

Early Owner Planning Leads to Project Success

Subhead to come.

by Dan Gainsboro

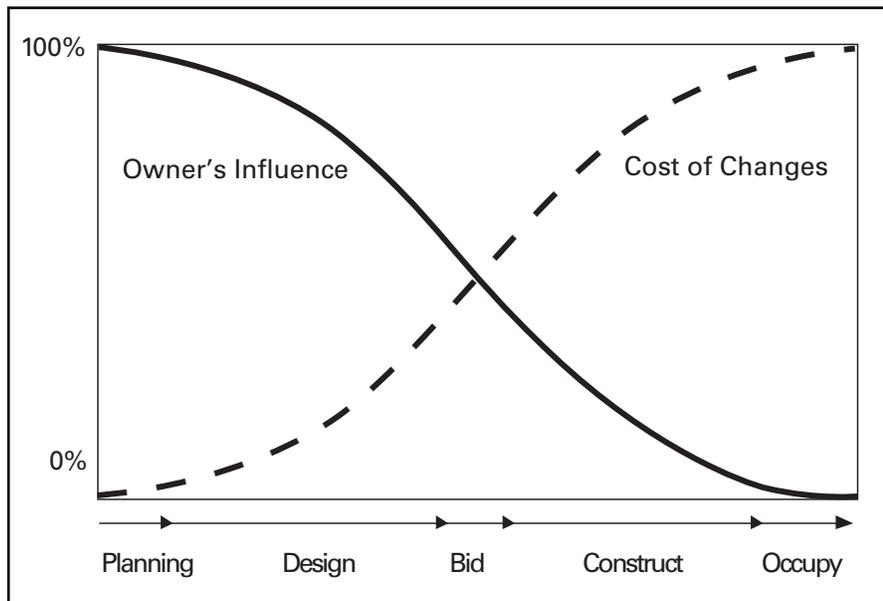
Introduction

Building projects for institutions of higher education can be complex, expensive, and lengthy. It therefore is important to carefully evaluate whether a project should be undertaken and, if so, to carefully plan how to proceed. Without a comprehensive planning phase, the project is at risk for problems such as cost overruns, schedule delays, unhappy end users, diminished political goodwill, delay in the start of new programs, and the forfeiture of a donor gift. Avoiding these problems and successfully completing a project relies as much on the quality of the initial planning as it does on the effectiveness of the collaboration among the project owner, architect, and builder during the design and construction phases.

Virtually all of the decisions in the project start-up phase are the exclusive domain of the project owner—the academic institution. The decisions made in this phase create the foundation on which all future decisions will be made. Therefore, an effective start-up phase is critical to the success of a project. In a typical institutional project, the 90/10 rule applies: decisions made in the first 10 percent of project effort determine 90 percent of a project's cost and schedule. This first 10 percent of the project is almost always the exclusive responsibility of the owner. In addition, this start-up phase represents the point at which an owner has the greatest ability to influence the outcome of a project (see figure 1). **[cr]** Furthermore, a poor or incomplete start-up phase can cause an increase in project costs of as much as 10 to 20 percent as a result of avoidable design and construction change orders. For a sense of what happens when the planning phase is not handled well, see

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Figure 1 **Owner's Influence Over Time**



the sidebar “Six Symptoms of a Project Developed Through an Incomplete Start-up Process,” which also identifies recommended approaches to handling these problems.

This article provides an overview of the key factors that contribute to a successful project start-up process. The approach discussed entails three phases of activities that must be performed by the project owner, often with help from consultants: making sure that all parties inside the institution understand the project and agree on the desired outcomes (Phase I); identifying and preparing the internal team for its role in the project (Phase II); and selecting the external team of consultants—the architects, builders, and specialty consultants who can work most effectively with the organization to bring the project to fruition on time and on budget (Phase III).

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The discussion of the three phases of project start-up is illustrated with examples to show how three colleges have used this process to improve their project outcomes. All three schools are of similar size, with 2,000 to 3,000 students. College A is a suburban business school, College B is a liberal arts college, and College C is a small urban university. The article concludes with a summary of the key implications for planners.

Phase I: Understanding the Project and Desired Outcomes

The first phase of project start-up is to develop a comprehensive understanding of the project and the desired outcomes necessary for the project to be considered a success. This comprehensive understanding of the project will serve as the foundation for Phases II and III and therefore is particularly critical to success. Developing a comprehensive understanding involves:

- assembling a cross section of the institution representing the various stakeholder interests in the project
- defining the project

Six Symptoms of a Project Developed Through an Incomplete Start-up Process

Have you worked on a project that experienced some or all of the symptoms listed below? If so, you may have skipped some of the tasks in the project start-up process. Although most of the planning tasks seem obvious, it is easy to overlook or give inadequate attention to them, particularly if they involve making hard choices or mediating between competing interests. However, if these issues are not handled properly during the planning phase, they re-emerge later as problems.

There is too much conflict between the architect and the contractor. Given the risks involved and the complexity and passion required to complete any project, a certain amount of conflict is normal. However, too much conflict prevents the project from moving ahead efficiently. Conflict therefore becomes counterproductive and must be managed. This conflict is often caused by a lack of clarity about roles, responsibilities, and expectations as well as by ineffective or insufficient owner leadership.

- Treatment: Strengthen project leadership, ensure effective team selection, select appropriate delivery system, and perform comprehensive team orientation.
- The project is behind schedule and over budget. This occurs because the budget and schedule were not adequately defined or were unrealistic.

Treatment: Align program with budget, define project goals, provide strong project leadership, and manage user group expectations.

- The team is unwilling to make decisions. This is a certain sign of problems to come or a fundamental lack of trust among team members. Most often this occurs either because the wrong set of people were involved during the project definition stage, a discussion about decision-making procedures did not take place, or the leadership team failed to unearth user group and institutional leadership project objectives.

