

# Chapters *To Go*



## **Project Management: A Systems Approach to Planning, Scheduling, and Controlling, Thirteenth Edition**

by Harold Kerzner  
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## Chapter 2: Project Management Growth: Concepts and Definitions

### 2.0 INTRODUCTION

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- Chapter 2 The Project Management Environment
  - Chapter 4 Project Integration Management
- 

The growth and acceptance of project management has changed significantly over the past 45 years, and these changes are expected to continue well into the twenty-first century, especially in the area of global project management.

The growth of project management can be traced through topics such as roles and responsibilities, organizational structures, delegation of authority and decision-making, and especially corporate profitability. Twenty years ago, companies had the choice of whether or not to accept the project management approach. Today, some companies foolishly think that they still have the choice. Nothing could be further from the truth. The survival of the firm may very well rest on how well project management is implemented, and how quickly.

### 2.1 THE EVOLUTION OF PROJECT MANAGEMENT: 1945–2021

During the 1940s, line managers used the concept of over-the-fence management to manage projects. Each line manager, wearing the hat of a project manager, would perform the work necessitated by their line organization, and when completed, would throw the “ball” over the fence in hopes that someone would catch it. Once the ball was thrown over the fence, the line managers would wash their hands of any responsibility for the project because the ball was no longer in their yard. If a project failed, blame was placed on whichever line manager had the ball at that time.

The problem with over-the-fence management was that the customer had no single contact point for questions. The filtering of information wasted precious time for both the customer and the contractor. Customers who wanted firsthand information had to seek out the manager in possession of the ball. For small projects, this was easy. But as projects grew in size and complexity, this became more difficult.

The Cold War arms race made it clear that the traditional use of over-the-fence management would not be acceptable to the Department of Defense (DoD). The government wanted a single point of contact, namely, a project manager who had total accountability through all project phases. The use of project management was then mandated for some of the smaller weapon systems such as jet fighters and tanks. NASA mandated the use of project management for all activities related to the space program.

By the late 1950s and early 1960s, the aerospace and defense industries were using project management on virtually all projects, and they were pressuring their suppliers to use it as well. Project management was growing, but at a relatively slow rate except for aerospace and defense.

Because of the vast number of contractors and subcontractors, the government needed standardization, especially in the planning process and the reporting of information. The government established a life-cycle planning and control model and a cost monitoring system and created a group of project management auditors to make sure that the government's money was being spent as planned. These practices were to be used on all government programs above a certain dollar value. Private industry viewed these practices as an overmanagement cost and saw no practical value in project management.

The growth of project management has come about more through necessity than through desire. Its slow growth can be attributed mainly to lack of acceptance of the new management techniques necessary for its successful implementation. An inherent fear of the unknown acted as a deterrent for managers.

Other than aerospace, defense, and construction, the majority of the companies in the 1960s maintained an informal method for managing projects. In informal project management, just as the words imply, the projects were handled on an informal basis whereby the authority of the project manager was minimized. Most projects were handled by functional managers and stayed in one or two functional lines, and formal communications were either unnecessary or handled informally because of the good working relationships between line managers. Many organizations today, such as low-technology manufacturing, have line managers who have been working side by side for 10 or more years. In such situations, informal project management may be effective on capital equipment or facility development projects.

By 1970 and again during the early 1980s, more companies departed from informal project management and restructured to

formalize the project management process, mainly because the size and complexity of their activities had grown to a point where they were unmanageable within the current structure.

By 1970, the environment began to change rapidly. Companies in aerospace, defense, and construction pioneered in implementing project management, and other industries soon followed, some with great reluctance. NASA and the DOD “forced” subcontractors into accepting project management.

Table 2–1: LIFE-CYCLE PHASES FOR PROJECT MANAGEMENT MATURITY

Embryonic Phase	Executive Management Acceptance Phase	Line Management Acceptance Phase	Growth Phase	Maturity Phase
<ul style="list-style-type: none"> <li>Recognize need</li> <li>Recognize benefits</li> <li>Recognize applications</li> <li>Recognize what must be done</li> </ul>	<ul style="list-style-type: none"> <li>Visible executive support</li> <li>Executive understanding of project management</li> <li>Project sponsorship</li> <li>Willingness to change way of doing business</li> </ul>	<ul style="list-style-type: none"> <li>Line management support</li> <li>Line management commitment</li> <li>Line management education</li> <li>Willingness to release employees for project management training</li> </ul>	<ul style="list-style-type: none"> <li>Use of life-cycle phases</li> <li>Development of a project management methodology</li> <li>Commitment to planning</li> <li>Minimization of “creeping scope”</li> <li>Selection of a project tracking system</li> </ul>	<ul style="list-style-type: none"> <li>Development of a management cost/schedule control system</li> <li>Integrating cost and schedule control</li> <li>Developing an educational program to enhance project management skills</li> </ul>

By the 1990s, companies had begun to realize that implementing project management was a necessity, not a choice. The issue was not how to implement project management, but how fast it could be done.

[Table 2–1](#) shows the typical life-cycle phases that an organization goes through to implement project management. There are seven driving forces that lead executives to recognize the need for project management:

1. Capital projects
2. Customer expectations
3. Competitiveness
4. Executive understanding
5. New project development
6. Efficiency and effectiveness
7. The need for business growth

Manufacturing companies are driven to project management because of large capital projects or a multitude of simultaneous projects. Executives soon realize the impact on cash flow and that slippages in the schedule could end up idling workers.

Companies that sell products or services, including installation, to their clients must have good project management practices. These companies are usually non–project-driven but function as though they were project-driven. These companies now sell solutions to their customers rather than products. It is almost impossible to sell complete solutions to customers without having superior project management practices because what you are actually selling is your project management expertise.

The speed by which companies reach some degree of maturity in project management is most often based on how important they perceive the driving forces to be. Non–project-driven and hybrid organizations move quickly to maturity if increased internal efficiencies and effectiveness are needed. Competitiveness is the slowest path because these types of organizations do not recognize that project management affects their competitive position directly. For project-driven organizations, the path is reversed. Competitiveness is the name of the game and the vehicle used is project management.

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- 1.2.3.4 Operations and Project Management
- 1.2.3.5 Operations Management

## Standard for Project Management

### • 3.4 Focus on Value

Table 2–2: BENEFITS OF PROJECT MANAGEMENT

Past View	Present View
<ul style="list-style-type: none"> <li>• Project management will require more people and add to the overhead costs.</li> <li>• Profitability may decrease.</li> <li>• Project management will increase the amount of scope changes.</li> <li>• Project management creates organizational instability and increases conflicts.</li> <li>• Project management is really “eye wash” for the customer's benefit.</li> <li>• Project management will create problems.</li> <li>• Only large projects need project management.</li> <li>• Project management will increase quality problems.</li> <li>• Project management will create power and authority problems.</li> <li>• Project management focuses on suboptimization by looking at only the project.</li> <li>• Project management delivers products to a customer.</li> <li>• The cost of project management may make us noncompetitive.</li> <li>• Emphasis is on the creation of deliverables.</li> <li>• Role of the project manager is to manage the project.</li> <li>• The project manager makes mainly project-related technical decisions.</li> <li>• The company recognizes project management as a career path.</li> </ul>	<ul style="list-style-type: none"> <li>• Project management allows us to accomplish more work in less time, with fewer people.</li> <li>• Profitability will increase.</li> <li>• Project management will provide better control of scope changes.</li> <li>• Project management makes the organization more efficient and effective through better organizational behavior principles.</li> <li>• Project management will allow us to work more closely with our customers.</li> <li>• Project management provides a means for solving problems.</li> <li>• All projects will benefit from project management.</li> <li>• Project management increases quality.</li> <li>• Project management will reduce power struggles.</li> <li>• Project management allows people to make good company decisions.</li> <li>• Project management delivers solutions and business value to our customers.</li> <li>• Project management will increase our business.</li> <li>• Emphasis is on the creation of business benefits and value.</li> <li>• The project manager is managing part of the business.</li> <li>• The project manager makes both technical and business decisions.</li> <li>• The company recognizes project management as a strategic competency.</li> </ul>

By the 1990s, companies finally began to recognize the benefits of project management. [Table 2–2](#) shows some of the benefits of project management and how our view of project management has changed.

In 2008, we saw the beginning of the housing market crunch in the United States and other nations. From 2008 to 2016, many companies saw a slowdown in company growth. Some companies recognized that the benefits of using project management could help them develop strategic partnerships, alliances, and joint ventures, thus providing growth opportunities. But now, in addition to the traditional project management competencies, project managers would need to understand how culture, politics and religion affect decision-making in their partner's environment. In the future, a knowledge of culture, politics, and religion may be necessary to become a global project manager.

Recognizing that the organization can benefit from the implementation of project management is just the starting point. The question now becomes “How long will it take us to achieve these benefits?” This can be partially answered from [Figure 2–1](#). In the beginning of the implementation process, there will be added expenses to develop the project management methodology and establish the support systems for planning, scheduling, and control. Eventually, the cost will level off and become pegged. The question mark in [Figure 2–1](#) is the point at which the benefits equal the cost of implementation. This point can be pushed to the left through training and education.

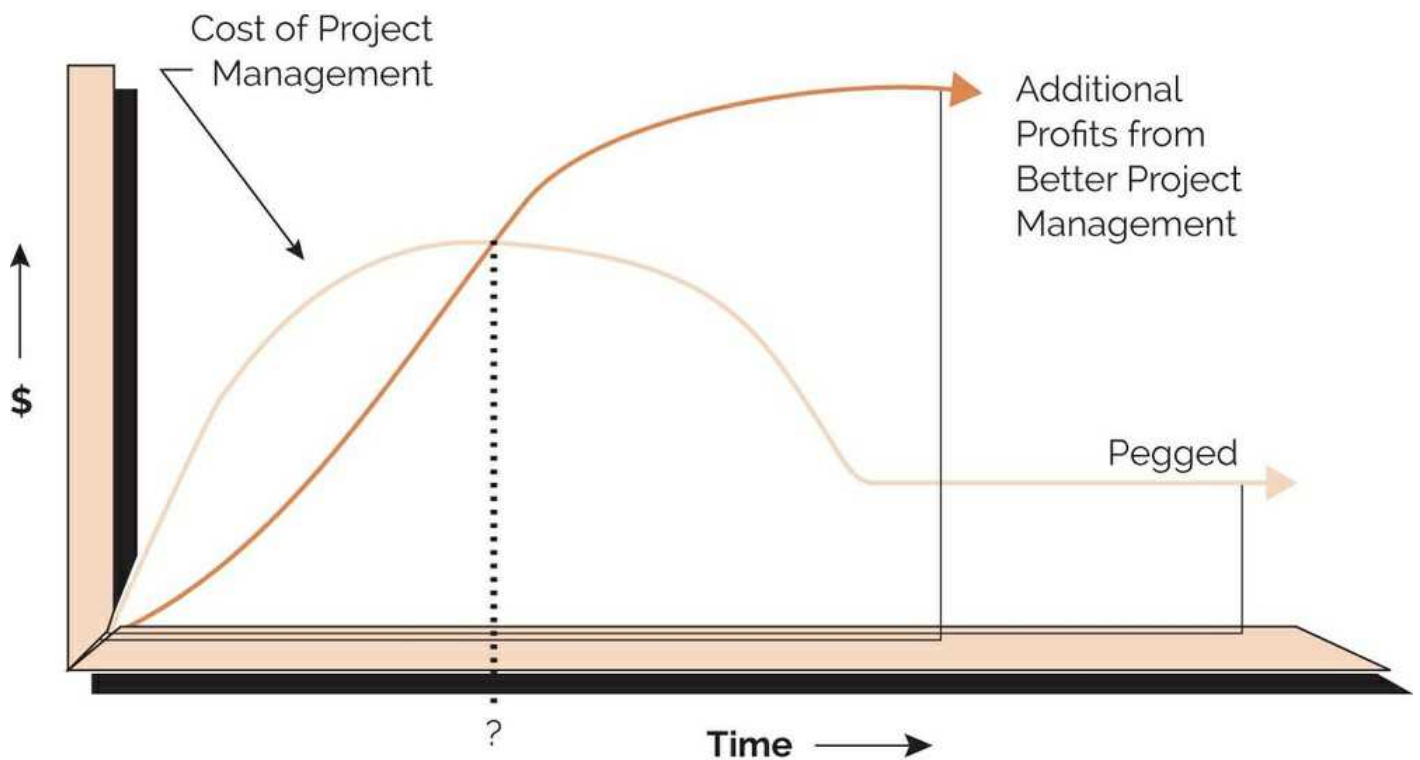


Figure 2-1: Project management costs versus benefits.

## 2.2 RESISTANCE TO CHANGE

Why was project management so difficult for companies to accept and implement? The answer is shown in [Figure 2-2](#). Historically, project management resided only in the project-driven sectors of the marketplace. In these sectors, the project managers were given the responsibility for profit and loss, which virtually forced companies to treat project management as a profession. Project managers were viewed as managing part of a business rather than just performing as a project manager.

