UNIVERSITY OF **MARYLAND**
**University College**

Learning Resource

IT Project Management

In this course, we will briefly overview what project management entails and the role of a project manager. To become a good project manager, you should complete further study in this area. Project management certificates are offered by universities such as UMUC, and there is at least one recognized certification authority—the Project Management Institute (PMI). PMI evaluates both your experience as well as your knowledge before a certification is awarded, because project management is best learned from a combination of classroom study and real-world experiences. To best understand a discussion of project management, you should be familiar with the following definitions:

Term	Definition	Examples
project	temporary endeavor undertaken to create a unique product, service, or result with a specific start and end	build a house; write a research paper; plan a wedding.
project scope	describes the work that must be accomplished to complete the project	three-bedroom, two-bath house completed and occupancy certificate obtained; research paper submitted to professor; wedding held
project manager	"expert" responsible for planning, managing, and controlling all aspects of a project	construction manager; student; wedding planner

Term	Definition	Examples
project management	the application of knowledge, skills, tools, and techniques to project activities to meet project requirements	Overseeing the construction for building the house; developing the "to-do" list for researching and writing the research paper; defining activities for the wedding planning notebook
project deliverables	concrete, tangible outcomes, results, or products generated as a result of a project	drywall completed on new house construction; first draft of research paper written; wedding invitations printed
milestones	key dates when specific, critical tasks or groups of activities are completed	March 15: electrical wiring completed; May 1: research completed; June 1: reception hall booked
contingency	anticipating delays or problems, and having an alternative solution or strategy planned	backup plumber and electrician identified in case primary contractors are unavailable; reserve an extra day before the paper is due in case of delay; have tents ready in case it rains on the wedding day

What is the role of a project manager? Is the role of an IT project manager different? A project manager must control the four key variables associated with any project: **time** (schedule), **resources** (human and financial), **scope** of work, and **quality**. The project manager leads the development of a project plan that takes all of these into consideration. Depending on the organization and scope of a project, there may be both a business project manager and a technical project manager assigned to an IT project. It is essential that the business owns the solution (fully responsible for its success). IT's role is to help the business identify the best technology solution for the business problem.

Project Management Variables
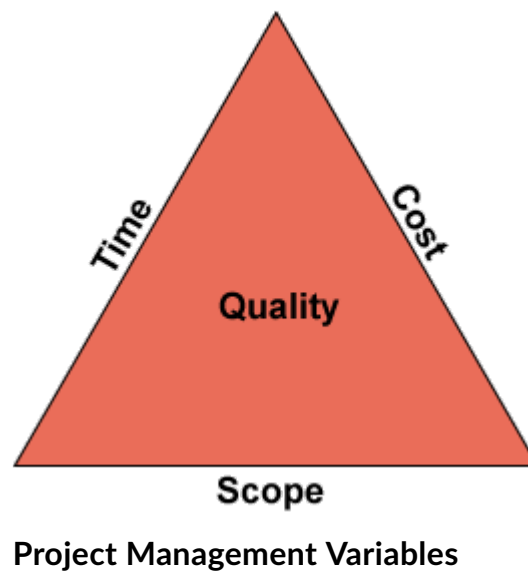
Frequently, trade-offs are required during the establishment and life of a project. Project management is the science of making intelligent, conscious trade-offs. While it is likely impossible to eliminate problems within a project of any size, having a sound project management methodology puts in place a process and means with which to deal with issues as they arise. As things change, the project manager must adjust the four variables to keep them in balance. For instance, the budget may be limited, which can restrict the scope of the work and the number of people who can work on the project. Or, the project may have a firm deadline, which can drive costs up since more people would have to be hired to complete the project on time. When any one of the four variables changes, it will have an impact on at least one (and often more than one) other variable. Time, Cost and Scope are often referred to as the Triple Constraints of project management as a change in any one of these three has an impact on the others and the project quality. A strong project manager pays close attention to the project plan and the progress of the project against the plan, and manages the variables appropriately to ensure successful completion of the project. Successful completion is accomplished if the project is delivered on time, stays within the allocated budget, and performs the required functions correctly. This role is the same for any project manager, including an IT project manager.

The project methodology provides the structure and processes to define and plan a project, monitor its progress, and evaluate its end result. A standard methodology also provides for consistency, allows the process to be refined and improved over time by incorporating lessons learned, and increases the transferability of skills among team members. Project methodologies include project initiation, project planning, and project execution.