Treatment: Define decision-making and approval process, spell out time frame for making decisions, and ensure information transfer protocols are in place.

- Morale is low. Projects tend to last a long time. Until the project moves into the construction phase it is difficult for participants to appreciate and visualize their contributions. There are plenty of opportunities to experience burnout along the way.

Treatment: Make explicit project goals, celebrate incremental project successes/milestones, and provide consistent leadership and direction.

- There are numerous change order requests. This is usually an indication of inadequate definition in the construction documents or insufficient field investigation at the project outset. It can also be a result of an owner's "creeping" wish list or a designer's failure to design within the budget. Often it is a combination of these factors.

Treatment: Develop a comprehensive understanding of the project, research project constraints, and establish team performance expectations.

- There are a large number of post-occupancy complaints. This is probably the most costly in terms of goodwill and is equally avoidable with a project start-up process. The source of the problem is similar to that noted in the "slow decision making" symptom described above.

Treatment: Involve key stakeholders early in the process, seek consensus about program/scope, and invite users to be a part of program reductions when necessary.

- conducting the planning study
- setting the project goals and measurable objectives
- testing key assumptions
- uncovering and investigating important constraints
- drafting a preliminary project implementation plan
- determining the type of management experience desired

These tasks are not always performed sequentially and often take place simultaneously.

Identify and involve key stakeholders. To develop an accurate, comprehensive, and mutually agreeable project understanding, it is essential to have representatives from a cross section of five to eight of the institution's key stakeholders—the project start-up leadership team or the “team before the team.” It is essential that the right cross section of the institution participate in this early stage to ensure that the correct problem is being addressed. To ensure key concerns are not overlooked, representatives should include at least one member who can represent the perspectives of the central administration, budget and finance, development office (if a gift or fundraising is involved), physical plant and facilities, and the programmatic needs of the project (for example, department heads or chairs who can articulate special concerns if the project is instructional space, science laboratories, or Residential Life facilities). At least a portion of the group should serve on subsequent teams to provide continuity with the original objectives.

Example 1: Identifying and involving stakeholders. College A had just completed a detailed market survey that identified a shortfall of both undergraduate and graduate student housing. The institution was accustomed to pursuing sound management practices, making quick and decisive decisions, and executing projects using an open and collaborative process. At the same time, personnel changes were taking place in both the Office of Project Management and on the Facilities and Grounds Board.

For the project to be a success, it would be essential for the college to bring the new board members representing administration and physical plant staff

(vice president of facilities management and planning, director of information technology operations, director of facilities services) and the stakeholders (representatives from Residential Life, dean of admissions, dean of MBA programs, and dean of housing) up to speed quickly and to establish a common understanding of their roles and the planning process to be pursued. Compounding the challenge were the very different sets of criteria the undergraduate and graduate projects needed to address in terms of their programs, the way in which each fit into its surroundings, and the role they would play on the campus.

Define the project. The leadership team begins the process of aligning the project goals with the needs that initiated the project. The first task is to develop an accurate and comprehensive understanding of the project. This is the step where the project start-up team identifies the problem(s) that must be solved. In the previous example, the problem to be solved was the expansion of undergraduate and graduate student housing.

At the same time, this step is the first opportunity to begin to reconcile any conflicting expectations or aspirations and to identify key questions that a planning study will need to address to determine whether the project should proceed to the design and construction phase. These initial meetings are also the first opportunity to test how much agreement there is on the project goals. A good tactic is to ask each participant at the first meeting to describe his or her view of success, the goals required to achieve that success, and what measures should be used to determine how well the goals are being met. This exercise usually identifies conflicting objectives long before much time or money has been invested and later will allow the design team to proceed efficiently and with fewer interruptions resulting from unresolved conflicts.

Example 2: Defining the project. School A had determined that it needed to expand its upper-class undergraduate housing offerings to avoid losing students to off-campus housing alternatives and, at the same time, enhance the on-campus community. A site had been identified

that was readily available and would provide a relatively simple platform on which to build. Unfortunately the site was located in the middle of a well-established freshman residence community. When we met with representatives from the student housing office and asked them for their reaction to this location, they immediately recognized that the very people we were designing for, upper-class undergraduates, would reject this location. Fortunately we were able to avoid proceeding too far down this path and a second and more suitable site was identified.

Conduct the planning survey. Often we recommend that a planning study be initiated once the project has been defined. The understanding developed in the project definition stage is not a substitute for a comprehensive planning study. Instead, the goal of developing the initial understanding is to identify all the important aspects of the project that must be explored prior to making a full commitment to the project. If critical issues are missed in the definition stage, they inevitably show up later in the project, usually at an inopportune, and typically more costly, time. This understanding also becomes the means by which the scope of the project can be communicated and validated among internal audiences (institutional stakeholders) and eventually with external audiences (consultants).

A planning study should include seven basic components: a survey of existing facility conditions and an analysis of current building code deficiencies (if the project involves the renovation of an existing facility), the development of a conceptual building program (an inventory of rooms, their approximate size, and necessary adjacencies between the rooms), conceptual layouts, a preliminary project budget, a project time line with phasing considerations, and an implementation plan.

In some circumstances, such as those described in the following example, institutions should consider outsourcing the planning study rather than conducting it in-house. Outsourcing may be beneficial when there are special needs in the design of the project with which the institutional staff has little or no experience, when adequate numbers of staff are not available to keep the project moving forward, or when it is critical for the development of an accurate cost estimate. Other reasons may be a need for the

objectivity that can be provided by external development and as a way to manage political issues on campus.

The timing of when a planning study is performed varies. Some institutions require all projects to undergo a rigorous planning study before a decision to commit funds is made. Others allow a project to progress into the design process before a decision is made to commit necessary resources. Some institutions do not require a planning study at all and wait for the design process to determine if the project should proceed to construction. However, this is not a recommended practice.