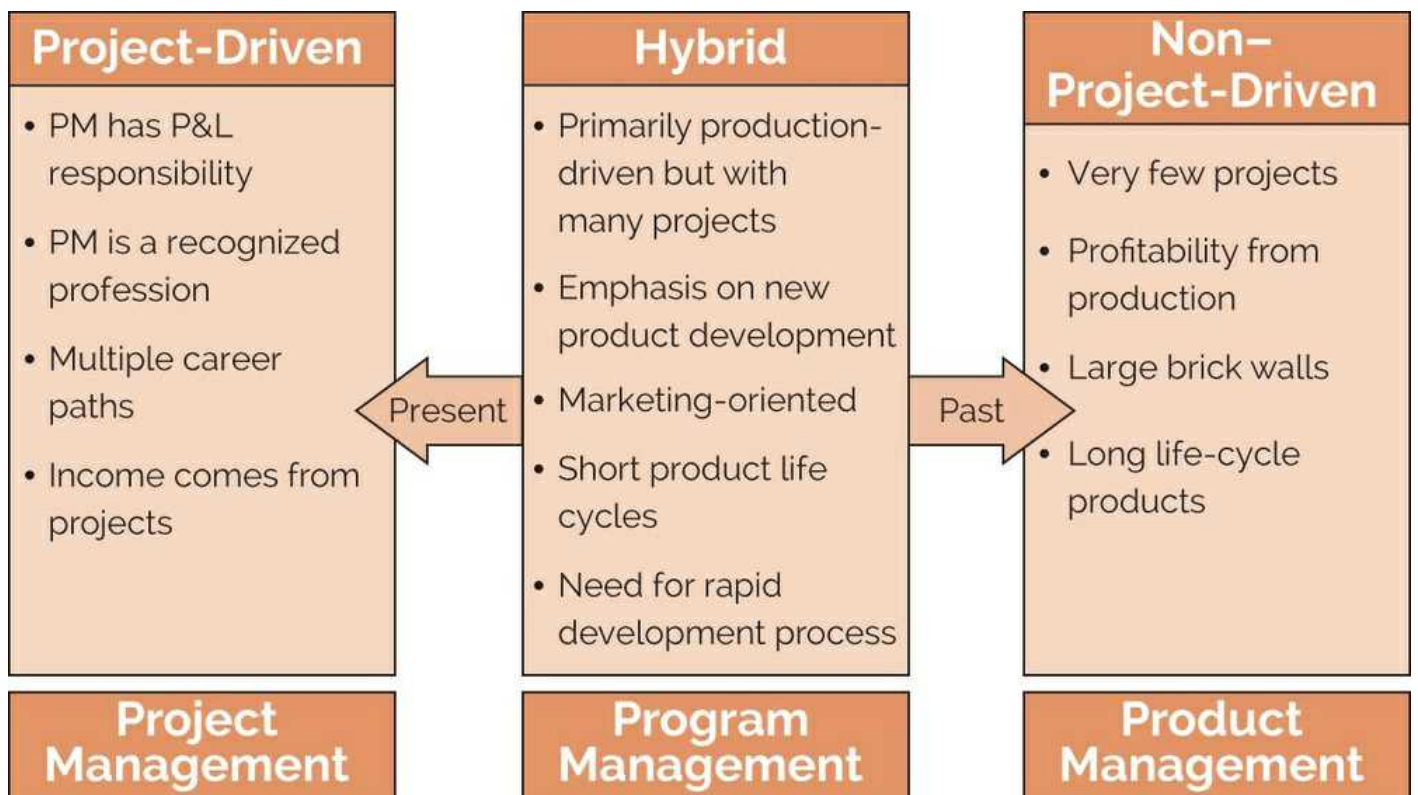


Figure 2-2: Industry classification (by project management utilization).

In the non-project-driven sectors of the marketplace, corporate survival was based on products and services, rather than on a

continuous stream of projects. Profitability was identified through marketing and sales, with very few projects having an identifiable P&L. As a result, project management in these firms was never viewed as a full-time profession.

In reality, most firms that believed that they were non-project-driven were actually hybrids. Hybrid organizations are typically non-project-driven firms with one or two divisions that are project-driven. Historically, hybrids have functioned as though they were non-project-driven, as shown in [Figure 2-2](#), but today they are functioning like project-driven firms. Why the change? Management has come to the realization that they can most effectively run their organization on a “management by project” basis, and thereby achieve the benefits of both a project management organization and a traditional organization. The rapid growth and acceptance of project management during the last 10 years has taken place in the non-project-driven/hybrid sectors. Now, project management is being promoted by marketing, engineering, and production, rather than only by the project-driven departments (see [Figure 2-3](#)).

A second factor contributing to the acceptance of project management was the economy, specifically the recessions of 1979–1983 and 1989–1993. This can be seen from [Table 2-3](#). By the end of the recession of 1979–1983, companies recognized the benefits of using project management but were reluctant to see it implemented. Companies returned to the “status quo” of traditional management. There were no allies or alternative management techniques that were promoting the use of project management.

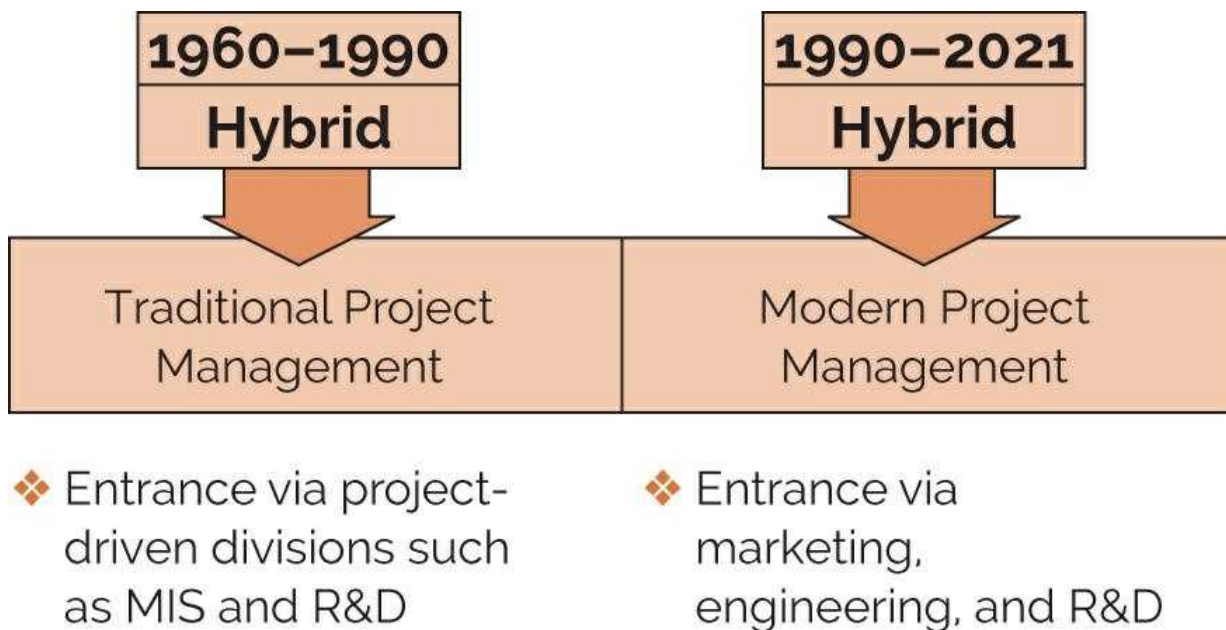


Figure 2-3: From hybrid to project-driven.

Table 2-3: RECESSIONARY EFFECTS

Recession	Characteristics				Results of the Recessions
	Layoffs	R&D	Training	Solutions Sought	
1979–1983	Blue collar	Eliminated	Eliminated	Short-term	<ul style="list-style-type: none"> <li>Return to status quo</li> </ul>
					<ul style="list-style-type: none"> <li>No project management support</li> </ul>
					<ul style="list-style-type: none"> <li>No allies for project management</li> </ul>
1989–1993	White collar	Focused	Focused	Long-term	<ul style="list-style-type: none"> <li>Change way of doing business</li> </ul>
					<ul style="list-style-type: none"> <li>Risk management</li> </ul>
					<ul style="list-style-type: none"> <li>Examine lessons learned</li> </ul>

The recession of 1989–1993 finally saw the growth of project management in the non-project-driven sector. This recession was characterized by layoffs in the white collar/management ranks. Allies for project management were appearing and emphasis was being placed on long-term solutions to problems. Project management was here to stay.

As project management continues to grow and mature, it will have more allies. In the twenty-first century, emerging world nations will come to recognize the benefits and importance of project management. Worldwide standards for project management will be established that may very well include requirements related to culture, politics, and religious aspects.

Even though project management has been in existence for more than 50 years, there are still different views and misconceptions



about what it really is. Textbooks on operations research or management science still have chapters entitled “Project Management” that discuss only PERT scheduling techniques. A textbook on organizational design recognized project management as simply another organizational form that would exist until the project was completed.

All companies sooner or later understand the basics of project management. But companies that have achieved excellence in project management have done so through successful implementation and execution of processes and methodologies.

## 2.3 SYSTEMS, PROGRAMS, AND PROJECTS: A DEFINITION

In the preceding sections, the word *systems* has been used rather loosely. The exact definition of a system depends on the users, environment, and ultimate goal. Business practitioners define a system as:

A group of elements, either human or nonhuman, that is organized and arranged in such a way that the elements can act as a whole toward achieving some common goal or objective.

Systems are collections of interacting subsystems that, if properly organized, can provide a synergistic output. Systems are characterized by their boundaries or interface conditions. For example, if the business firm system were completely isolated from the environmental system, then a *closed system* would exist, in which case management would have complete control over all system components. If the business system reacts with the environment, then the system is referred to as *open*. All social systems, for example, are categorized as open systems. Open systems must have permeable boundaries.

If a system is significantly dependent on other systems for its survival, then it is an *extended system*. Not all open systems are extended systems. Extended systems are ever-changing and can impose great hardships on individuals who desire to work in a regimented atmosphere.

Military and government organizations were the first to attempt to define the boundaries of systems, programs, and projects.

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- 1.2.3.2 Program Management

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Programs can be construed as the necessary first-level elements of a system. Additionally, they can be regarded as subsystems. However, programs are generally defined as time-phased efforts, whereas systems exist on a continuous basis.

Projects are also time-phased efforts (much shorter than programs) and are the first level of breakdown of a program. As shown in [Table 2–4](#), the government sector tends to run efforts as programs, headed up by a program manager who hopes that their program will receive government funding year after year. Today, the majority of the industrial sector uses both project and program managers. Throughout this text, I have used the terms project and program management as being the same because they are generally regulated by the same policies, procedures, and guidelines. In general, as will be discussed in Chapter 11, projects are often considered to be the first level of subdivision of a program, and programs are often longer in duration than projects. However, there are many other significant differences, such as:

- Projects may have a single objective, whereas programs may have multiple objectives with a heavy orientation toward business rather than technical objectives.
- The length of programs often makes them more susceptible to changing environmental conditions, politics, the economy, business strategy, and interest rates.
- The possibility for changing economic conditions may play havoc with pricing out long-term programs based on estimates on forward pricing rates.
- Functional managers are often reluctant to give up their best workers who are in high demand by committing them to a single program that will run for years.
- Program governance is conducted by a committee rather than by a single individual, and the membership may change over the life of the program.
- Program funding may be on a yearly basis and changes in planned funding are based on existing need, which may change from year to year, and economic conditions.
- Scope changes may occur more frequently and have a greater impact on the project.
- Rebaselining and replanning will occur more frequently.

- Based on the program's length, succession planning may be necessary for workers with critical skills.
- The loss of some workers over the length of the program may be expected because of changing positions, better opportunities in another company, and retirements.
- Workers may not believe that a long-term assignment on just one program is an opportunity for career advancement.

Table 2–4: DEFINITION SUMMARY

Level	Sector	Title
System*	—	—
Program	Government	Program managers
Project	Industry	Project managers

\* Definitions, as used here, do not include in-house industrial systems such as management information systems or shop floor control systems.

PMI has certification programs for both project and program managers and does differentiate between the two. There are textbooks written that are dedicated entirely to program management.

Once a group of tasks is selected and considered to be a project, the next step is to define the kinds of project units. There are four categories of projects:

1. *Individual projects.* These are short-duration projects normally assigned to a single individual who may be acting as both a project manager and a functional manager.
2. *Staff projects.* These are projects that can be accomplished by one organizational unit, say a department. A staff or task force is developed from each section involved. This works best if only one functional unit is involved.
3. *Special projects.* Often special projects occur that require certain primary functions and/or authority to be assigned temporarily to other individuals or units. This works best for short-duration projects. Long-term projects can lead to severe conflicts under this arrangement.
4. *Matrix or aggregate projects.* These require input from a large number of functional units and usually control vast resources. Today, many of these projects are virtual.

Project management may now be defined as the process of achieving project objectives through the traditional organizational structure and over the specialties of the individuals concerned.

## 2.4 PROJECTS VERSUS OPERATIONS

Project management is applicable for any ad hoc (unique, one-time, one-of-a-kind) undertaking concerned with a specific end objective whereas operations focus heavily on repetition and repeatable processes that have minimal deviations from an established norm.

In order to complete a task, a project manager must:

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- 1.2.2 The Importance of Project Management

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### **Standard for Project Management**

- 2.4 The Project Environment About Projects

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- Set objectives.
  - Establish plans.
  - Organize resources.
  - Provide staffing.



- Set up controls.
- Issue directives.
- Motivate personnel.
- Apply innovation for alternative actions.
- Remain flexible.

The type of project will often dictate which of these functions a project manager will be required to perform.

Operations generally focus on maintaining the business, whereas projects may focus on growing the business. However, there are projects in operations that may be needed for continuous improvement efforts to make the business more efficient and effective.

The operations environment is generally more stable than the project environment and less likely to be impacted by environmental factors. Projects are more susceptible to risks than routine operations. Most of the activities above that the project manager may do are usually performed by the functional managers in operational projects. Operational projects may reside in one functional area whereas other projects may require the integration of several functional areas and stakeholder interfacing. Operational projects may be managed by workers who view the project as an added responsibility whereas strategic projects may require a full-time assignment. Some operations have minimal risks and exist in an environment of rigid policies and procedures. Additional differences will be discussed in [Section 2.20](#).

## 2.5 PRODUCT VERSUS PROJECT MANAGEMENT: A DEFINITION

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### *PMBOK® Guide, 6th Edition*

- 4.1.1 Inputs to Project Charter
- 5.0 Project Scope Management

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### Standard for Project Management

- 2.5 Product Management Considerations

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Some people mistakenly argue that there is no major difference between a project and a program other than the time duration. Project managers focus on the end date of their project from the day they are assigned as project manager. Program managers usually have a much longer time frame than project managers and never want to see their program come to an end. In the early years of project management with the DOD serving as the primary customer, aerospace and defense project managers were called program managers because the intent was to get follow-on government contracts each year.

But what about the definition of product management or product line management? Product managers function closely like program managers. The product manager wants his or her product to be as long-lived as possible and as profitable as possible. Even when the demand for the product diminishes, the product manager will always look for spin-offs to keep a product alive.