Project Initiation

The first step is the selection of strategic projects. However, the project manager does not select the projects alone; usually that is done by senior management after the presentation of a business case that outlines the business need (problem or opportunity) and options for

potential solutions (how to address the need rather than specific products). Often a feasibility study is undertaken to determine the viability of the effort and potential solutions. The feasibility study can also include cost estimates and identify potential risks.

Project Planning

Once senior management approves the business case and allocates resources, the project manager ensures the project plan is fully developed and executed according to plan. The **project plan** provides the road map for the project. The project manager is responsible for building a realistic plan to achieve the desired results and then monitoring to ensure that tasks are completed on schedule, resources are available as planned, and key milestones and deliverables are met. Clearly defining the project scope and business requirements are key to project planning. A smart project manager makes sure that his or her plan has SMART criteria. The SMART criteria below will help to ensure that clear, understandable and measurable objectives have been established for the project:

- Specific

- Measurable

- Agreed upon

- Realistic

- Time framed

These objectives are documented in the project plan and used throughout the project's life to help keep the project on track. A sound project plan is:

- **easy to understand**—Tasks and deliverables are specifically presented in commonly understood, well-defined terms.

- **readable**—Graphical representation follows standard structure and layout.

- **communicated to all key stakeholders**—Those involved and affected know what the plan is.

- **appropriate to the project's size, complexity, and importance**—The plan is not overly involved or complicated for a minor, small-cost, short-term project, and is not too general and abbreviated for a complex, high-cost, long-term, high-priority project.

- **prepared by the team**—Project team members contribute to the project plan development, rather than a project manager developing it in a vacuum.

Project Execution

This is where the project plan provides the roadmap, and the project work is carried out. The project manager monitors progress against the plan, managing any changes and mitigating risks as they become known. Project risk management involves identifying potential events or conditions that could have a negative effect on the project, estimating the impact if the risk occurs, determining a mitigation strategy to reduce the likelihood of the risk occurring, and identifying what will be done if the event or condition actually arises. Keep in mind that the job of the project manager is to stay on top of all the variables and manage the cost, schedule (time), scope, and quality. Routine status reports are an important part of tracking the progress of the project. This monitoring process helps the project manager keep time, cost, and scope in balance. He or she must seek additional resources (money or people) or a schedule change (time) when the scope increases, and must be able to articulate the effect on quality if additional resources or a schedule change are not authorized. The project manager is responsible to senior leaders to monitor the variables, keep leadership informed, and propose solutions for changes as they occur.

For our purposes, we will assume that a correct business process redesign occurred and the best solution was chosen. So what do we need from a project management perspective? It would seem easy enough: plan the work and work the plan, and voilà! The solution is implemented on schedule and on budget.

Of course, anyone who has participated in a project knows that it rarely happens that way. Building a house gets complicated because two solid weeks of rain delay the pouring of the concrete. You thought you could conduct your term paper research on Saturday, but a friend had a ticket for the big game and you could not decline his offer; therefore, you didn't gather the information so you could begin writing your paper on Sunday. And planning a wedding—there are so many potential issues there—the bridesmaids hate their dresses, the caterer backed out, the organist broke her wrist, and so forth. You get the idea; even the best-planned project will have challenges.

The four variables are interdependent; you cannot change one without affecting the others. For example:

- Decreasing a project's time frame means either increasing the cost of the project or decreasing the scope of the project to meet the new deadline.

- Increasing a project's scope means either increasing the project's time frame or increasing the project's cost (or both) to meet the increased scope changes.

- Decreasing a project's resources (either people or money) will necessitate a reevaluation of the scope and/or the quality. The scope may need to be reduced to avoid decreasing the quality. If the scope must remain unchanged, quality will suffer.

- Increasing a project's quality requirements will require more time and money to incorporate more perfection and test all possible outcomes for correctness.

Having a well-prepared project plan can help reduce the risk of project failure, but it cannot eliminate the possibility of failure. There are many reasons why even a well-planned project can fail. Some common project problems result from mismanagement (Whitten & Bentley, 2008, p. 81):

- failure to establish upper-management commitment to the project

- poor expectations of management (expectations of users and managers not in agreement, or expectations change over the life of the project)

- premature commitment to budget and schedule

- overly optimistic

- mythical man-month (unrealistic estimate of the amount of work an individual can perform on the project)

- inadequate people-management skills

- failure to adapt to business change

- insufficient resources

- failure to work the plan

As you review this list, how many of these causes are related to hardware, software, or other technology issues? Right—none! This indicates that it is frequently the human aspect of projects that creates most of the problems and greatly increases the risk of failure. Therefore, the importance of paying attention to the softer skills of managing people on IT projects cannot be overemphasized.