Example 3: Conducting a planning study.

The administration of College C wanted to bring a currently unused, historic wood-frame building back into active use as a new admissions office. The admissions department, on the other hand, despite a critical shortage of space, was quite content to remain in the space it had occupied for several decades. Complicating matters was a desire to expand a very successful adjacent humanities program into the space admissions was presently occupying.

To address the department's needs and concerns, the vice president of planning authorized a planning study. The purpose of this study was threefold: to demonstrate to the admissions staff that relocating to the newly renovated building could occur without compromising convenient visitor access or reducing access to the campus, that additional space requirements could be met without diminishing the quality of their space or impacting their critical admissions calendar, and finally that the facility changes would be affordable (perhaps less of a concern to the admissions staff).

To ensure that the results of the study would be considered valid and to address special project attributes such as accessibility, historic significance, and a substantial backlog of deferred maintenance needs, the vice president assembled a team consisting of outside planning

consultants. This team of consultants would work directly with a cross section of the college, including representatives from the admissions department and key members of the physical plant staff. This was the “team before the team.”

The study developed a preliminary program of spaces (both current and future), a conceptual layout and arrangement of the spaces, and a survey of the existing conditions and code deficiencies that would need to be addressed to make this facility suitable for its new use. It also considered the most appropriate delivery method and key traits and skill sets for the design and construction team.

Set project goals and measurable objectives. The definition of success in most higher education projects consists of more than one attribute. Even the standard measures of budget, schedule, and quality do not capture the range of concerns covered by most institutional projects. Instead, issues such as functional program, development potential and donor aspirations, student and parent expectations, and even peer school competition must be taken into consideration in each decision. For a project start-up team to be able to execute a project it is essential to fully define the project’s measurable success criteria. This is accomplished by completing a thorough goal-setting exercise that includes a cross section of the institutional stakeholders who must have a voice in the project. When selecting this group, it is important to understand the culture of the institution in which this goal setting is taking place. In some organizations only a small group of key decision makers is necessary. In other instances, the expectation is that virtually everyone involved in the community will have a chance to participate. In these instances goal-setting exercises must be designed to coordinate and manage this input.

A typical goal-setting exercise is a daylong focus group workshop, led by a facilitator and supported by a note taker to document the proceedings, in which stakeholders are asked to identify any goal(s) they have for the project. These goals are then organized into groups and then prioritized by the participants. It is often very helpful to have a facilitator to manage the exercise. Once the goals are prioritized, the corresponding objectives for each goal can be developed to measure how well the goal has been accomplished.

Sometimes it is helpful to take the objectives one step further and ask participants to identify specific recognizable examples that help illustrate a desired outcome. The owner can use the goals and objectives to guide the development of the planning study described previously, and, once confirmed, incorporate them into the external consultant selection process.

At a minimum, the goals must include:

- a consensus-based statement of the owner’s vision for the project
- a clear description of the programmatic needs
- a detailed conceptual budget, including order of magnitude numbers with appropriate contingencies for hard (construction, site improvement, remediation, utility infrastructure improvements, etc.) and soft (design, engineering, furniture, fixtures and equipment, information technology, testing/commissioning, and other owner expenses) costs
- a schedule identifying priorities and highlighting the major steps in the project such as institutional approvals (for example, by the Board of Trustees), funding milestones, design completion, award of the bid to a contractor, completion of construction, and occupancy and project closeout (collection of as-builts, owners’ manuals, warranties, commissioning, etc.)
- sustainability and operating imperatives (for example, the project will place no additional demands on the existing utility infrastructure and/or a definition of the building’s expected life span)
- special project considerations or unique attributes (for example, the commitment to a full restoration of a historic building)
- a financial plan indicating sources of funds to pay for the project and the time line for securing those funds to avoid starts and stops

In most cases, these initial goals will evolve as the project becomes better understood through the subsequent planning and design stages. They will become the criteria against which progress is measured and the context in which all-important decisions will be made. Without this step, owners may eagerly try to solve a problem before it has been sufficiently defined, only to discover they solved the wrong problem, as illustrated in example 2.

In addition to defining the project goals, it also is helpful to determine the priority assigned to each goal and which goals are more flexible than others. For example, a

possible goal might be to complete the project by a certain date provided it is within five percent of the project budget and causes no disruption to campus operations. The key is to understand the nature of each goal and how success will be measured. If time and budget constraints are imposed, then appropriate contingencies must be included in both master budgets and schedules and these constraints must be conveyed to the consultants.

Example 4: Clarifying goals. To establish project goals for College A's two housing projects, goal-setting exercises with both the client team and the architect selection committee were held. These two groups formed the project start-up leadership team. In the first meeting with the client team, it was clear that the undergraduate housing requirement was much better understood than the graduate housing requirement. This was evidenced by the client team's inability to define what they meant by "creating a global village" as well as a disagreement about the number of units required. It was clear that a second, more detailed goal-setting exercise, with an appropriate cross section of staff, was required to develop a better understanding of the actual need for and nature of the housing.

The second exercise, which included representatives from admissions, the dean of the graduate school, and several members of Residential Life determined that the actual immediate need was closer to 45 units than to the 60 originally projected. It also became clear from conversations that the preferred configuration was an easy-to-access, townhouse configuration rather than a single-access multi-unit building.

Test assumptions. As key stakeholders are brought on board to develop project goals, they bring with them assumptions about what the institution needs and the amount of resources available. These assumptions may include the types and sizes of space required; appropriate allowances for circulation, structural, mechanical, electrical, and plumbing systems requirements (if the physical plant participates); unrealistic completion dates; degree of

acceptable disruption to campus activities; and temporary parking needs.