There is also a difference between project and product scope:

- *Project scope* defines the work that must be accomplished to produce a deliverable with specified features or functions. The deliverable can be a product, service, or other result.
- *Product scope* defines the features or functions that characterize the deliverable.

There is a relationship between project and product management. When the project is in the R&D phase, a project manager is involved. Once the product is developed and introduced into the marketplace, the product manager takes control. In some situations, the project manager can become the product manager. Product and project management can, and do, exist concurrently within companies.

Product management can operate horizontally as well as vertically. When a product is shown horizontally on the organizational chart, the implication is that the product line is not big enough to control its own resources full-time and therefore shares key functional resources. If the product line were large enough to control its own resources full-time, it would be shown as a separate division or a vertical line on the organization chart.

Based on the nature of the project, the project manager (or project engineer) can report to a marketing-type person. The reason is that technically oriented project leaders get too involved with the technical details of the project and lose sight of when and how to “kill” a project. Remember, most technical leaders have been trained in an academic rather than a business environment. Their commitment to success often does not take into account such important parameters as return on investment, profitability, competition, and marketability. This is one of the reasons why some project plans and project business cases identify an “exit criteria” that states under what circumstances the project should be canceled or possibly redirected toward a different business outcome.

To alleviate these problems, project managers and project engineers, especially on R&D-type projects, are now reporting to marketing so that marketing input will be included in all R&D decisions because of the high costs incurred during R&D. Executives must exercise caution with regard to this structure in which both product and project managers report to the marketing function. The marketing executive could become the focal point of the entire organization, with the capability of building a very large empire.

## 2.6 MATURITY AND EXCELLENCE: A DEFINITION

Some people contend that maturity and excellence in project management are the same. Unfortunately, this is not the case. Consider the following definition:

Maturity in project management is the implementation of a standard methodology and accompanying processes such that there exists a high likelihood of repeated successes.

This definition is supported by the life-cycle phases shown in [Table 2–1](#). Maturity implies that the proper foundation of tools, techniques, processes, and even culture, exists. When projects come to an end, there is usually a debriefing with senior management to discuss how well the methodology was used and to recommend changes. This debriefing looks at *key performance indicators*, which are shared learning topics, and allows the organization to maximize what it does right and to correct what it did wrong.

The definition of excellence can be stated as:

Organizations excellent in project management are those that create the environment in which there exists a *continuous* stream of successfully managed projects and where success is measured by what is in the best interest of *both* the company and the project (i.e., customer).

Excellence goes well beyond maturity. You must have maturity to achieve repetitive excellence. [Figure 2–4](#) shows that once the organization completes the first four life-cycle phases in [Table 2–1](#), it may take two years or more to reach some initial levels of maturity. Excellence, if achievable at all, may take an additional five years or more.

[Figure 2–4](#) also brings out another important fact. During maturity, more successes than failures occur. During excellence, we obtain a continuous stream of successful projects. Yet, even after having achieved excellence, there will still be some failures.

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Executives who always make the right decision are not making enough decisions. Likewise, organizations in which all projects are completed successfully are not taking enough risks and are not working on enough projects.

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It is unrealistic to believe that all projects will be completed successfully. Some people contend that the only true project failures are the ones from which nothing is learned. Failure can be viewed as success if the failure is identified early enough so that the resources can be reassigned to other more opportunistic activities.

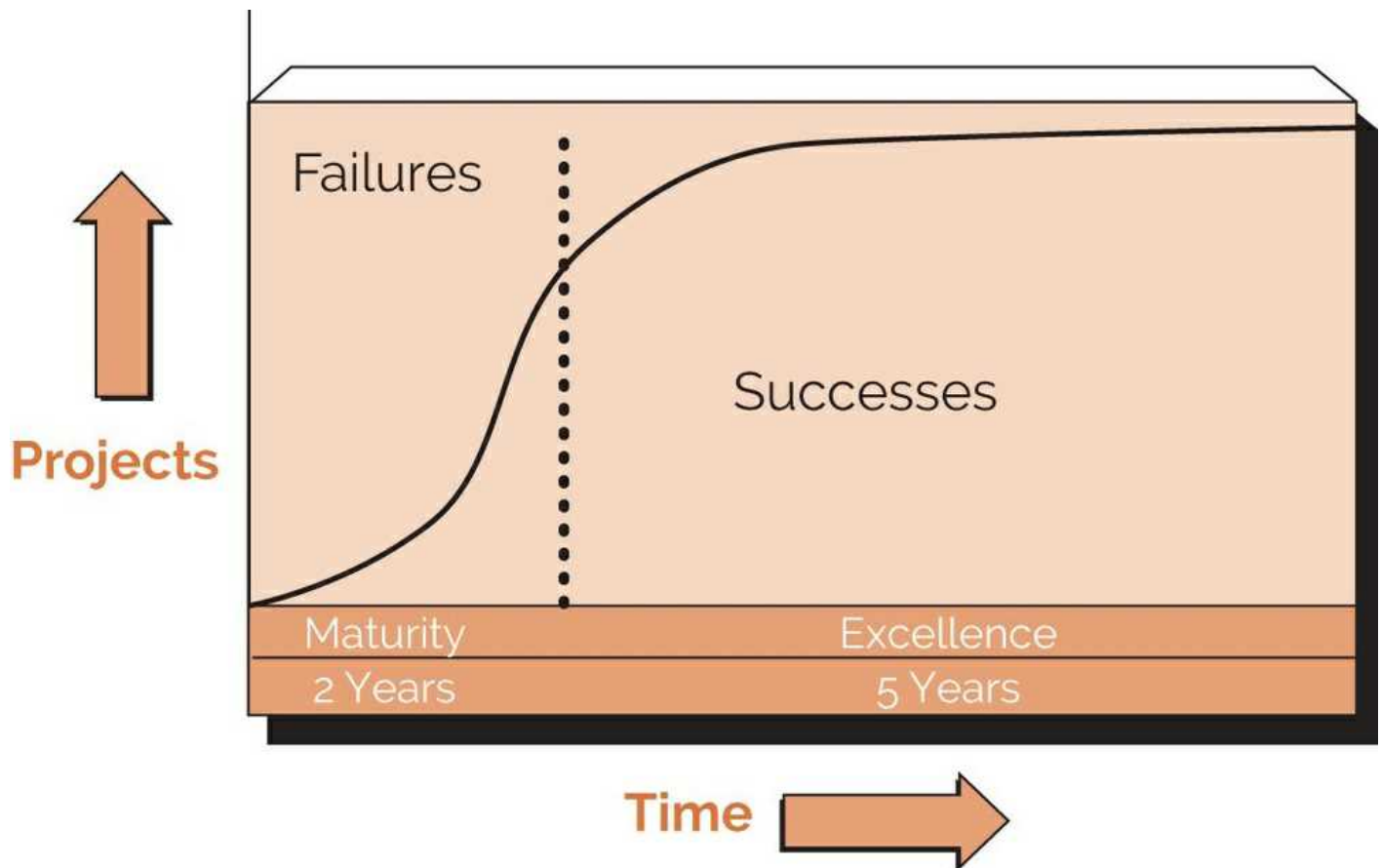


Figure 2-4: The growth of excellence.

Maturity in project management is often measured by our obedience in the use of standardized processes and tools. When excellence in project management occurs, standardized processes are replaced by flexible processes, and new tools are used to reduce waste and streamline efforts.

## 2.7 INFORMAL PROJECT MANAGEMENT: A DEFINITION

Companies today are managing projects more informally than before. Informal project management does have some degree of formality but emphasizes managing the project with a minimum amount of paperwork. Furthermore, informal project management is based on guidelines rather than the policies and procedures that are the basis for formal project management. This was shown previously to be a characteristic of a good project management methodology. Informal project management mandates effective communications, effective cooperation, effective teamwork, and trust.

These four elements are absolutely essential for effective informal project management. [Figure 2-5](#) shows the evolution of project documentation over the years. As companies become mature in project management, emphasis is on guidelines and checklists. [Figure 2-6](#) shows the critical issues as project management matures toward more informality.

As a final note, not all companies have the luxury of using informal project management. Customers often have a strong voice in whether formal or informal project management will be used. Dashboard reporting of project status accompanied by some degree of project management maturity has more companies leaning toward informal project management.

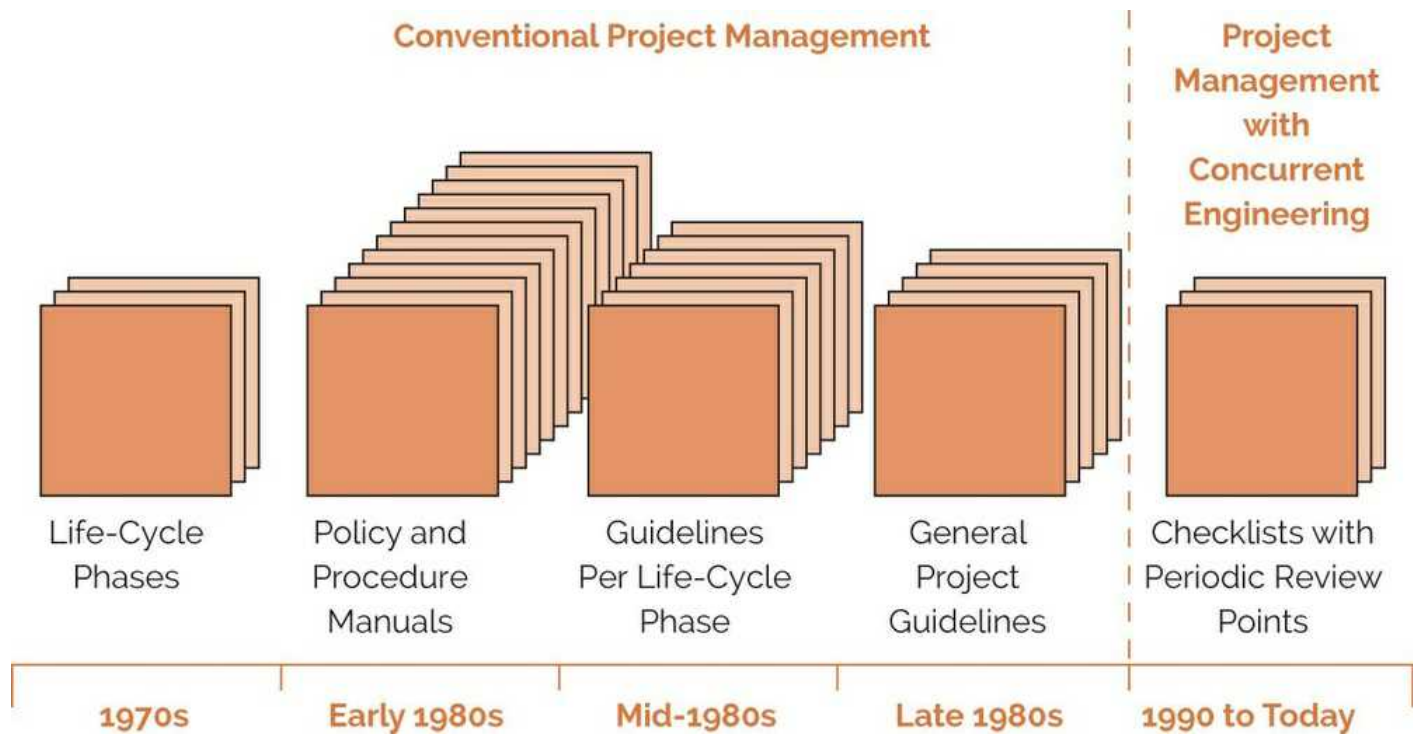


Figure 2–5: Evolution of policies, procedures, and guidelines. *Source:* Reprinted from H. Kerzner, *In Search of Excellence in Project Management* (New York: John Wiley & Sons, 1998), p. 196.

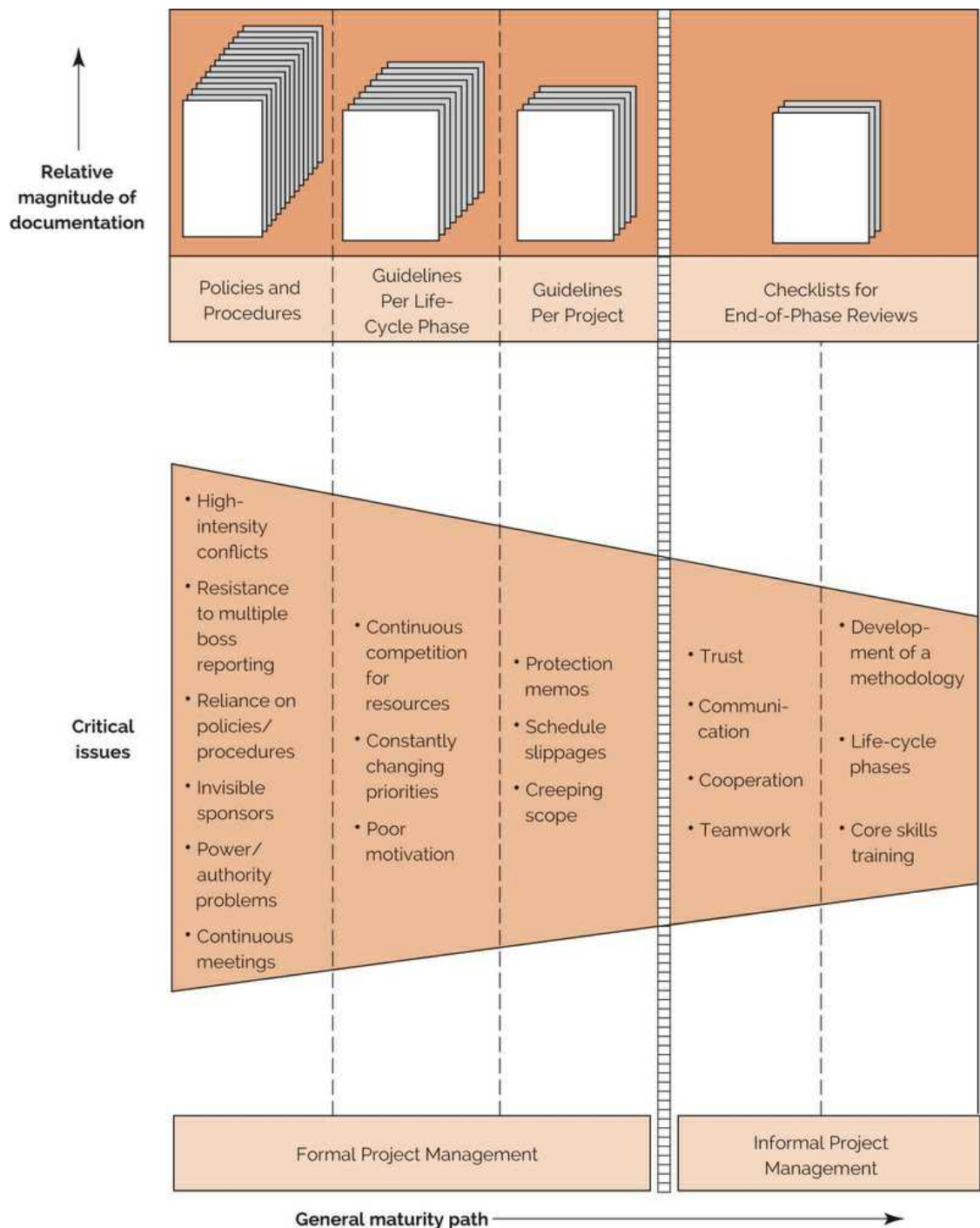


Figure 2-6: Maturity path.

