

1.1.1. Analysis of needs

The acquisition of a constructed facility usually represents a major capital investment, whether its owner happens to be an individual, a private corporation or a public agency. Since the commitment of resources for such an investment is motivated by market demands or perceived needs, the facility is expected to satisfy certain objectives within the constraints specified by the owner and relevant regulations. Since an owner is essentially acquiring a facility on a promise in some form of agreement, it will be wise for any owner to have a clear understanding of the acquisition process in order to maintain firm control of the quality, timeliness and cost of the completed facility.

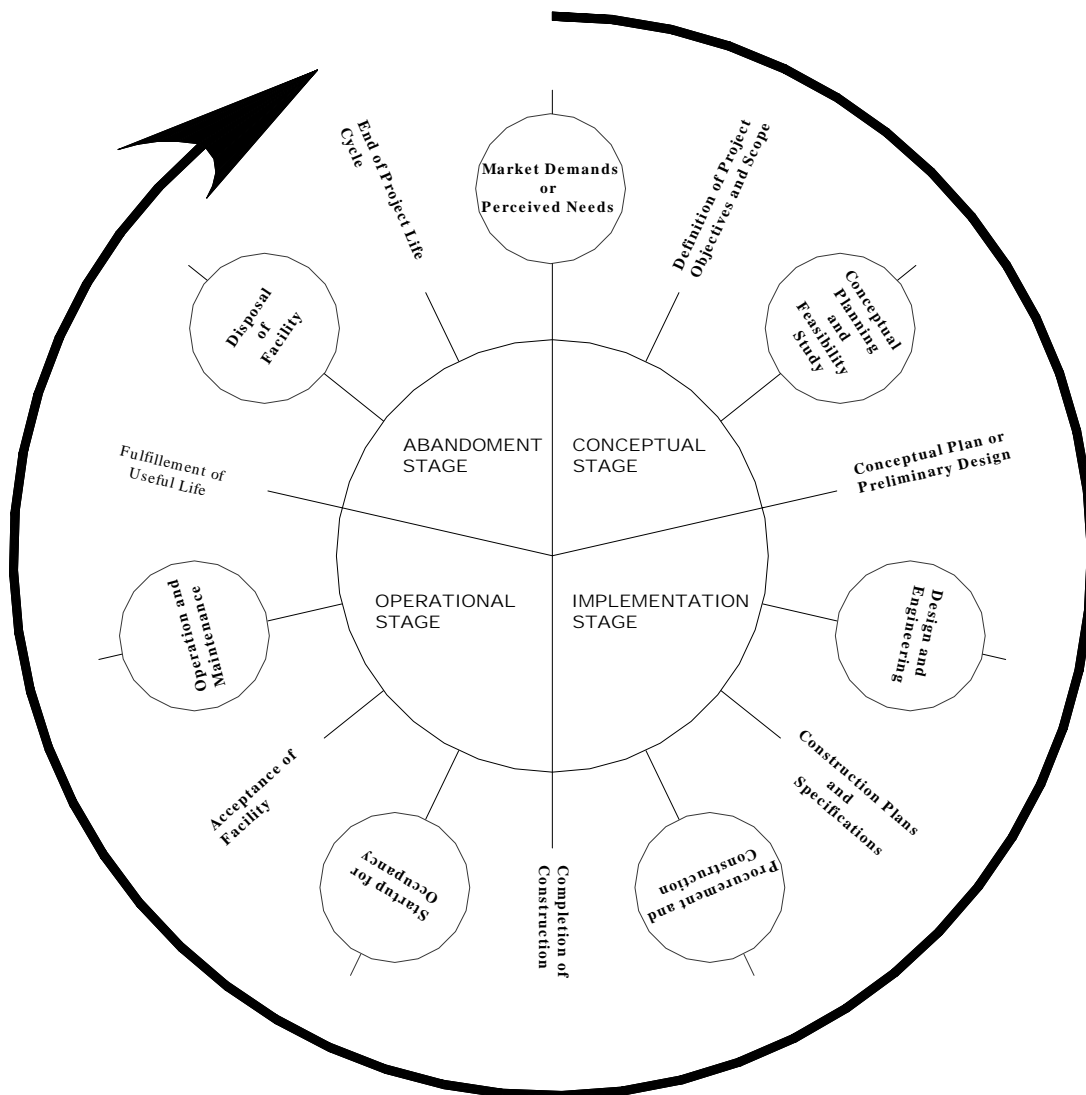


Figure 1. Project Life Cycle of a Constructed Facility.

Construction projects are intricate and time-consuming undertakings. The total development of a project normally consists of several phases requiring a diverse range of specialized services. In progressing from initial planning to project completion, the typical job passes through successive and distinct stages that demand inputs from such disparate directions as financial organizations, governmental agencies, engineers, architects, lawyers, insurance and surety companies, contractors, and building tradesmen. From the perspective of an owner, the project life cycle for a constructed facility may be illustrated schematically in Figure 1. Essentially, a project is conceived to meet market demands or needs in a timely fashion. Various possibilities will be considered in the conceptual planning stage, and the technological and economic feasibility of each alternative will be assessed and compared in order to select the best possible project. The financing schemes for the proposed alternatives will also be examined, and the project will be programmed with respect to the timing for its completion and for available cash flows. After the scope of the project is clearly defined, detailed engineering design will provide the blueprint for construction, and the definitive cost estimate will serve as the baseline for cost control. In the procurement and construction stage, the delivery of materials and the erection of the project on site must be carefully planned and controlled. After the construction is completed, there is usually a brief period of start-up or shakedown of the constructed facility when it is first occupied. Finally, the management of the facility is turned over to the owner for full occupancy until the facility lives out its useful life and is designated for demolition or conversion.