All assumptions must be tested and expectations appropriately managed. Typically it is the responsibility of the start-up leadership team to align stakeholder expectations with the project goals. Involving appropriate parties in the project definition phase most often results in a much higher level of buy-in and acceptance of budget and program constraints. At the same time, it helps avoid future misunderstandings and disappointment when the project is completed.

The leadership team must ask itself and the key stakeholders a number of important strategic questions: Is the project a legitimate priority for the institution now? Can the necessary money be raised? Can the organization's infrastructure support the project? Is the suggested program really needed? Have the underlying program assumptions been validated and, if so, how? Are program requests and budget limits reconcilable? What regulatory and physical constraints will influence this project? What type of leadership will the project require and who will provide it? How will decisions be made? What is at stake if the project succeeds or fails?

Example 5: Testing assumptions about the project implementation plan. At the outset of the project, College A's architect selection committee emphasized that optimizing available funds, capitalizing on economies of scale (including costs for internal project management), and bringing the two projects online at the same time were the primary project objectives. A meeting was organized with the key stakeholders to ensure that these were truly the most important goals and that everyone was prepared to live with the compromises.

The discussion pointed out that combining the two projects to realize maximum economies of scale and pursuing a joint schedule to reduce completion times would mean there would not be enough time to develop a master plan for the graduate housing site. When weighing possible cost savings against the probability of producing housing that might be rejected by the very group

it was designed to serve, the board decided that it was more important to pursue an implementation plan that would allow for a master planning process.

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Identify and investigate important constraints.

Correcting the effects of poor early decisions later in the project often entails costly redesign work and the undoing of months of effort. Often it can also necessitate inefficient—and costly—project scope reductions to meet budget priorities (often referred to as value engineering exercises). A partial list of common constraints includes:

- *Money.* What funds are available for the project? When and how will the funds become available? What are the sources of funding: donors, reserve funds, borrowing?
- *Time.* Is there a date by which the project must be occupied, or is the completion date dependent on other factors such as fund-raising? How will the institution's academic calendar affect the project timeline?
- *Site.* Where will the new facility be located? Who will it affect? Will a land acquisition be required?
- *Regulatory.* What local, state, and federal regulations affect the project? What permits will be required? How difficult will they be to obtain?
- *Political.* Are there community issues that will affect the project? Are there internal political issues? How will the project affect the institutional culture?
- *Change.* How readily will the users accept the proposed changes?
- *Physical.* Are there adverse subsoil conditions or significant conflicts with underground utilities? Are there hazardous materials to be abated?
- *Collateral project effects.* Will this project require other program areas to be modified (for example, will this project cause other areas of the existing building to require costly code upgrades)?

Once the obvious constraints are identified, further discussion can be focused on less obvious issues that

might arise. The impact on the project as currently defined should be determined and, if necessary, alternatives or adjustments to the project considered.

Example 6: Identifying strategies to management constraints. College A's planning team identified a significant regulatory constraint in the selection of the preferred site: a multi-step zoning approval process. There was a recent history of protracted negotiations between the college and one of the two towns in which the campus is located. The town and college disagreed about allowable uses, appropriate density, and parking requirements.

The college realized that similar problems would be encountered for the proposed project, resulting in significant costs in terms of time, money, and goodwill with its neighbors. The planning team studied various alternatives and decided to manage this risk by choosing a site located entirely in the more cooperative town, thus minimizing the difficulty of attaining the necessary approvals.

Develop the preliminary project implementation

plan. An implementation plan describes how the project team (internal staff and external consultants) will progress from the clearly articulated project goals and the completed planning study to project completion. Sometimes described as "building the project on paper," it is essential that the plan identify all of the necessary tasks, deadlines, and approvals, as well as the parties responsible for each task required to complete the project. In many respects it is similar to a time line. However, a well-defined implementation plan ensures that the people involved in the project are aware of what will be required of them while exposing any unreasonable expectations. In addition, the plan must incorporate appropriate project controls, consequences, and recovery strategies in the event that actual circumstances deviate from the plan. Most often these plans take the form of a bar chart that indicates tasks, durations, and dependencies, but the plan can also be developed as a narrative overlaid on a calendar. The important point is that whatever format is used, it must be easy for participants to understand their obligation(s) and amend the plan as the project progresses.

Determine the desired type of project management experience. The last step in Phase I is to determine what type of project management experience the institution requires during the design and construction phase. If a deliberate choice is not made, the design and construction team will impose their preferred approach on the owner. This decision has a direct impact on the level and nature of involvement that the institution's project representatives (leadership and user groups) will have. The institution must decide whether project responsibility will be turned over to an outsourced project manager or whether the owner will take a hands-on approach. Will decisions be made top-down or bottom-up? Will the project use a consensus model or will there be a single decision maker? Must the project be completed as quickly as possible with the least amount of delays and surprises, or can the institution afford to take some detours along the way?

These decisions must be made in the first phase of the project start-up process because they determine the necessary preparations for the internal team and the most important traits, skills, and interpersonal chemistry required of the external team. This is essential information for the selection of the optimum external team and is a key component of the comprehensive request for proposal for various consultants undertaken in Phase III.

Example 7: Selecting a preferred management experience—the decision to outsource. Historically at College A, the Office of Project Management (OPM) controlled project development on campus, with little Board of Trustees involvement. However, several new board members with substantial building experience had joined the board. This led to a reconsideration of the board's role in project development.

After reviewing the college's standard approach to project delivery and the normal places for board input, it was agreed that the OPM would continue to be responsible for day-to-day project execution and that the board would assume responsibility for major decisions such as the selection of the most appropriate project delivery method, approval of the total project budget, and design and construction team selection.

After carefully considering the

complexity of the project being planned, the time and money constraints involved, the experience of the OPM, and the desired role the board would play in the project, it was determined that it would be in the project's best interest to hire an outside project management firm to represent the school's interest and be responsible for the day-to-day management of the project, reporting directly to the OPM.