## 2.8 THE MANY FACES OF SUCCESS

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- 1.2.6.4 Project Success Measures

Historically, the definition of success has been meeting the customer's expectations regardless of whether the customer is internal or external. Success also includes getting the job done within the constraints of time, cost, quality, and any other competing constraints. Using this standard definition, success is defined as a point on the time, cost, quality/performance grid. But how many projects, especially those requiring innovation, are accomplished at this point?

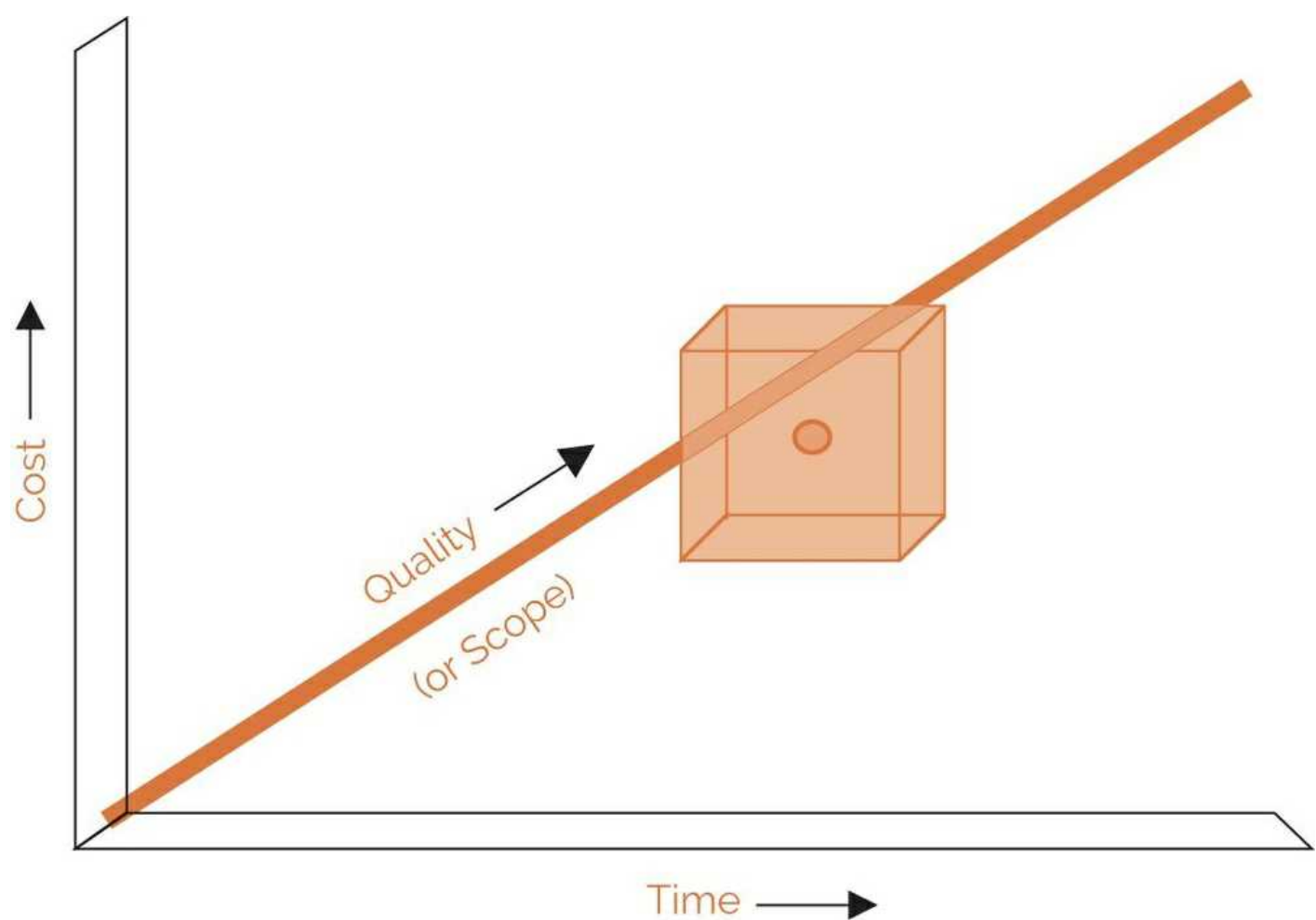


Figure 2–7: Success: point or cube?

Very few projects are ever completed without trade-offs or scope changes on time, cost, and quality. Therefore, success could still occur without exactly hitting this singular point. In this regard, success could be defined as a cube, such as seen in [Figure 2–7](#). The singular point of time, cost, and quality would be a point within the cube, constituting the convergence of the critical success factors (CSFs) for the project.

Another factor to consider is that there may exist both primary and secondary definitions of success, as shown in [Table 2–5](#). The primary definitions of success are seen through the eyes of the customer. The secondary definitions of success are usually internal benefits. If achieving 86 percent of the specification is acceptable to the customer and follow-on work is received, then the original project might very well be considered a success.

Table 2–5: SUCCESS FACTORS

Primary	Secondary
<ul style="list-style-type: none"><li>• Within time</li></ul>	<ul style="list-style-type: none"><li>• Follow-on work from this customer</li></ul>
<ul style="list-style-type: none"><li>• Within cost</li></ul>	<ul style="list-style-type: none"><li>• Using the customer's name as a reference on your literature</li></ul>
<ul style="list-style-type: none"><li>• Within quality limits</li></ul>	<ul style="list-style-type: none"><li>• Commercialization of a product</li></ul>
<ul style="list-style-type: none"><li>• Accepted by the customer</li></ul>	<ul style="list-style-type: none"><li>• With minimum or mutually agreed upon scope changes</li><li>• Without disturbing the main flow of work</li><li>• Without changing the corporate culture</li><li>• Without violating safety requirements</li><li>• Providing efficiency and effectiveness of operations</li><li>• Satisfying OSHA/EPA requirements</li><li>• Maintaining ethical conduct</li></ul>



Table 2–5: SUCCESS FACTORS

Primary	Secondary
	<ul style="list-style-type: none"><li>• Providing a strategic alignment</li><li>• Maintaining a corporate reputation</li><li>• Maintaining regulatory agency relations</li></ul>

The definition of success can also vary according to who the stakeholder is. For example, each of the following can have his or her own definition of success on a project:

- Consumers: safety in its use
- Employees: guaranteed employment
- Management: bonuses
- Stockholders: profitability
- Government agencies: compliance with federal regulations

It is possible for a project management methodology to identify primary and secondary success factors. This could provide guidance to a project manager for the development of a risk management plan and for deciding which risks are worth taking and which are not.

As stated in Section 1.0, projects are now being aligned to business goals and objectives. This applies to programs as well as projects. In addition to the alignment, the output of projects and programs is now expected to create sustainable business value. All of this has forced us to rethink our definitions of projects, programs, and how we will measure success. [Table 2–6](#) shows how some of the definitions will most likely change in the future. The traditional definitions are still applicable today, but there is a need, at least in the author's opinion, to include business and value components. Consuming resources on projects and programs that are not intended to create sustainable business value may not be a good business decision.

Customers and contractors must come to an agreement on the definition of success. A project manager was managing a large project for a government agency. The project manager asked one of the vice presidents in his company, “What's our company's definition of success on the project for this government agency?” The vice president responded, “Meeting the profit margins we stated in our proposal.” The project manager then responded, “Do you think the government agency has the same definition of project success as we do?” The conversation then ended.

When the customer and the contractor are working toward different definitions of success, decision-making becomes suboptimal and each party makes decisions in their own best interest. In an ideal situation, the customer and the contractor will establish a mutually agreed upon definition of success that both parties can live with.

Table 2–6: TRADITIONAL AND FUTURE DEFINITIONS

Factor	Traditional Definition	Future Definition
Project	A temporary endeavor undertaken to create a unique product, service or result*	A collection of sustainable business value scheduled for realization
Program	Achieving a set of business goals through the coordinated management of interdependent projects over a finite period of time*	A collection of projects designed to achieve a business purpose and create sustainable business value within the established competing constraints
Success	Completion of the projects or programs within the triple constraints of time, cost and scope	Achieving the desired business benefits and value within the competing constraints
* Based on PMBOK® Guide, 5th edition, Glossary of terms.		

While it is possible that no such agreement can be reached, a good starting point is to view the project through the eyes of the other party. As stated by Rachel Alt-Simmons<sup>[1]</sup>:

All too often, we take an inside-out perspective. What this means is that we see a customer's journey from how we engage with them as a company, not how they engage with us as a consumer. A helpful tool in identifying how customers engage with us is by creating a customer journey map. The journey map helps identify all paths customers take in achieving their goal from start to finish. By looking at your organization through your customers' eyes, you can begin to better understand the challenges that a customer faces in doing business with your organization. The team sees the customer outside of product or functional silos and helps link pieces of a customer process across the

organization. Often, teams find out that potential solutions for problems that they're identifying extend outside of their functional realm – and that's okay!

[1] Rachel Alt-Simmons, *Agile by Design* (Hoboken, NJ: John Wiley, 2016), p. 33.

## 2.9 THE MANY FACES OF FAILURE

Previously we stated that success might be a cube rather than a point. If we stay within the cube but miss the point, is that a failure? Probably not! The true definition of failure is when the final results are not what were expected, even though the original expectations may or may not have been reasonable. Sometimes customers and even internal executives set performance targets that are totally unrealistic in hopes of achieving 80–90 percent. For simplicity's sake, let us define failure as unmet expectations.

With unmeetable expectations, failure is virtually assured since we have defined failure as unmet expectations. This is called a *planning failure* and is the difference between what was planned and what was, in fact, achieved. The second component of failure is poor performance or *actual failure*. This is the difference between what was achievable and what was actually accomplished.

*Perceived failure* is the net sum of *actual failure* and *planning failure*. Figures 2–8 and 2–9 illustrate the components of perceived failure. In Figure 2–8, project management has planned a level of accomplishment (C) lower than what is achievable given project circumstances and resources (D). This is a classic underplanning situation. Actual accomplishment (B), however, was less than planned.

A slightly different case is illustrated in Figure 2–9. Here, we have planned to accomplish more than is achievable. Planning failure is again assured even if no actual failure occurs. In both of these situations (overplanning and underplanning), the actual failure is the same, but the perceived failure can vary considerably.

Today, most project management practitioners focus on the *planning failure* term. If this term can be compressed or even eliminated, then the magnitude of the actual failure, should it occur, would be diminished. A good project management methodology helps to reduce this term. We now believe that the existence of this term is largely due to the project manager's inability to perform effective risk management. In the 1980s, the failure of a project was believed to be largely a quantitative failure due to:

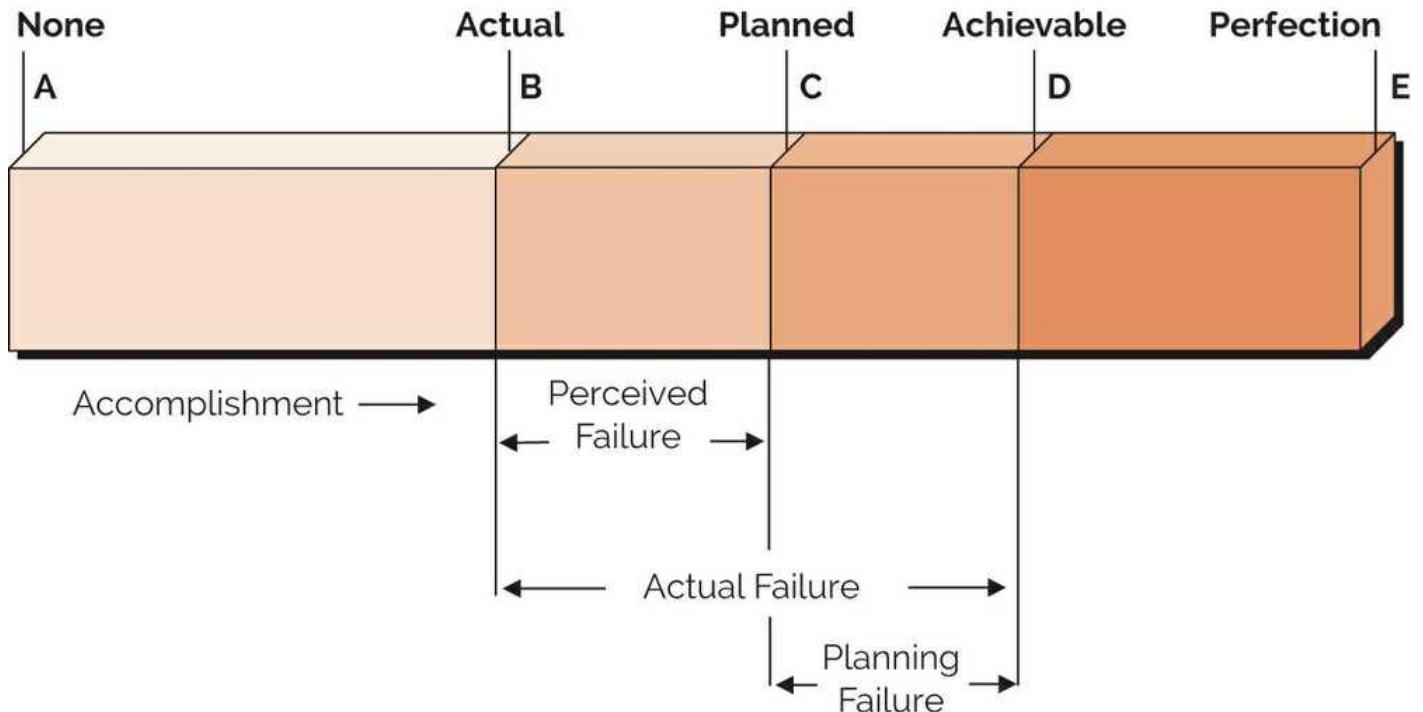


Figure 2–8: Components of failure (pessimistic planning).

