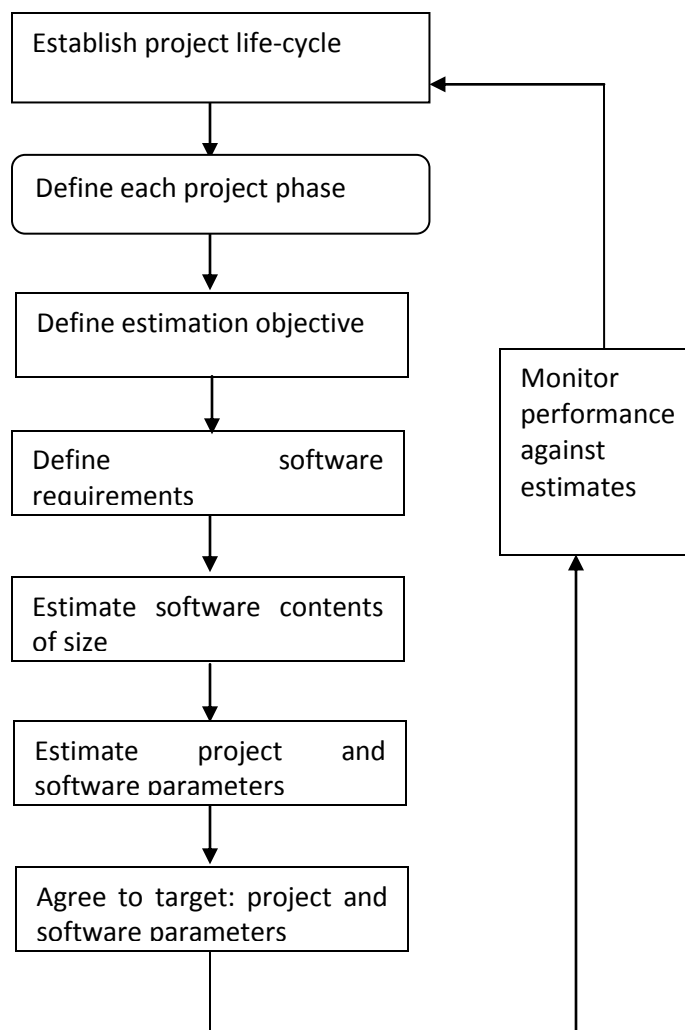
2. State all product attributes

- Level of performance/response:- The performance of software project should be high.
- Ease of modification:- All attributes should be easy to modified in software projects.
- Availability:- All components and functionalities should be available to estimate the software project.

3. Identify all ancillary work

- Database creation:- Database creation helps in project estimation.
- Training:- training of employees also help in project estimation.
- Documentation:- The documentation of projects also help in project estimation.

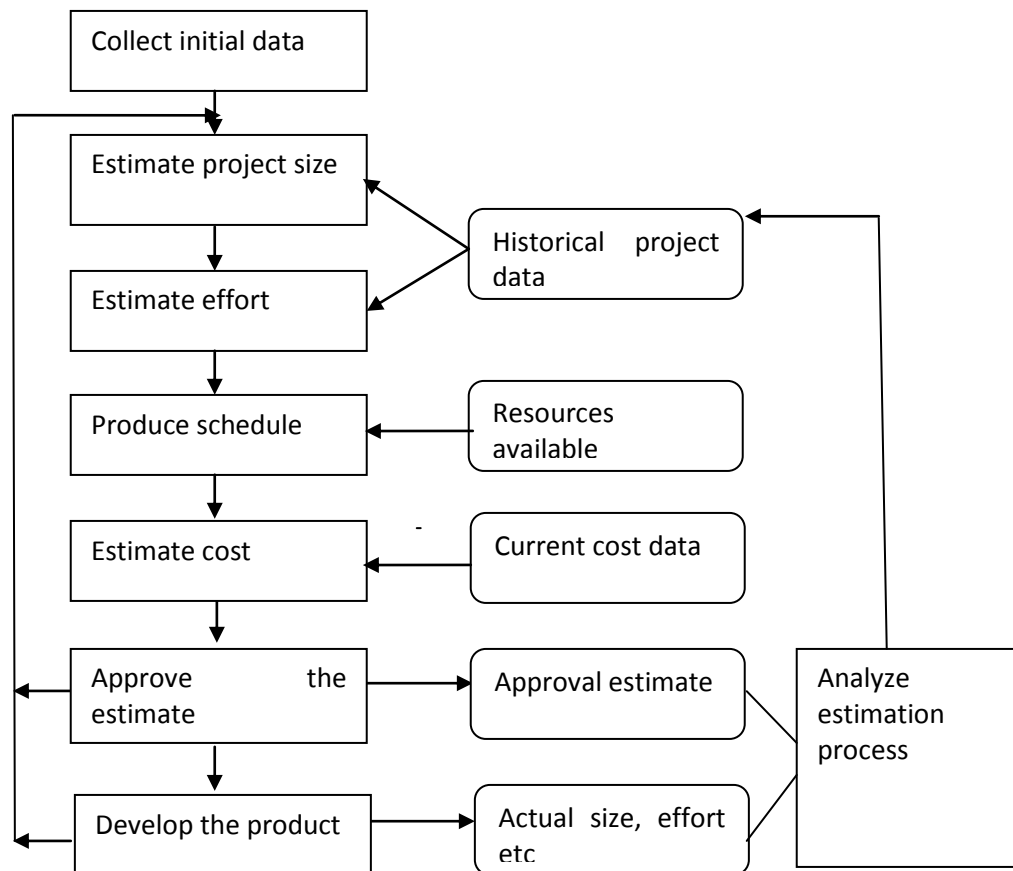
IV. Stages in software project estimation:-



Estimating cost:- (Direct and indirect):-

How you estimate the total project cost will depend on how your organization allocates cost. Some costs may not be allocated to the individual projects and may be taken care of adding an overhead values to labor rates (\$ per hour). Often, project manager will only estimate the labor cost and identify any additional project cost not considered “overhead” by organization. The simplest labor cost can be obtained by multiplying the project’s effort estimate (per hour) by a general labor rates (\$ per hour). The cost of developing a product contains many variables:

- **Direct Cost** attributed to the effort spent directly on the project.
- **Indirect cost** that occurs such as office space, company benefits etc.



V. Conclusion

An effective capacity is the maximum amount of work done by an organization in a given time. There are number of methods (cost estimation, resource estimation and schedule estimation) are used to estimate the software projects. There are number of problems due to which the software project can not be estimated. This paper helps to understand the capacity planning process and project estimation processes.

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