Phase I outcome. With a clear understanding of the project, well-articulated and agreed-upon success criteria, and an honest appraisal of available financial resources, the institution knows that the project is viable. It can move now to the next phase with confidence. This start-up work also provides the basis for clearly communicating the vision of the institution to its internal and external teams. The next step is to select and develop the internal team.

Phase II: Identifying and Preparing the Internal Team

Once the project scope is understood, the internal team that will shepherd the project through design, construction, and eventually occupancy must be selected and prepared for its role in the project. The owner must decide which roles and responsibilities can be managed with in-house staff and which will need to be managed by consultants. Also, the management of participants' expectations must continue and decision-making and information management processes must be created.

The internal team is the staff within the owner's organization: those who will play leadership roles in the project, users who will provide input on the project, and others who will provide support (such as campus police, public relations, event coordinators, and environmental and health officers). As in Phase I, it is important to include members who represent a cross section of the institution. Similar to the Phase I team, a group of six to eight participants is ideal. Also, we find it useful for some members of the Phase I team to be part of this Phase II team, and some members of the Phase II team will continue on the implementation team after the project start-up phase is completed. However, the planning team must manage the expectations that this new group of stakeholders inevitably bring with them to keep the project moving smoothly. It is useful to revisit the project goals to reinforce the primary

objectives for the new participants and to resolve any legitimate conflicts before the project gets underway. As in Phase I, it is essential to resolve any conflicts before any external design phase consultants are brought on board.

Prepare the team. The preparation stage is focused on identifying existing staff capabilities: strengths and weaknesses, relevant experience, and working styles. This honest assessment permits the institution to determine the need for external consultants who can provide the complementary skills required to implement the project. This will vary from project to project, even within the same institution, due to the various needs of projects and the changing skill set of staff over time. Realistic appraisals of staff availability and knowledge are essential at this stage.

Identify roles and responsibilities. There are many people in an institution who become involved in a building project, either as support staff or as direct users of the new facility. Our experience has shown that on a major academic project (\$5 million and above), this can require as much as 12,000 staff hours or two FTEs per year over the course of the project. The project start-up process does not dictate any particular project team organization. It *does* propose that to be successful, an owner and the internal team must fill a variety of roles. Some roles can only be performed by the owner. Many roles can be performed under the direction of a single person or group, and often each person on the team can fill more than one of these roles. To fill the various roles required and determine which roles can be filled by staff and which must be filled by consultants, the owner must assess the needs of the particular project against the skills and experience of the existing available staff.

There are four contributions an owner must provide: leadership, funding, liaison between the external (consultant) project team and the institution, and decisions and approvals. In addition, someone on the internal team must be responsible for providing navigation around the political minefields, coaching the team, and managing transitions as the project evolves. One person may, of course, play several roles on the team:

- *Leadership.* Every project needs an effective leader who is able to set and manage expectations, who can create an environment where effective collaboration can take place, who can hold oneself and one's team accountable for meeting project goals, and who has the ability and authority to say "no." The project leader sets the tone for the entire project team (internal and

external) by understanding all members' roles and ensuring that they work together harmoniously toward achieving the project goals.

- *Funding.* Money is the lifeblood of any project. A savvy owner secures realistic financial commitments from funding sources and disburses funds in accordance with agreed-upon milestones and performance expectations. While this may seem obvious, more than one project has stumbled over this issue.
- *Liaison.* The success of a project depends on how well several groups of people and independent organizations can collaborate. Every project needs someone to manage the interaction between the institution and external consultants. The more hands-off the owner is, the more important this role becomes. In some cases, this liaison can be the same person as the internal project team leader; in other cases, there are benefits to having two separate people in these roles.
- *Decisions and approvals.* If money is the lifeblood of a project, then decisions are the arteries that feed the rest of the system. Every project must identify who makes the final decisions, whether it is the project leader or a group. Every project also needs a way to make time-sensitive decisions that cannot wait for a project team meeting or for board approval. This is true for both big and small decisions, because even a small decision can have a significant impact on a project if it is not made on a timely basis.
- *Internal policies.* Although somewhat similar to the liaison role, the person in this role monitors the institutional political process. The task is to both anticipate and clear the political minefields that may be encountered during the project.
- *Coaching and change management.* The person in this role monitors team morale, helps the team over bumps in the process, and reminds the team of what it is trying to accomplish. The coach is alert for team members who are protecting their individual interests rather than looking for creative, collaborative solutions to problems.

The example that follows illustrates the importance of role identification.

Example 8: Identifying roles and responsibilities. College B had just received board approval to begin an ambitious eight-year, \$200-million, multiple-building capital program. The board sought assurance that the internal planning and project management staff (a function historically performed by physical plant staff) could handle this significant increase in workload without compromising the high quality of campus operations or the quality of the student and faculty experience. The board was also interested in shifting to a more fiscally predictable outcome-based approach to project delivery.

Given the board's sensitivity to the effects of construction on the landscape and campus operations, it became essential to develop a credible implementation plan that outlined the major impacts, key decision points, mitigation programs, and responsible parties. Working with key members of the physical plant staff and the administration, the skills of the internal staff were compared to the needs of the various projects; this uncovered gaps in the project leadership team.

With this assessment of needs, the internal team could shift its focus to determining who (either in-house or through the use of consultants) would fill those roles and responsibilities. This ensured that all necessary tasks had a responsible party attached and accountable for meeting the expectations of all the major roles on the projects. One example of an opportunity that emerged from this assessment exercise was the decision to hire a single civil engineer. This decision alone enabled the college to achieve substantial economies of scale through coordinated and efficient site planning of underground utilities and earthwork activities throughout all projects.