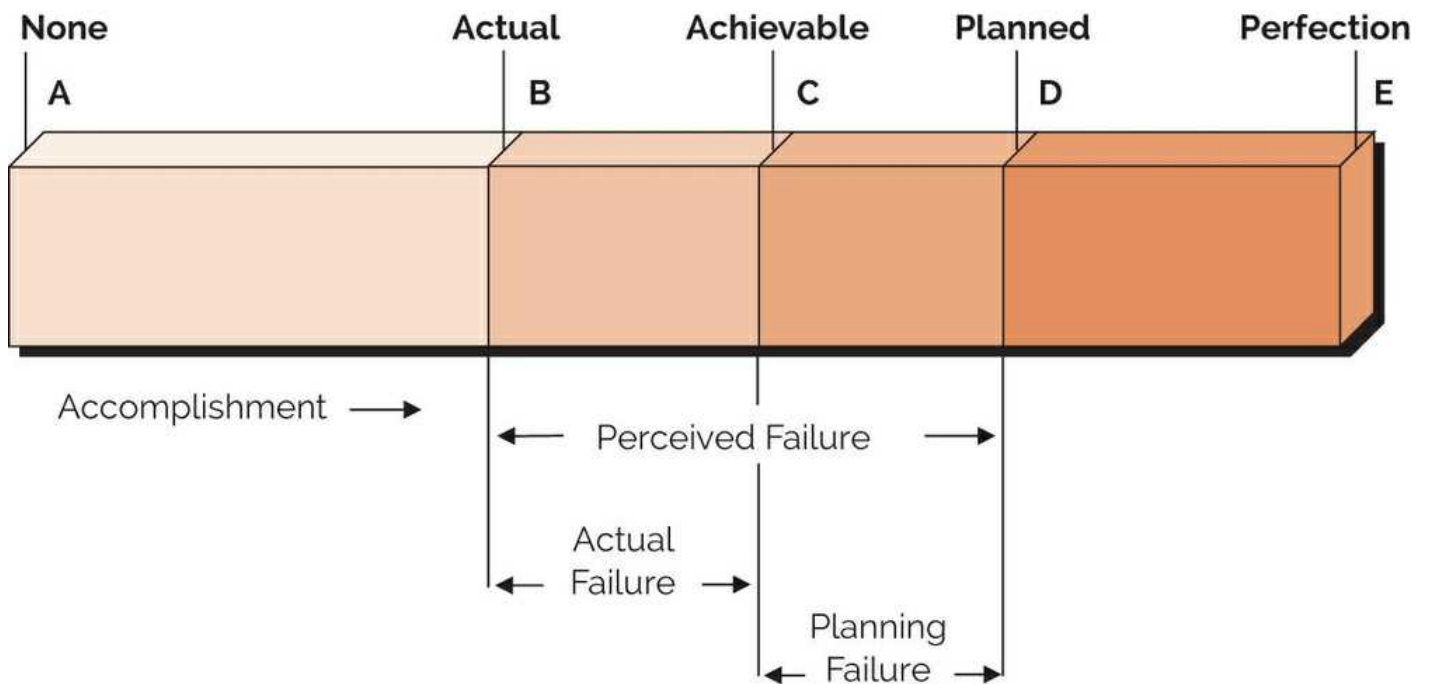


Figure 2-9: Components of failure (optimistic planning).

- Ineffective planning
- Ineffective scheduling
- Ineffective estimating
- Ineffective cost control
- Project objectives being “moving targets”

During the 1990s, the view of failure changed from being quantitatively oriented to qualitatively oriented. A failure in the 1990s was largely attributed to:

- Poor morale
- Poor motivation
- Poor human relations
- Poor productivity
- No employee commitment
- No functional commitment
- Delays in problem solving
- Too many unresolved policy issues
- Conflicting priorities between executives, line managers, and project managers

Although these quantitative and qualitative approaches still hold true to some degree, today we believe that the major component of planning failure is inappropriate or inadequate risk management or having a project management methodology that does not provide any guidance for risk management.

Sometimes, the risk management component of failure is not readily identified. For example, look at [Figure 2-10](#). The actual performance delivered by the contractor was significantly less than the customer’s expectations. Is the difference due to poor technical ability or a combination of technical inability and poor risk management? Today we believe that it is a combination.

When a project is completed, companies perform a lessons-learned review. Sometimes lessons learned are inappropriately labeled and the true reason for the risk event is not known. [Figure 2-11](#) illustrates the relationship between the marketing

personnel and technical personnel when undertaking a project to develop a new product. If the project is completed with actual performance being less than customer expectations, is it because of poor risk management by the technical assessment and forecasting personnel or poor marketing risk assessment? The relationship between marketing and technical risk management is not always clear.

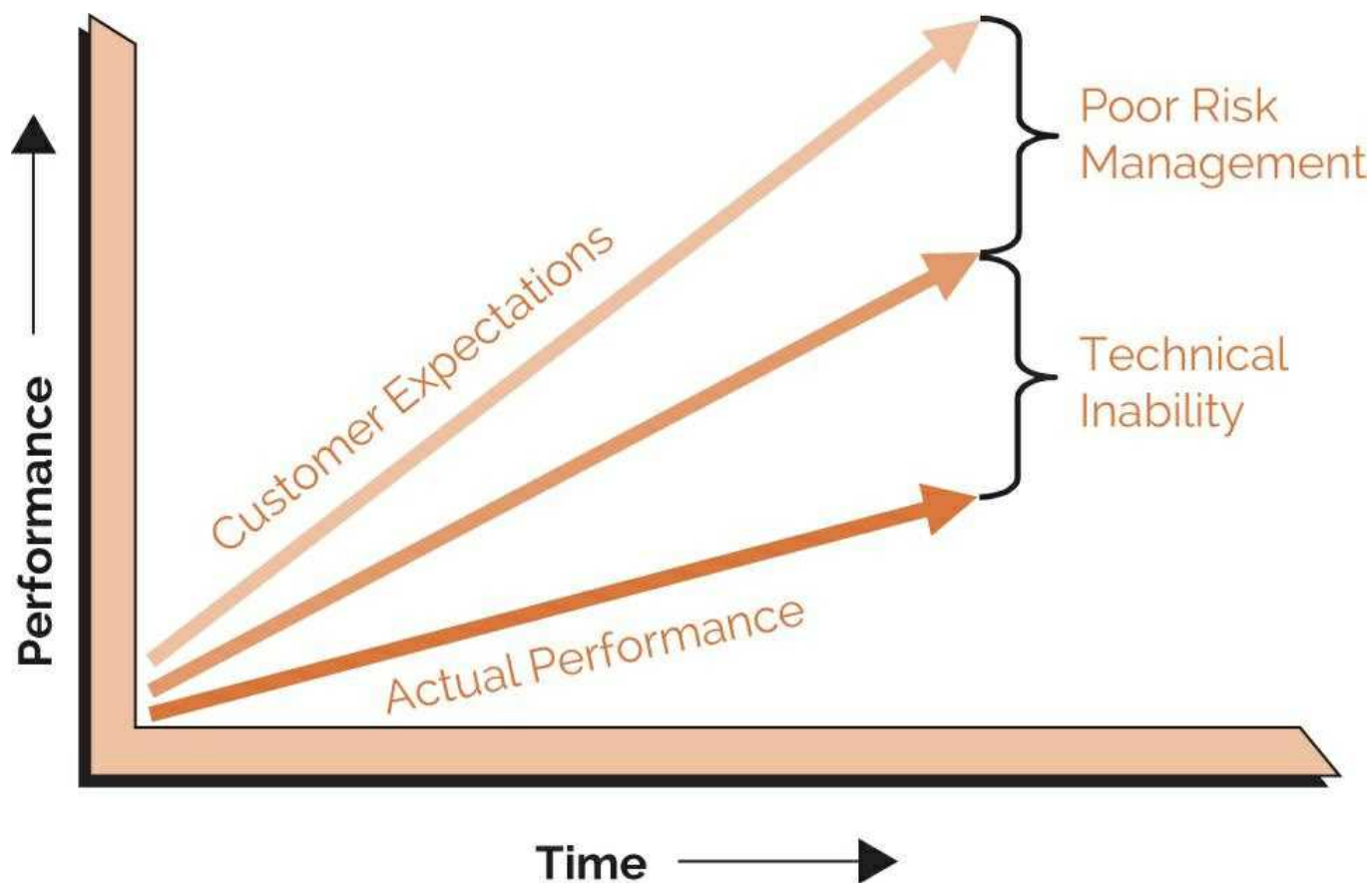


Figure 2-10: Risk planning.



Figure 2-11: The relationship between marketing and technical personnel.

[Figure 2-11](#) also shows that opportunities for trade-offs diminish as we get further downstream on the project. There are numerous opportunities for trade-offs prior to establishing the final objectives for the project. In other words, if the project fails, it may be because of the timing when the risks were analyzed.

## 2.10 CAUSES OF PROJECT FAILURE

There are numerous causes of project failure, whether a partial or complete failure, and most failures are a result of more than one cause. Some cause may directly or indirectly lead to other causes. For example, business case failure can lead to planning and execution failure. For simplicity sake, project failures can be broken down into the following categories:

### **Planning/execution failures:**

- Business case deterioration
- Business case requirements changed significantly over the life of the project
- Technical obsolescence has occurred
- Technologically unrealistic requirements
- Lack of a clear vision
- Plan asks for too much in too little time
- Poor estimates, especially financial
- Unclear or unrealistic expectations
- Assumptions, if they exist at all, are unrealistic
- Plans are based on insufficient data
- No systemization of the planning process
- Planning is performed by a planning group
- Inadequate or incomplete requirements
- Lack of resources
- Assigned resources lack experience or the necessary skills
- Resources lack focus or motivation
- Staffing requirements are not fully known
- Constantly changing resources
- Poor overall project planning
- Established milestones are not measurable
- Established milestones are too far apart
- The environmental factors have changes causing outdated scope
- Missed deadlines and no recovery plan
- Budgets are exceeded and out of control
- Lack of replanning on a regular basis
- Lack of attention provided to the human and organizational aspects of the project
- Project estimates are best guesses and not based on history or standards

- Not enough time provided for estimating
- No one knows the exact major milestone dates or due dates for reporting
- Team members working with conflicting requirements
- People are shuffled in and out of the project with little regard for the schedule
- Poor or fragmented cost control
- Weak project and stakeholder communications
- Poor assessment of risks if done at all
- Wrong type of contract
- Poor project management; team members possess a poor understanding of project management, especially virtual team members
- Technical objectives are more important than business objectives
- Assigning critically skilled workers, including the project manager, on a part-time basis
- Poor performance tracking metrics
- Poor risk management practices
- Insufficient organizational process assets

**Governance/stakeholder failures:**

- End use stakeholders not involved throughout the project
- Minimal or no stakeholder backing; lack of ownership
- New executive team in place with different visions and goals
- Constantly changing stakeholders
- Corporate goals and/or vision not understood at the lower organizational levels
- Unclear stakeholder requirements
- Passive user stakeholder involvement after handoff
- Each stakeholder uses different organizational process assets, which may be incompatible with each other
- Weak project and stakeholder communications
- Inability of stakeholders to come to an agreement

**Political failures:**

- New elections resulting in a change of power
- Changes in the host country's fiscal policy, procurement policy, and labor policy
- Nationalization or unlawful seizure of project assets and/or intellectual property
- Civil unrest resulting from a coup, acts of terrorism, kidnapping, ransom, assassinations, civil war, and insurrection
- Significant inflation rate changes resulting in unfavorable monetary conversion policies
- Contractual failure such as license cancellation and payment failure

Failures can also be industry-specific such as IT failure or construction failure. Some failures can be corrected while other failures can lead to bankruptcy.



## 2.11 DEGREES OF SUCCESS AND FAILURE

Projects get terminated for one of two basic reasons: project success, or project failure. Project success is considered a natural cause for termination and is achieved when we meet the success criteria established at the onset of the project. Project failure is often the result of unnatural causes such as a sudden change in the business base, loss of critical resources, or inability to meet certain critical constraints. Previously we listed the numerous reasons why a project can get terminated. Canceling a project is a critical business decision and can have a serious impact on people, processes, materials, and money within the company. Depending on when it's canceled, it can also impact customer and partner relationships.

In an ideal situation, the business case for a project would contain a section identifying the criteria for success and also for termination. Identifying cancellation criteria is important because too many times a project that should be canceled just lingers on and wastes precious resources that could be assigned to other more value-driven projects.