Thus the information necessary to the project manager for making important decisions must involve an understanding of preceding phases of the project or what is expected in subsequent stages.

The life cycle of the project consists of four stages.

- (1) The Conceptual Stage
- (2) The Implementation Stage
- (3) The Operational Stage and
- (4) The Abandonment Stage.

Prior to implementation of any planning in the construction management process, there has to be an establishment or identification of a “need”. The basic process of decision starts with the

recognition that there is a need for a capital improvement or for a new development. Once the owner has identified a need for the new facility, the requirements are defined and a potential solution is developed. The budgetary constraints are also delineated and the project is conceived and defined during this period.

Project definition involves establishing broad project characteristics such as location, performance criteria, size, configuration, layout, equipment, services, and other requirements put forth by the owner, which are needed to establish the general aspects of the project. During this stage the owner hires key consultants including the designer and construction manager. The definition of the work is basically the responsibility of the owner, although a design professional may be called in to provide technical assistance and advice. The most critical decision that is made during this project phase is whether to proceed with the project or not.

Project scope is the way in which one describes the boundaries of the project. It defines what a project will deliver and what it will not deliver. For larger projects, it can include the organizations affected, the transactions affected, the data types included etc.

The scope of the project must be kept current and good communication maintained with all of the team who may be involved in the various studies and financial analyses. If you look at the reasons that projects fail, it is usually the result of two problems. Either the team did not spend enough time defining the project and/or there was a lack of scope management.

After initial definition, a preliminary feasibility study will be made to determine whether the concept is technically possible. Examination of rough economic data is done to justify pursuing the project. Assuming that the project is feasible, a preliminary definition is made and very preliminary planning is done. A closer look is taken at costs and a viability study is prepared. The viability study determines the commercial feasibility of the project. Viability means that the project can be profitable or necessary to the company's operations and available at a reasonable cost. Profitability and payout for the project are calculated. The financing source for the project is established as the capital may come from the owner, from outside financing, from the sale of bonds or elsewhere. Once the source of money has been resolved, formal submission of the proposal or request for funding is made and approval is given if the project is to proceed.

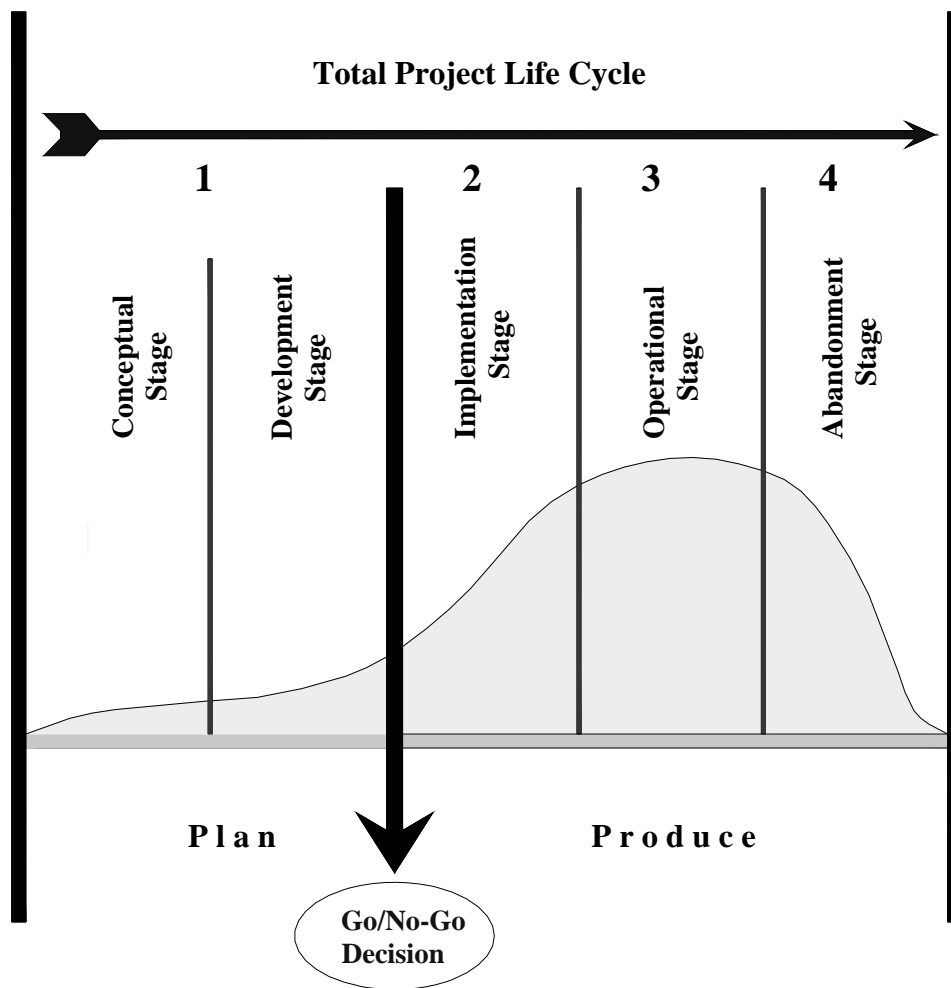


Figure 2. The stages of development.

In sum, for the conceptual planning stage of a project the owner needs to gather as much reliable information as possible about a project. This process will require hiring quite a number of design and technical consultants to help if those resources are not available within the company. Once the information is formulated the owner needs to make a decision as to whether or not to proceed with the project. This is called the go/no go decision. If the decision is go, the owner needs to select a site, establish program, a conceptual estimate, and a master schedule. The designer and construction manager should also be hired at this stage. Conceptual planning stops short of detailed design although a considerable amount of preliminary architectural or engineering work may be required.