Based on this assessment of existing

staff capabilities and availabilities, the college was able to hire an appropriate number of outside consultants to fill gaps in the existing staff's skill set. Consultants took on the following roles: a clerk of the works who was responsible for monitoring the quality of the construction, confirming adherence to plans and specifications, and managing the flow of information; a multi-project coordinator responsible for identifying cost efficiencies, opportunities for cost savings, and construction mitigation measures among the several simultaneous projects; and project managers to coordinate the large amount of furniture, finishes and equipment (FF&E), and information technology issues.

Manage expectations. At this point it should be clear that managing expectations is an ongoing task of the project leaders. In the project start-up phase, the owner begins to prepare the staff, key stakeholders, and user groups for the project by setting realistic expectations for their participation and clarifying their degree of involvement, including their relationship with external consultants. Institutions by their very nature are multi-headed organizations. Unlike many organizations that have a single point of contact and decision-making authority, higher education institutions tend to distribute essential information and decision-making authority. For a project to be universally embraced, several constituencies must be consulted and competing priorities resolved.

One of the greatest challenges facing the outside consulting team is determining which voices within an organization take precedence. To ensure constructive and efficient use of the stakeholders' time and to minimize the possibility of user discontent, it is critical to manage expectations closely. For the outside project team to succeed, it needs to know who the client is. Is the expectation that these user groups will provide information (user group participant role) or will they also have decision-making authority (more of a client role)? If they do have decision-making authority, is there a limit (dollar amount or programmatic schedule impact) to their authority? The time line and cost sensitivity of user groups is often quite different from that of the project leadership.

How the project leadership will maintain control over the budget and schedule must be considered.

Manage decision making. The next task in preparing the internal team is to decide how the team will make decisions. Understanding the institution's decision-making process is critical when developing the project schedule to ensure that decisions are made on time. Equally important, it ensures that the design and construction team is able to meet the owner's schedule objectives.

Example 9: Customizing the schedule for decision making. Developing an accelerated decision-making process for the construction phase turned out to be essential to College B's project success. Shortly into the construction phase, the project team realized that relying on the normal biweekly meeting schedule—which had worked well for the less-urgent pace of the planning and design phases—would not work if the projects were to stay on schedule. The team discussed and agreed upon a rapid response decision-making chain to ensure that all major decisions would be sufficiently considered and had received stakeholders' approval.

This process made explicit how information would be distributed and tracked; how members would communicate with each other between meetings (including the frequency, content, format, and venue); and how the team would set priorities to ensure the best use of everyone's limited time. Because of the potentially overwhelming volume of decisions to make, the team created a critical action item list that highlighted the most important issues for the week, included a time line for decision making or action steps, and identified the responsible parties.

Establish information management system. The final task in preparing the internal team involves establishing an information management and sharing system for all parties involved in the project, both internal and external. Without a smooth flow of information, the project grinds to a halt. A typical project involves an immense amount of

data flowing from the institution to the external consultants responsible for executing the project. The challenge for the institutional outsider is to have access to accurate information in a timely manner. Understanding the source and accuracy of the information is essential. Once a project is underway, the information-sharing task is a two-way street. As with decision making, having an explicit discussion about what information is required in which format and medium (e-mail, fax, telephone call) and at what frequency facilitates timely decision making by the institution.

A typical building project requires the institution to communicate with many external service providers. For these consultants to be successful, they must understand how the institution works and from whom they should take direction. To set the stage for effective collaboration, an owner must make its standard operating procedures and expectations explicit. Since most staff within an institution do not spend their days working on facility projects, they need some insight into how they can be constructive participants on the project team. There are several people behind each of the main players, further increasing the complexity of communications as they make their way through the system. Imagine the children's game of "telephone" and how a question makes its way through the large cast of characters involved in a typical project and the challenge of managing information flow becomes clear.

Example 10: Developing project planning documents to manage expectations.

College B's project team developed a comprehensive time line and a set of campus maps to indicate where construction would take place and how the planning, design, and construction process would proceed throughout the eight-year building program. The team reviewed its experience with previous projects, identified lessons learned, and developed strategies for handling issues that had caused problems in the past.

These project planning tools enabled the board, senior administrators, development office staff, the college president, and others to communicate the project scope, time line, and likely disruptions to other institutional constituents outside of the project team. At the same time, it provided the

project team with a means of measuring its progress.

The project team also involved key physical plant and facilities staff at appropriate points to help them understand how the new capital project responsibilities would be incorporated into their existing day-to-day operational and maintenance responsibilities. In addition, the project team met with other major internal stakeholders, such as information technology staff, campus police, and events coordination staff. This ensured that everyone understood how the project would affect their operations and resulted in a greater level of buy-in and ultimate project success.

Phase II outcome. The internal team is operating with realistic expectations, so the stage is set for effective collaboration with the external design and construction team. Based on the work completed in Phases I and II, the institution is now ready to select an effective external team of consultants to help complete the project.

Phase III: Selecting the External Team of Consultants

Once the owner has a clear understanding of the project and has evaluated the capabilities and availabilities of its internal team and has prepared the team for its role in the project, attention can focus on the selection of the external consultants. This is the group of outsiders who will provide the design, engineering, and construction services required to complete the project. The internal team from Phase II will now select the most appropriate delivery system, design the selection process, specify the criteria for hiring the consultants (the architect, the builder, and specialty consultants), and establish standards for the implementation team's (inside staff and external consultants) performance measures.

Hiring external service providers is an operational task that is best accomplished after the Phase I and II tasks have been addressed. Without the information gathered in these earlier phases, there is a high risk that a project will suffer unnecessary false starts, delays, and cost overruns, or result in over-payment or purchase of more services than needed. In addition, our experience has shown that

there is no time in the project when objectivity is more important than in the project start-up phase. Architects design and builders build, so their motivations may be at odds with asking and answering the fundamental questions that must be addressed in Phases I and II.