If you look back at the list of causes of project failures, you will see that many connect to one or more of these interrelated elements. For example, premature commitment to budget and schedule will definitely affect the time and cost variables. Let's relate this cause to our earlier examples.

Project	Cause of Failure
Building a House	estimating the construction budget with insufficient research into the current costs of construction materials, or assuming stable pricing
Preparing a research paper	planning your schedule to complete the paper without considering other course assignments or personal requirements

Project	Cause of Failure
Planning a wedding	establishing a budget for "dear old dad" without obtaining the costs of catering the reception

Scope Management

Failure to manage the scope of a project will result in **scope creep**—the natural tendency of projects to become bigger than originally intended, with detrimental impact on cost, time, and outcome. Using our previous examples, some scope creep occurs when while building a house, we decide to add a home theater in the basement; you decide to add a PowerPoint presentation to your research paper; and the wedding reception entertainment changes from Cousin George, the DJ, to an eight-piece jazz ensemble.

Since almost no project goes exactly according to plan, the project manager needs a tool to detect and manage the changes. The process of change management is this tool. The project manager documents all approved changes, revises the project plan accordingly, and then continues managing and monitoring the project.

To minimize inadvertent scope creep, effective project managers define a **change management process** specifically related to the project. (This is different from the organizational change management strategies that relate to generally managing the changes within the organization that a new solution may create.) At the risk of oversimplifying this concept, for the purposes of our discussion, we are talking about a structured process (part of an overall project management methodology) to address changes in requirements or expectations on the specific project outcome.

As you can imagine, changes affect resources. A change may require additional staff hours, hardware and/or software costs, testing, systems configurations, and/or the assessment of impact on related IT components. There are times when these changes are necessary to maximize the intended business solution, address some unforeseen problem, or meet a changing business strategy or requirement. Having a structured methodology in place means that the change is treated as a potential mini-project:

- The requirements are documented and analyzed.

- The impact (time, money, and other resources) is analyzed, and the effects on budget and schedule are defined.

- At this point, the business sponsor or project owner may decide whether or not to proceed with the change.

In many larger organizations, a **change control board (CCB)** exists for just such situations. Representatives from the affected areas review the documentation and decide whether or not to proceed. If the decision is to proceed, the additional impact is inserted into the project plan, and appropriate adjustments are made.

What Makes an Effective Project Manager?

The critical skills needed for IT or business project managers are the ability to (1) manage people and (2) manage the project effectively. The project team can be staffed with technical expertise, but it is much more difficult, if not impossible, to make up for a project manager's shortcomings in the areas of understanding the business and addressing the human aspects. Project managers must also address team issues to help guide the project team. People should be recognized for their contributions and successes and held accountable for failing to meet commitments. Far too often, members of project teams know things aren't going well, but bolster themselves by vowing to get caught up next week. Addressing problems as early as possible in the project allows time to make corrections and help keep the project on target.

If we look back at our definition of **project manager,** it seems like this individual bears most of the responsibility for making projects successful. Although he or she may delegate various tasks, the buck frequently stops with the project manager. Because of the many hats project managers wear, the variety of skills they must have, and the constant juggling act they must perform, it is no wonder that highly capable and skilled project managers can be scarce and are in great demand. Let's look at the skills, or competencies, a good project manager must have.

Project Manager Competencies

Competencies	Description
business achievement	- connects projects with corporate strategy and objectives - partners with and involves stakeholders throughout the process - provides quality perspective

Competencies	Description
people management	- communicates effectively - facilitates team process - coaches team members to work cohesively and fosters a spirit of collaboration - provides resources and training to develop team members - prepares, monitors, and controls project plan—gathers input and adjusts as needed
problem-solving	- displays initiative to show creativity and innovation - calculates risks and prepares contingencies - applies critical thinking to problem resolutions - provides systems perspective
influence	- understands and is sensitive to interpersonal motivations and behaviors of others - is aware of corporate political landscape and can navigate it effectively - understands the implications of project decisions and manages risks - knows how to enlist cooperation and build consensus among business managers, users, and IT staff

Competencies	Description
self-management	- displays self-confidence, but with humility "walks the talk" - has personal accountability - works well under pressure and adverse conditions

Successful project managers combine knowledge and skills with experience in participating and managing projects. Lessons learned from past projects can help inform best practices to be applied to future projects. Consistent application of a sound project management methodology along with strong interpersonal and leadership skills enable project managers to help organizations gain strategic advantage through successful project delivery.

References

Whitten, J. L., & Bentley, L. D. (2008). *Introduction to systems analysis and design*. New York, NY: McGraw-Hill.