There are degrees of project success and failure. For example, a project can come in two weeks late and still be considered as a success. A project over budget by \$100,000 can also be considered a success if the end results provide value to the client and the client accepts the deliverables. Projects can also be partial successes and partial failures. One possible way of classifying project results can be:

- *Complete success.* The project met the success criteria, value was created, and all constraints were adhered to.
- *Partial success.* The project met the success criteria, the client accepted the deliverables, and value was created although one or more of the success constraints were not met.
- *Partial failure.* The project was not completed as expected and may have been canceled early on in the life cycle. However, knowledge and/or intellectual property was created that may be used on future projects.
- *Complete failure.* The project was abandoned and nothing was learned from the project.

In the future, we can expect to have more than three constraints on our projects. It is important to understand that it may not be possible to meet all of the competing constraints and therefore partial success may become the norm.

## 2.12 PROJECT HEALTH CHECKS

Periodic project health checks are one of the best ways for early identification of potential causes of project problems and to avert possible failure. Projects seem to progress quickly until they are about 60 to 70 percent complete. During that time, everyone applauds that work is progressing as planned. Then, perhaps without warning, the truth comes out and we discover that the project might be in trouble. This occurs because of:

- Our disbelief in the value of using more project metrics
- Selecting the wrong metrics
- Our fear of what project health checks may reveal

Some project managers have an incredible fixation with project metrics and numbers, believing that metrics are the Holy Grail in determining status. Most projects seem to focus heavily on only two metrics: time and cost. These are the primary metrics in all earned value measurement systems (EVMS). While these two metrics *may* give you a reasonable representation of where you are today, using only these two metrics to provide forecasts into the future are “gray areas” and may not indicate future problem areas that could prevent a successful and timely completion of the project. The metrics used for health checks may be different than the traditional metrics being used for routine performance reporting. At the other end of the spectrum, we have managers who have no faith in the metrics and therefore focus on vision, strategy, leadership, and prayers.

Rather than relying on metrics alone, the simplest solution might be to perform periodic health checks on the project rather than waiting for serious issues to surface. In doing this, three critical questions must be addressed:

1. Who will perform the health check?
2. Will the interviewees be honest in their responses and not influenced by internal politics?
3. Will management and stakeholders overreact to the truth?

The surfacing of previously unknown or hidden issues could lead to loss of employment, demotions, or project cancellation. Yet project health checks offer the greatest opportunity for early corrective action to save a potentially failing project by mitigating risks early. Health checks can also discover future opportunities as well as validating that the project is still aligned to strategic

corporate objectives. It is essential to use the right metrics.

### Understanding Project Health Checks

People tend to use audits and health checks synonymously. Both are designed to ensure successful repeatable project outcomes, and both must be performed on projects that appear to be heading for a successful outcome as well as those that seem destined to fail. There are lessons learned and best practices that can be discovered from both successes and failures. Also, detailed analysis of a project that appears to be successful at the moment might bring to the surface issues that show that the project is really in trouble.

Table 2–7 shows some of the differences between audits and health checks. Although some of the differences may be subtle, we will focus our attention on health checks.

**Situation:** During a team meeting, the project manager asks the team, “How’s the work progressing?” The response is: “We’re doing reasonably well. We’re just a little bit over budget and a little behind schedule, but we think we’ve solved both issues by using lower salaried resources for the next month and having them work overtime. According to our enterprise project management methodology, our unfavorable cost and schedule variances are still within the threshold limits and the generation of an exception report for management is not necessary. The customer should be happy with our results thus far.”

These comments are representative of a project team that has failed to acknowledge the true status of the project because they are too involved in the daily activities of the project. Likewise, we have project managers, sponsors, and executives who are caught up in their own daily activities and readily accept these comments with blind faith, thus failing to see the big picture. If an audit had been conducted, the conclusion might have been the same, namely that the project is successfully following the enterprise project management methodology and that the time and cost metrics are within the acceptable limits. A forensic project health check, on the other hand, may disclose the seriousness of the issues.

Just because a project is on time and/or within the allotted budget does not guarantee success. The result could be that the deliverable has poor quality such that it is unacceptable to the customer. In addition to time and cost, project health checks can focus on quality, the skill level of the assigned resources, benefits, and requirements, just to name a few. The need for more metrics than we now use should be apparent. The true measure of the project’s future success is the value that the customers see at the completion of the project and beyond. Health checks must therefore be value-focused. Audits, on the other hand, usually do not focus on value.

Table 2–7: AUDITS VS. HEALTH CHECKS

Variable	Audit	Health Checks
Focus	On the present	On the future
Intent	Compliance	Execution effectiveness and deliverables
Timing	Generally scheduled and infrequent	Generally unscheduled and when needed
Items to be searched	Best practices	Hidden, possible destructive issues and possible cures
Interviewer	Usually someone internal	External consultant
How interview is led	With entire team	One-on-one sessions
Time frame	Short term	Long term
Depth of analysis	Summary	Forensic review
Metrics	Use of existing or standard project metrics	Special health check metrics may be necessary

Health checks can function as an ongoing tool by being performed randomly when needed or periodically throughout various life-cycle stages. However, there are specific circumstances that indicate that a health check should be accomplished quickly. These include:

- Significant scope creep
- Escalating costs accompanied by a deterioration in value and benefits
- Schedule slippages that cannot be corrected
- Missed deadlines
- Poor morale accompanied by changes in key project personnel
- Metric measurements that fall below the threshold levels

Periodic health checks, if done correctly and using good metrics, eliminate ambiguity such that true status can be determined.

Health checks offer several benefits. They can:

- Determine the current status of the project.
- Identify problems early enough such that sufficient time exists for corrective action to be taken.
- Identify the critical success factors that will support a successful outcome or the critical issues that can prevent successful delivery.
- Identify lessons learned, best practices, and critical success factors that can be used on future projects.
- Evaluate compliance to and improvements for the enterprise project management methodology.
- Validate that the project's metrics are correct and provide meaningful data.
- Identify which activities may require or benefit from additional resources
- Identify present and future risks as well as possible risk mitigation strategies.
- Determine if the benefits and value will be there at completion.
- Determine if euthanasia is required to put the project out of its misery.
- Develop or recommend a fix-it plan.

There are misconceptions about project health checks. Some of these are:

- The person doing the health check does not understand the project or the corporate culture, thus wasting time.
- The health check is too costly for the value we will get by performing it.
- The health check ties up critical resources in interviews.
- By the time we get the results from the health check, it is either too late to make changes or the nature of the project may have changed.

## Who Performs the Health Check?

One of the challenges facing companies is whether the health check should be conducted by internal personnel or by external consultants. The risk with using internal personnel is that they may have loyalties or relationships with people on the project team and therefore may not be totally honest in determining the true status of the project or in deciding who was at fault.

Using external consultants or facilitators is often the better choice. External facilitators can bring to the table:

- A multitude of forms, guidelines, templates, and checklists used in other companies and similar projects
- A promise of impartiality and confidentiality
- A focus on only the facts and hopefully free of politics
- An environment where people can speak freely and vent their personal feelings
- An environment that is relatively free from other day-to-day issues
- New ideas for project metrics

## Life-Cycle Phases

There are three life-cycle phases for project health checks. These include:

- Review of the business case and the project's history
- Research and discovery of the facts
- Preparation of the health check report

Reviewing the business case and project's history may require the health check leader to have access to proprietary knowledge and financial information. The leader may have to sign nondisclosure agreements and noncompete clauses before being allowed to perform the health check.

In the research and discovery phase, the leader prepares a list of questions that need to be answered. The list can be prepared from the *PMBOK® Guide's* performance domain areas. The questions can also come from the knowledge repository in the consultant's company and may contain templates, guidelines, checklists, or forms. The questions can change from project to project and industry to industry.

Some of the critical areas that must be investigated include:

- Performance against baselines
- Ability to meet forecasts
- Benefits and value analyses
- Governance
- Stakeholder involvement
- Risk mitigation
- Contingency planning

If the health check requires one-on-one interviews, the health check leader must be able to extract the truth from interviewees who have different interpretations or conclusions about the status of the project. Some people will be truthful whereas others will either say what they believe the interviewer wants to hear or distort the truth as a means of self-protection.

The final phase is the preparation of the report. This should include:

- A listing of the issues
- Root cause analyses, possibly including identification of individuals who created the problems
- Gap analysis
- Opportunities for corrective action
- A get-well or fix-it plan

Project health checks are not "Big Brother Is Watching You" activities. Rather, they are part of project oversight. Without these health checks, the chances for project failure significantly increase. Project health checks also provide us with insight on how to keep risks under control. Performing health checks and taking corrective action early is certainly better than having to manage a distressed project.

## 2.13 THE STAGE-GATE PROCESS

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### *PMBOK® Guide, 6th Edition*

- 1.2.4.1 Project and Development Life Cycles
- 

When companies recognize the need to begin developing processes for project management, the starting point is normally the stage-gate process. The stage-gate process was created because the traditional organizational structure was designed primarily for top-down, centralized management, control, and communications, all of which were no longer practical for organizations that use project management and horizontal workflow. The stage-gate process eventually evolved into life-cycle phases.

Just as the words imply, the process is composed of stages and gates. Stages are groups of activities that can be performed either in series or parallel based on the magnitude of the risks the project team can endure. The stages are managed by crossfunctional teams. The gates are structured decision points at the end of each stage. Good project management processes usually have no more than six gates. With more than six gates, the project team focuses too much attention on preparing for the gate reviews rather than on the actual management of the project.

Project management is used to manage the stages between the gates and can shorten the time between the gates. This is a

critical success factor if the stage-gate process is to be used for the development and launch of new products. A good corporate methodology for project management will provide checklists, forms, and guidelines to make sure that critical steps are not omitted.

Checklists for gate reviews are critical. Without these checklists, project managers can waste hours preparing gate review reports. Good checklists focus on answering these questions:

- Where are we today (i.e., time and cost)?
- Where will we end up (i.e., time and cost)?
- What are the present and future risks?
- What assistance is needed from management?

Project managers are never allowed to function as their own gatekeepers. The gatekeepers are either individuals (i.e., sponsors) or groups of individuals designated by senior management and empowered to enforce the structured decision-making process. The gatekeepers are authorized to evaluate the performance to date against predetermined criteria and to provide the project team with additional business and technical information.

Gatekeepers must be willing to make decisions. The most common decisions are:

- Proceed to the next gate based on the original objectives.
- Proceed to the next gate based on revised objectives.
- Delay making a gate decision until further information is obtained.
- Cancel the project.

Sponsors must also have the courage to terminate a project. The purpose of the gates is not only to obtain authorization to proceed, but to identify failure early enough so that resources will not be wasted but will be assigned to more promising activities.

The stage-gate process has three major benefits:

- Provide structure to project management.
- Provide possible standardization in planning, scheduling, and control (i.e., forms, checklists, and guidelines).
- Allow for a structured decision-making process.

Companies embark on the stage-gate process with good intentions, but there are pitfalls that may disrupt the process:

- Gatekeepers might be assigned but not be empowered to make decisions.
- Some gatekeepers are afraid to terminate a project.
- The project team is denied access to critical information.
- The project team might focus more on the gates than on the stages.

It should be recognized that the stage-gate process is neither an end result nor a self-sufficient methodology. Instead, it is just one of several processes that provide structure to the overall project management methodology.

Today, the stage-gate process appears to have been replaced by life-cycle phases. Although there is some truth in this, the stage-gate process is making a comeback. Since the stage-gate process focuses on decision-making more than life-cycle phases, the stage-gate process is being used as an internal, decision-making tool within each of the life-cycle phases. The advantage is that, while life-cycle phases are the same for every project, the stage-gate process can be custom-designed for each project to facilitate decision-making and risk management. The stage-gate process is now an integral part of project management, whereas previously it was used primarily for new product development efforts. However, the stage-gate model seems to have the greatest success on projects that are reasonably well-defined at the start.

## 2.14 PROJECT LIFE CYCLES

- 1.2.4.2 Project Phase

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**PMBOK® Guide, 7th Edition**

- 2.3 Life Cycle Performance Domain

Every program, project, or product has certain phases of development known as life-cycle phases. A clear understanding of these phases permits managers and executives to better control resources to achieve goals. During the past few years, there has been at least partial agreement about the life-cycle phases of a product. They include:

- Research and development
- Market introduction
- Growth
- Maturity
- Deterioration
- Death

Today, there is no agreement among industries, or even companies within the same industry, about the life-cycle phases of a project. New project management methodologies are allowing project managers to establish their own life-cycle phases based on the needs of the project. This is understandable because of the complex nature and diversity of projects.

The theoretical definitions of the life-cycle phases of a system can be applied to a project. These phases include:

- Conceptual
- Planning
- Testing
- Implementation
- Closure

The first phase, the conceptual phase, includes the preliminary evaluation of an idea. Most important in this phase is a preliminary analysis of risk and the resulting impact on the time, cost, and performance requirements, together with the potential impact on company resources. The conceptual phase also includes a “first cut” at the feasibility of the effort.

The second phase is the planning phase. It is mainly a refinement of the elements in the conceptual phase and requires a firm identification of the resources required and the establishment of realistic time, cost, and performance parameters. This phase also includes the initial preparation of documentation necessary to support the system. For a project based on competitive bidding, the conceptual phase would include the decision of whether to bid, and the planning phase would include the development of the total bid package (i.e., time, schedule, cost, and performance).

Because of the amount of estimating involved, analyzing system costs during the conceptual and planning phases is not an easy task. As shown in [Figure 2–12](#), most project or system costs can be broken down into operating (recurring) and implementation (nonrecurring) categories. Implementation costs include one-time expenses such as construction of a new facility, purchasing computer hardware, or detailed planning. Operating costs include recurring expenses such as human resources. The operating costs may be reduced as shown in [Figure 2–12](#) if personnel perform at a higher position on the learning curve. The identification of a learning curve position is vitally important during the planning phase when firm cost positions must be established. Of course, it is not always possible to know what individuals will be available or how soon they will perform at a higher learning curve position.