Select a delivery system. If the selection of the most appropriate delivery system was not addressed in the implementation plan portion of the planning study discussed in Phase I, the first task in Phase III is to select one of the three delivery system options (for a description of each of these options, see the sidebar "Basic Delivery System Options"). A delivery system is the means by which an owner's needs are converted from a verbal description to the three-dimensional building. Since alternative delivery systems were created to address specific needs, it is important to be clear about what is really driving the project.

We recommend that owners select the delivery system before they choose their design and construction team for several reasons. First, the nature of the project (i.e., complexity, cost control needs, disruption considerations, and schedule objectives) influences the selection of the most appropriate delivery system. Second, the amount of experience a design or construction firm has with a particular delivery system will affect its performance. Finally, the culture of the environment in which the project will take place will inform which characteristics will be most important to project success. For example, an institution that is accustomed to making changes as a project unfolds will be frustrated and pay dearly if it chooses the most traditional design-bid-build method of delivery. Choosing the right delivery system has a significant impact on the project's outcome and the owner's experience along the way and therefore provides another key piece of the external team selection puzzle.

The project goals developed in Phase I and the organizational capability assessment developed in Phase II provide guidance for determining which delivery system is best for a specific project. Both the construction management and design-build approach require effective team collaboration. For design-build to work, an owner must have a very clear idea about what the building program must include, a clear statement about quality and building performance expectations, and a very effective and timely internal decision-making process.

Example 11: Choosing a delivery system. The College B planning study recommended that a construction

Basic Delivery System Options

There are three basic delivery system options: *design-bid-build*, *construction management*, and *design-build*. However, a public college or university may be limited by state law to using a particular delivery system. In Massachusetts, for example, until recently the only choice for state-funded college and university projects was the design-bid-build approach. In addition, the state mandates that projects funded by the state must adhere to the regulations outlined in Chapter 149, a state of Massachusetts statute that requires the builder to select the lowest filed sub-contractor bid regardless of its qualifications or the history it may have with the general contractor (builder).

The *design-bid-build* approach is the most traditional and familiar of all of the delivery systems. In this approach the owner hires an architect and engineering design team to develop a set of detailed construction documents, which are then put out to bid. The owner then hires the general contractor, often based on price, to build the project. The primary advantage of this option is that it is well understood and, as mentioned above, may be mandated in publicly funded projects. However, this approach is typically the most time-consuming, most adversarial, and often least cost-effective because of its inability to deal with the inevitable changes that accompany most institutional projects.

In the *construction management* approach, on the other hand, the owner hires both the design team and the builder early in the process. The purpose of hiring a construction management firm at this early stage is to have expert input early in the process to estimate costs, determine the feasibility of the construction plans, and identify scheduling considerations that can affect the design. This approach tends to be more collaborative and enhances the probability that the design will be developed in the context of the owner's budget. However, this approach may not result in the lowest cost project.

The third delivery system is *design-build*. In this approach the owner hires a single entity that can either be one firm capable of providing design and construction services in-house or two separate firms that form a temporary entity to design and construct the project. In either case the purpose is to provide a single point of responsibility for designing and constructing the facility. The advantages typically associated with this approach include time and cost savings, particularly if an owner has a detailed understanding of the facility needs and the building program and design do not present unique challenges.

management option be pursued. This recommendation was based on the college's internal staff's familiarity with this approach, the staff's existing workload that allowed little or no time to do this work, and the specific project budget and schedule goals.

Design the selection process. Once a decision is reached about the delivery system, the internal leadership team formed in Phase II can develop the plan for selecting the external team. Like the decision about the delivery system, this plan is based on the information collected in the first two phases and amended by relevant data from any available planning studies. The leadership team must consider the nature of the organization in which the project will take place. Questions to be answered include who needs to be involved in the selection process, how much time do they have available for the process, and how many firms will be considered in the selection process.

A good selection plan will be designed around the needs, culture, and expectations of the institution and may include state-mandated bid regulations, board oversight expectations, and donor preferences, if appropriate. The more refined the selection criteria and process are, the better the process for selecting an architect and builder will be. For example, once a decision is reached about the most appropriate delivery system, the number of potential architects and builders will be reduced to those with experience in the selected delivery system and project type.

Often members of the Phase II internal team participate in the selection process. In addition, it is not unusual for additional people from within the institution and the board to be added to the selection committee. If a donor is involved, often he or she is invited to participate as well.

With the selection committee in place, the next step is to choose the most appropriate selection method. The most common options

include qualification-based selection, design competition, interview/presentation, or mini-workshop (for a description of each of these options, see the sidebar “Basic Methods for Selecting Architects and Builders”).

The third task is to determine the selection criteria that will be used to select the firm so that these criteria can be included in the request for proposal (RFP) sent to external companies as the basis for bidding on the project. Waiting until the process is underway to identify these criteria is risky because selection committee members will be bombarded by various media (for example, beautiful renderings, slick brochures, well-crafted presentations, and strong recommendations) as the process plays out.

Since each firm brings its own approach and set of strengths and weaknesses to project development, the following should be considered when developing selection criteria: project complexity, schedule (normal to compressed), user group makeup (single user or department versus multiple users and departments), project profile (low to high significance on campus or to trustees), staff experience with this type of project (none to extensive), staff availability, importance of an intimate understanding of the institution (little to extensive), importance of strong people skills, complexity of regulatory approvals, extent of renovation versus new construction, and impact on existing utility infrastructure and any sustainability goals. This selection process, if designed properly, will help the selection team evaluate how well the prospective external teams will be able to address the needs of the project.

The fourth task is to develop a pre-qualified list of potential project bidders. A pre-qualified list includes firms that have been assessed in advance of the selection process by someone on the selection team to confirm they meet the minimum standards of the selection criteria. Pre-qualifying saves time and avoids the possibility of an unqualified firm advancing through the early stages of the process only to be disqualified at a more advanced and costly stage of the selection process. There are several sources for this list. Often the physical plant department has a file of firms that have sent the institution their credentials or that may have done work for the school in the past. Alternately, peer schools and trade associations like the Society for College and University Planning (SCUP) and Association of Higher Education Facilities Officers (APPA) can provide reliable information.

The final task of developing a selection process is for the internal selection team to agree on the procedures to

Basic Methods for Selecting Architects and Builders

A *qualification-based selection*, as the name implies, involves requesting the firm provide their qualifications independent of a fee for the owner’s consideration. Once the owner narrows down the field, often to two or three firms, a fee from each firm is requested. The *design competition* approach involves presenting the firms with a design challenge and asking them to develop solutions. This can be a great way to get a sense of how the firm thinks about design and its creative skills. Often an owner will provide a small stipend to cover the cost associated with developing these solutions. This approach usually involves a smaller, more select list. The *interview/presentation* may be the most common form of selection and typically involves a preliminary stage in which the owner narrows down the field to a short list based on qualifications. Finally, the *mini-workshop* is a version of the design competition that enables the owner to get a better idea of what it will be like to work with the firm as it interacts with the owner’s team in real time. This approach tends to require more time on the owner’s part but the rewards in terms of an up-close appraisal of the firm’s skills (technical and interpersonal) tend to be well worth the investment.

use for receiving and analyzing the bids, evaluating and paring down the bid responses, preparing for the interview with bidders, and checking company references.

Example 12: Selecting the right team.

At the completion of the planning study, College C organized an architect selection committee that included physical plant personnel, the vice president of planning, trustees, and representative users of the proposed facility. The committee’s first task was to pre-qualify a list of architectural firms. The committee then developed a detailed RFP based on the findings of the planning study, including the committee’s key selection criteria and

performance expectations. The committee toured local buildings designed by the pre-qualified architects, conducted interviews with the design teams, and checked references.

The outcome: the committee members were unanimous in their choice of a design firm. The committee engaged the architects for only the specific services the project really needed, with performance expectations incorporated into the contract. Based on the information in the planning study and the RFP, the design firm thoroughly understood the project requirements and the owner's expectations and entered the project at an advanced stage of understanding. This laid a strong foundation for the start of the design process.

Set performance standards. As discussed in Phase II, one of the internal team's key responsibilities is to establish acceptable performance standards for the implementation team (internal and external groups) responsible for delivering the project, consistent with the project goals defined in Phase I. These standards are the foundation of every high-performance team and include strategies for managing expectations, holding team members accountable for staying on task and working within the plan, identifying clear and measurable milestones, and clarifying the consequences of not meeting these standards (for example, financial penalties and incentives, rework and acceleration of schedule at no charge to the project). This clarity helps the external consultants understand what will be expected of them and what they can expect from the owner and the organization.

Since one of the biggest challenges for outsiders is to understand an institution's standard operating procedures and chains of command, successful interactions begin with the leadership team making explicit what the institution takes for granted. Everyone on the team must then accept responsibility for his or her part of the project and agree to hold each other accountable for achieving the project goals. We recommend that owners incorporate these performance expectations directly into the RFP so that each prospective firm understands them even before contract negotiations are undertaken.

As the external team is assembled, the owner has another opportunity to reinforce project goals and objectives. Finally and perhaps most importantly, the project leadership team must define the consequences of not meeting agreed-upon objectives. Will the team be held financially responsible for any delays it causes? Will it be required to cover the costs of any redesign work required to bring the project back on budget? Merely assuming a team will meet such objectives and waiting to figure out what to do if they are *not* met creates a huge risk of delay and cost overrun.

Phase III outcome. The successful completion of Phase III prepares the institution for hiring its external project team. As a consequence of the careful work completed, the institution will be in the best position to select a team of consultants that is a good match for the project's needs and the institutional culture. A thorough understanding of the project removes any uncertainties the consultants may have when trying to price the job. As a result, the institution is much more likely to purchase only the services it needs.

Conclusions and Key Lessons for Institutions

Adherence to a rigorous project start-up process is the means by which an owner can achieve the same high level of professionalism and expertise in the planning phase that consultants bring to the design and construction phases of the project. The steps discussed provide ongoing clarification of issues and concerns. Furthermore, when some of the steps outlined in this process are omitted, problems ranging from excessive interpersonal conflict to avoidable cost overruns and schedule delays may occur, as indicated in previously.

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There are several key lessons to be emphasized. First, our experience has shown that project size has very little effect on the need for the project start-up planning process discussed in this article. Early planning is necessary for all projects, regardless of their size. It pays to plan because *all* building projects represent a big investment of dollars, staff time, and institutional aspirations and credibility.

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Second, while all projects have complications, the “people” aspects of any project are more complicated than the technical aspects. It therefore is critical to involve the right people in Phases I, II, and III and to ensure that their roles and responsibilities are clearly understood.

Third, the project start-up process clearly takes more time and involves a larger group of stakeholders than a less

rigorous and less inclusive process. The assistance of a project planning consultant is an additional cost. However, the investment an owner makes in laying a strong foundation for the project’s success in the start-up phase is more than offset by later savings in money, risk, time, and aggravation that can result from a poorly planned project. Often, after an institution experiences the value and more predictable outcomes a thorough start-up phase provides, it tends to embrace this approach as a standard for all facility projects.

Fourth, when goals and program parameters are well documented, architects and other consultants can price their services more competitively, with less built-in fee contingency for anticipated program changes. Minimizing owner-requested changes during the construction phase saves money because almost all change orders are more expensive than the pre-award bid cost for the same item.

Finally, an institutional owner can assure a higher level of end user satisfaction as measured by a reduction in post-occupancy complaints on all facility projects. This is a direct and happy result of the early involvement of a cross section of end users and the management of their expectations throughout the process. ❧