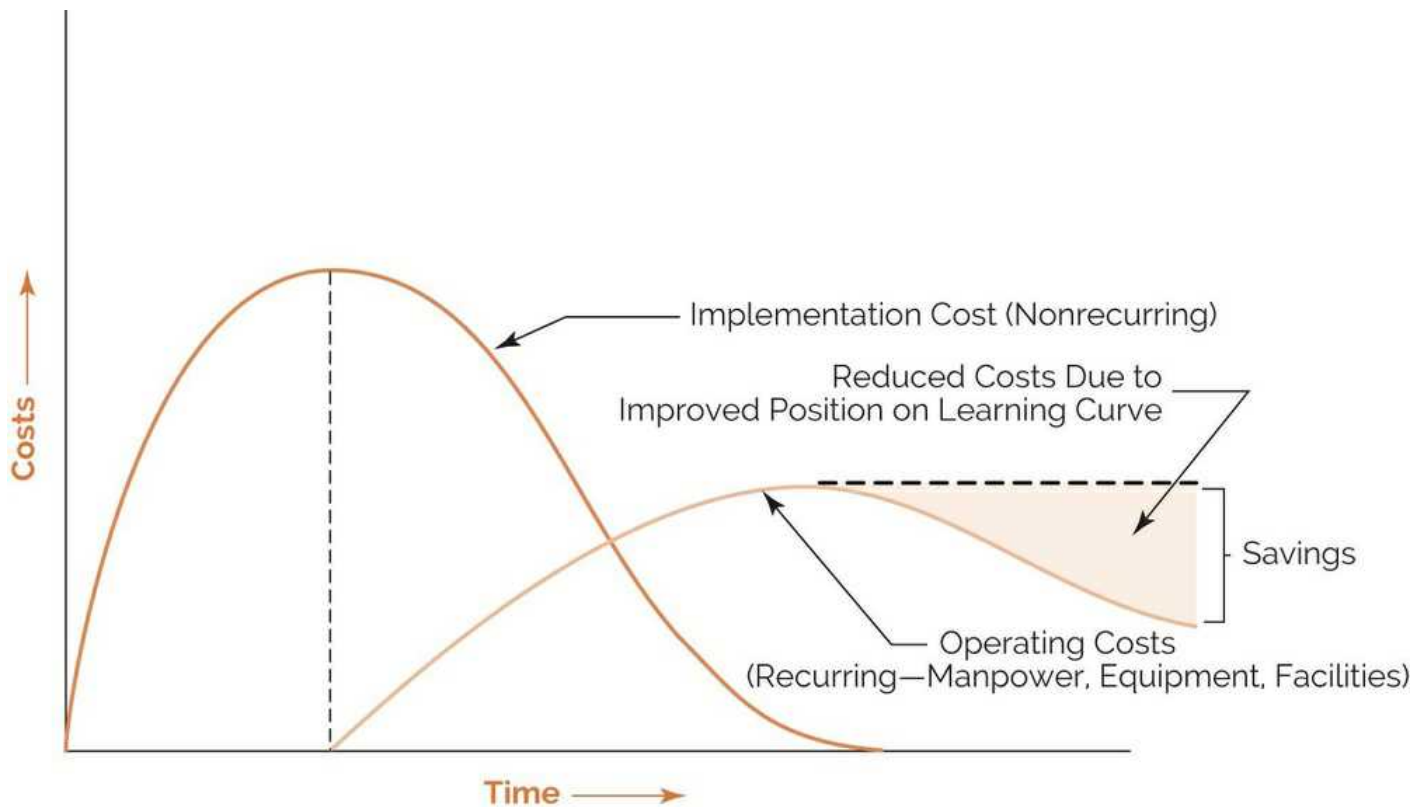


Figure 2-12: System costs.

Once the approximate total cost of the project is determined, a cost-benefit analysis should be conducted (see [Figure 2-13](#)) to determine if the estimated value of the information obtained from the system exceeds the cost of obtaining the information. This analysis is often included as part of a feasibility study. There are several situations, such as in competitive bidding, where the feasibility study is actually the conceptual and definition phases. Because of the costs that can be incurred during these two phases, top-management approval is almost always necessary before the initiation of such a feasibility study.

The third phase – testing – is predominantly a testing and final standardization effort so that operations can begin. Almost all documentation must be completed in this phase.

The fourth phase is the implementation phase, which integrates the project's product or services into the existing organization. If the project was developed for establishment of a marketable product, then this phase could include the product life-cycle phases of market introduction, growth, maturity, and a portion of deterioration.

The final phase is closure and includes the reallocation of resources. Consider a company that sells products to consumers. As one product begins the deterioration and death phases of its life cycle (i.e., the divestment phase of a system), new products or projects must be established. Such a company would, therefore, require a continuous stream of projects to survive, as shown in [Figure 2-14](#). As projects A and B begin their decline, new efforts (project C) must be developed for resource reallocation. In the ideal situation these new projects will be established at such a rate that total revenue will increase and company growth will be clearly visible.

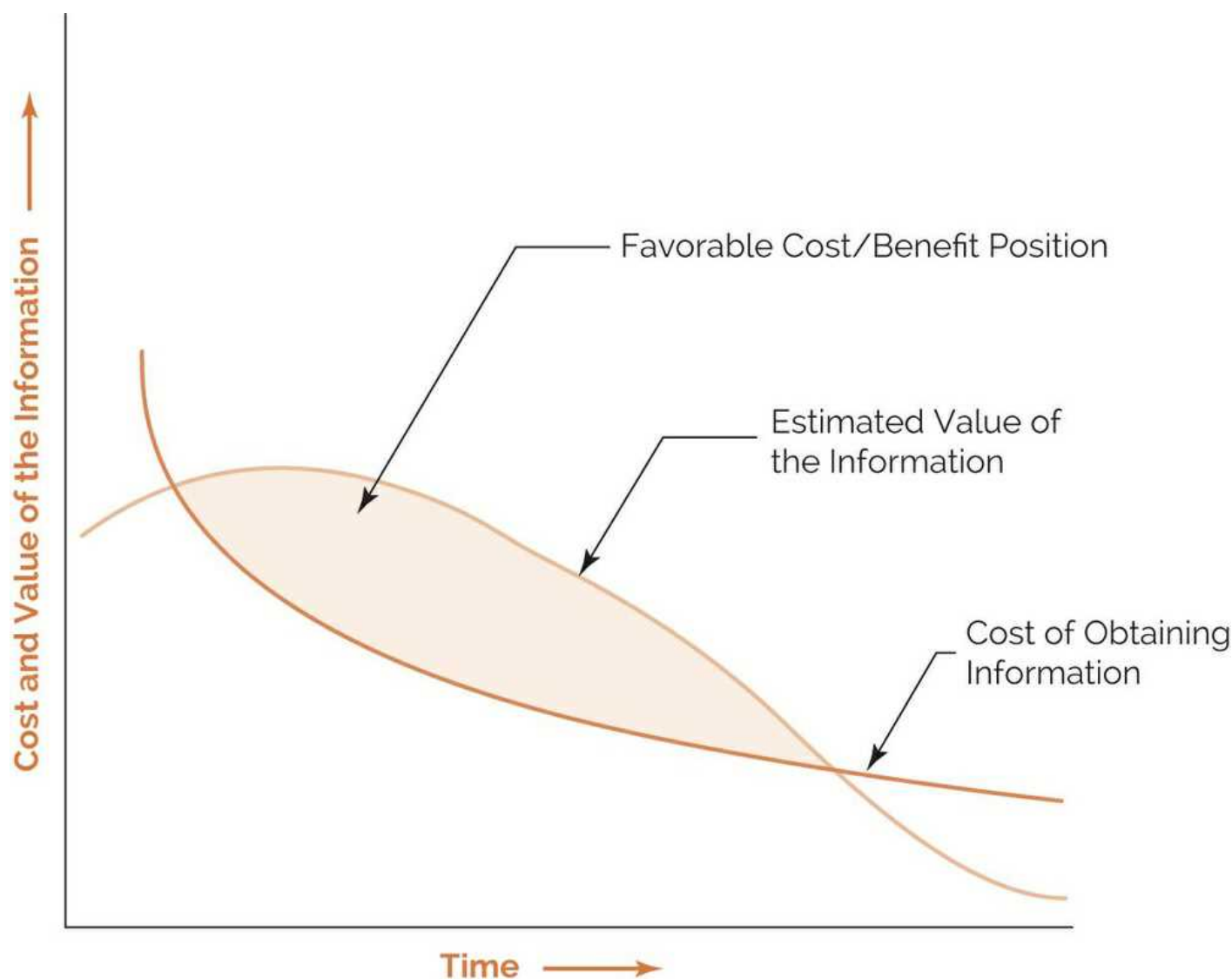


Figure 2–13: Cost–benefit analysis.

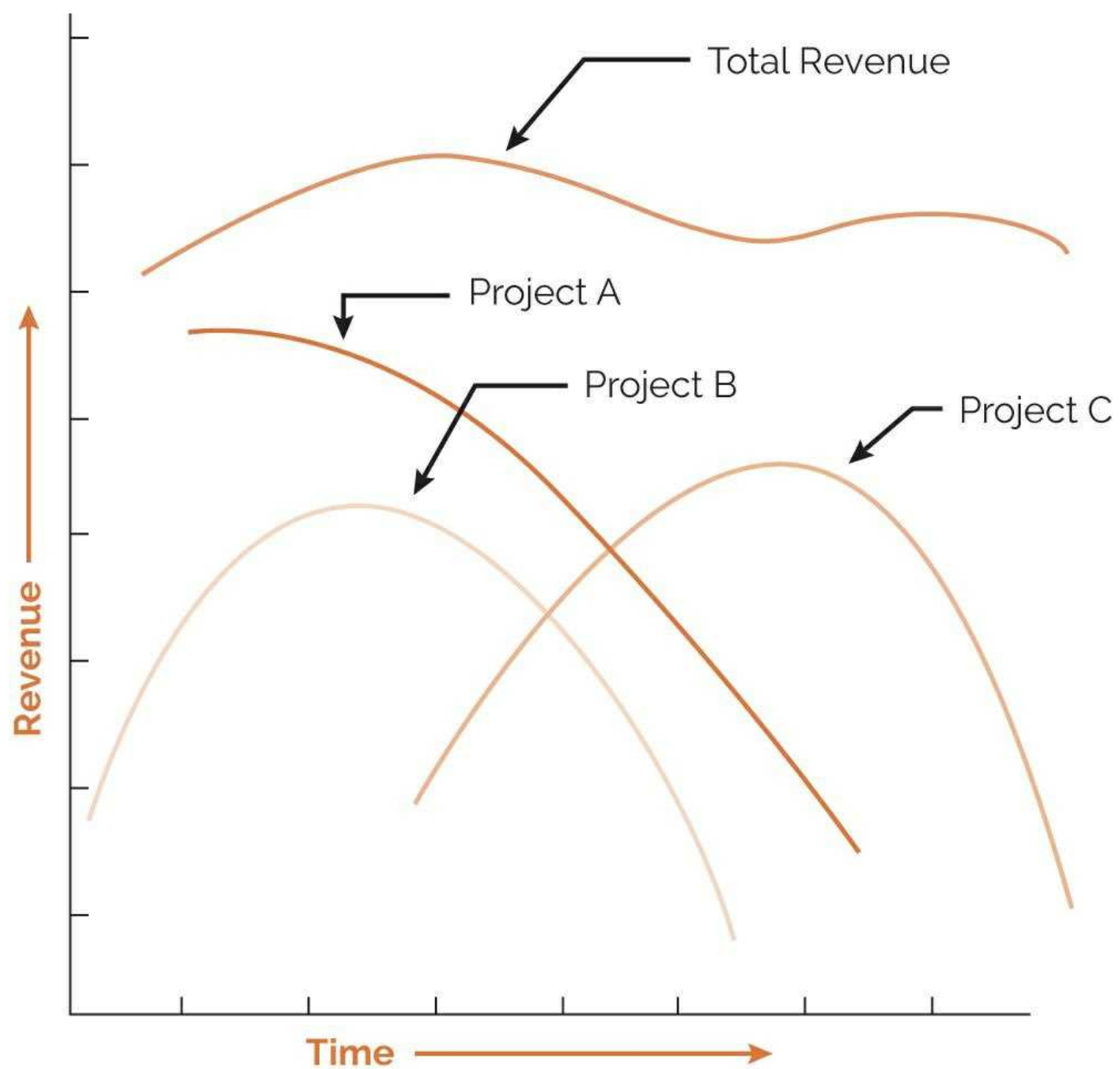


Figure 2–14: A stream of projects.

Table 2–8: LIFE-CYCLE PHASE DEFINITIONS

Engineering	Manufacturing	Computer Programming	Construction
• Start-up	• Formation	• Conceptual	• Planning, data gathering, and procedures
• Definition	• Buildup	• Planning	• Studies and basic engineering
• Main	• Production	• Definition and design	• Major review
• Termination	• Phase-out	• Implementation	• Detail engineering
	• Final audit	• Conversion	• Detail engineering/construction overlap
			• Construction
			• Testing and commissioning

The closure phase evaluates the efforts of the total system and serves as input to the conceptual phases for new projects and

systems. This final phase also has an impact on other ongoing projects with regard to identifying priorities.

[Table 2–8](#) identifies the various life-cycle phases that are commonly used in different industries. However, even in mature project management industries such as construction, one could survey 10 different construction companies and find 10 different definitions for the life-cycle phases.

Not all projects can be simply transposed into life-cycle phases (e.g., R&D). It might be possible (even in the same company) for different definitions of life-cycle phases to exist because of schedule length, complexity, or just the difficulty of managing the phases. Scope changes and mid-course corrections can lead to changes in downstream phases.

Top management is responsible for the periodic review of major projects. This should be accomplished, at a minimum, at the completion of each life-cycle phase.

## 2.15 GATE REVIEW MEETINGS (PROJECT CLOSURE)

### *PMBOK® Guide, 6th Edition*

- 1.2.4.3 Phase Review

Gate review meetings are a form of project closure. Gate review meetings could result in the closure of a life-cycle phase or the closure of the entire project. Gate review meetings must be planned for, and this includes the gathering, analysis, and dissemination of pertinent information. This can be done effectively with the use of forms, templates, and checklists.

There are two forms of closure pertinent to gate review meetings: contractual closure and administrative closure. Contractual closure precedes administrative closure.

Contractual closure is the verification and signoff that all deliverables required for this phase have been completed and all action items have been fulfilled. Contractual closure is the responsibility of both the project manager and the contract administrator but may include stakeholders based on contractual requirements.

Administrative closure is the updating of all pertinent records required for both the customer and the contractor. Customers are particularly interested in documentation on any as-built or as-installed changes or deviations from the specifications. Also required is an archived trail of all scope changes agreed to during the life of the project. Contractors are interested in archived data that include project records, minutes, memos, newsletters, change management documentation, project acceptance documentation, and the history of audits for lessons learned and continuous improvement.

Table 2–9: FORMS OF PROJECT CLOSURE

	Engineering	Administrative	Financial
Purpose	Customer signoff	Documentation and traceability completed	Shut down the completed work packages
When	End of the project	After contractual closure is completed	Throughout the project when work packages are completed
Activities	Verification and validationConformance to acceptance criteria, including quality assurance requirementsWalkthroughs, testing, reviews, and auditsCompliance testingUser testingReview of scope changesDocumenting as-built changes	Completion of minutes, memos, handouts, reports, and all other forms of documentationArchiving of documentation administrative closureCapturing the lessons learned and best practicesReleasing resources	Closing out work orders for completed workDocumenting financial resultsTransferring unused funds to the management reserve or profits

A subset of administrative closure is financial closure, which is the closing out of all charge numbers for the work completed. Even though contractual closure may have taken place, there may still exist open charge numbers for the repair of defects or to complete archived paperwork. Closure must be planned for, and this includes setting up a timetable and budget. [Table 2–9](#) shows the activities for each type of closure.

## 2.16 ENGAGEMENT PROJECT MANAGEMENT

### Standard for Project Management

- 3.3 Effectively Engage with Stakeholders

Companies have traditionally viewed each customer as a one-time opportunity, and after this customer's needs were met, emphasis was placed on finding other customers. This is acceptable as long as there exists a potentially large customer base.

Today, project-driven organizations, namely those that survive on the income from a continuous stream of customer-funded projects, are implementing the “engagement project management” (EPM) approach. With engagement project management, each potential new customer is approached where the contractor is soliciting a long-term relationship with the customer rather than a one-time opportunity. With this approach, contractors are selling not only deliverables and complete solutions to the client's business needs but also a willingness to make changes to the way that they manage their projects in order to receive future contracts from this client.

To maintain this level of customer satisfaction and hopefully a long-term relationship, customers are requested to provide input on how the contractor's project management methodology can be better utilized in the future. Some companies have added into their methodology a life-cycle phase entitled “Customer Satisfaction Management.” This life-cycle phase takes place after administrative closure is completed. The phase involves a meeting between the client and the contractor, and in attendance are the project managers from each organization, the sponsors, selected team members and functional managers, and the sales force. The question that needs to be addressed by the contractor is “What can we do better on the next project we perform for you?”

How much freedom should a client be given in making recommendations for changes to a contractor's EPM system? How much say should a customer have in how a contractor manages projects? What happens if this allows customers to begin telling contractors how to do their job? Obviously, there are risks to be considered for this level of customer satisfaction.

If the project manager is expected to manage several projects for this client, then the project manager must understand the nature of the client's business and the environment in which the client does business. This is essential in order to identify and mitigate the risks associated with these projects. Some companies maintain an engagement manager and a project manager for each client. The engagement manager functions like an account executive for that client and may provide the project manager with the needed business information.

## 2.17 PROJECT MANAGEMENT METHODOLOGIES: A DEFINITION

Historically, achieving project management excellence, or maturity, was more likely with a repetitive process that could be used on each and every project. This repetitive process was referred to as the project management methodology.

If possible, companies maintained and supported a single methodology for project management. Good methodologies integrate other processes into the project management methodology, as shown in [Figure 2–15](#). Many companies have all five of these processes integrated into their project management methodology.

In the coming years, companies can be expected to integrate more of their business processes in the project management methodology, thus requiring a high degree of flexibility. This is shown in [Figure 2–16](#). Managing off of a single methodology lowers cost, reduces resource requirements for support, minimizes paperwork, and eliminates duplicated efforts.

The characteristics of a good methodology based on integrated processes include:

- A recommended level of detail
- Use of templates
- Standardized planning, scheduling, and cost control techniques
- Standardized reporting format for both in-house and customer use

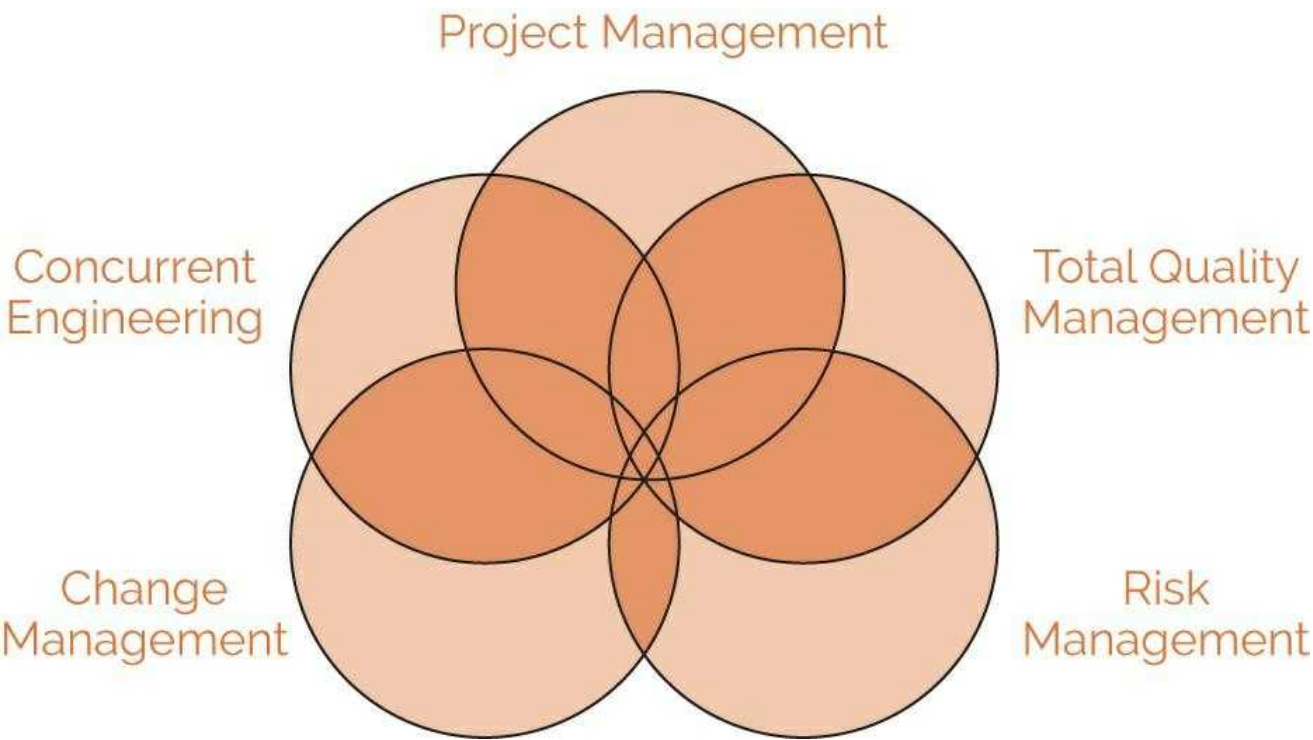


Figure 2–15: Integrated processes for the twenty-first century.

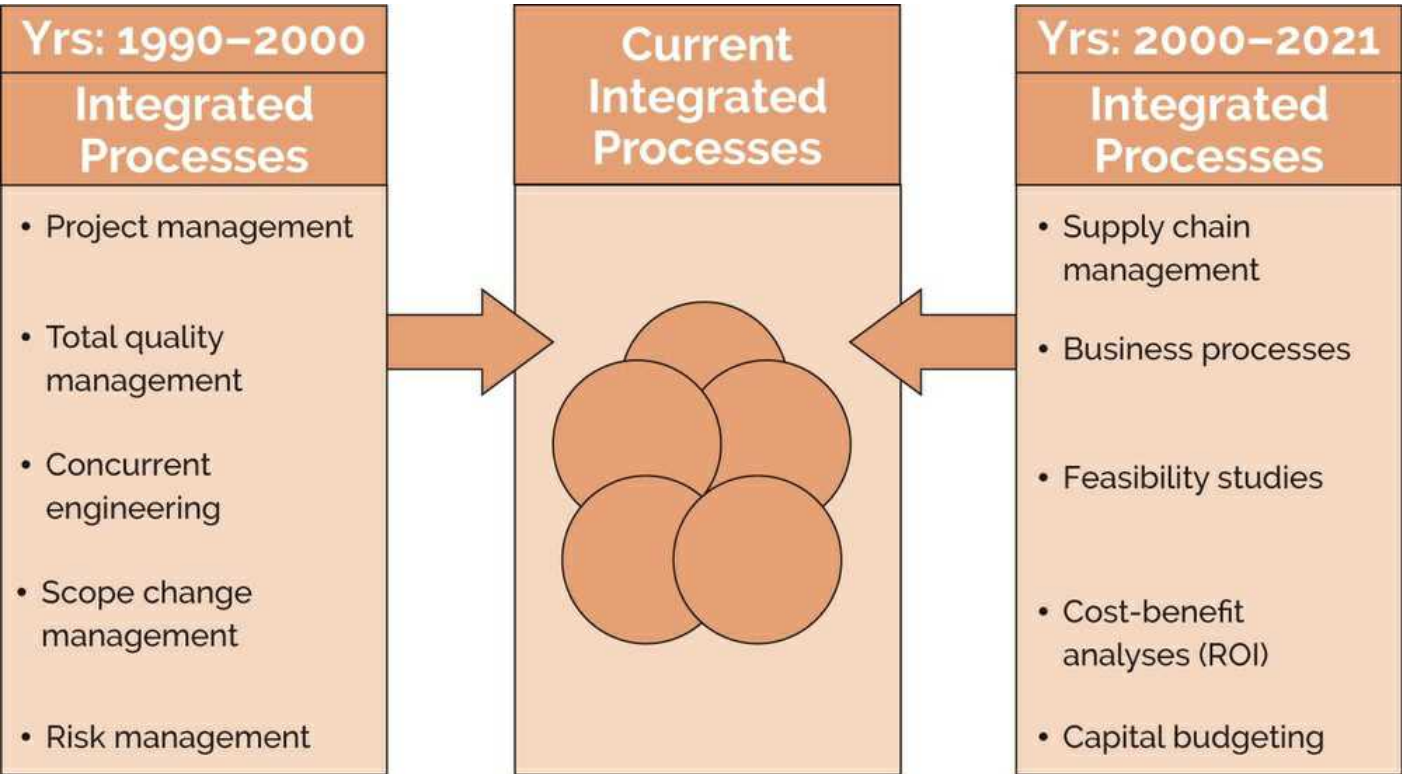


Figure 2–16: Integrated processes (past, present, and future).

- Flexibility for application to all projects
- Flexibility for rapid improvements
- Easy for the customer to understand and follow
- Readily accepted and used throughout the entire company
- Use of standardized life-cycle phases (which can overlap) and end of phase reviews ([Section 2.14](#))



- Based on guidelines rather than policies and procedures ([Section 2.7](#))
- Based on a good work ethic

Methodologies do not manage projects; people do. It is the corporate culture that executes the methodology. Senior management must create a corporate culture that supports project management and demonstrates faith in the methodology. If this is done successfully, then the following benefits can be expected:

- Faster “time to market” through better control of the project’s scope
- Lower overall project risk
- Better decision-making process
- Greater customer satisfaction, which leads to increased business
- More time available for value-added efforts, rather than internal politics and internal competition

## 2.18 FROM ENTERPRISE PROJECT MANAGEMENT METHODOLOGIES TO FRAMEWORKS

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### Standard for Project Management

- 3.7 Tailor Based on Context
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When the products, services, or customers have similar requirements that are reasonably well defined and do not require significant customization or numerous scope changes, companies develop often inflexible methodologies to provide some degree of consistency in the way that projects are managed. These types of methodologies are often based on rigid policies and procedures with limited flexibility but can be successful especially on large, complex, long-term projects. These “rigid” approaches are commonly called waterfall approaches where work is done sequentially and can be easily represented by Gantt charts. The waterfall approach, where almost all work is done sequentially, begins with well-defined requirements from which we must determine the budget and schedule to produce the deliverables. This approach thrives on often massive and costly documentation requirements. The approval of scope changes can be slow because rapid customer involvement may not be possible.

For some types of projects, such as in software development, the waterfall approach may not work well because the requirements may not be fully understood at the beginning of a project. We may not have a clear picture of the approach/solution we must take to create the deliverables. We may need some degree of experimentation which could lead to a significant number of scope changes. Customer involvement must occur throughout the project in order to address changes quickly, which mandates collaborative involvement by all participants including stakeholders. In this case, we may start out with a fixed budget and schedule, and then have to decide how much work can be done within the time and cost constraints. The requirements can evolve over the life of the project. For these types of projects, a more flexible or agile approach is needed. The agile project management methodology will be discussed in more depth in Section 8.12.

As companies become reasonably mature in project management and recognize the need for a more agile approach on some projects, the policies and procedures are replaced by forms, guidelines, templates, and checklists. This provides more flexibility for the project manager in how to apply the methodology to satisfy a specific customer’s requirements. This leads to a more informal or agile approach to project management.

When companies depart from rigid or inflexible project management practices and go to frameworks, the firm can then maintain several different types of project management approaches. There can also be hybrid approaches, which are combinations of the inflexible and flexible approaches. [Table 2–10](#) illustrates some of the factors that a firm may look at in deciding which approach is best.

Today, most projects are managed with an approach that is neither extremely agile nor extremely rigid; it is an in-between approach with some degree of flexibility and more informal than formal. Because the amount of flexibility can change for each project, this approach is sometimes called a *framework*. A framework is a basic conceptual structure that is used to address an issue such as a project. It includes a set of assumptions, concepts, templates, values, and processes that provide the project manager with a means for viewing what is needed to satisfy a customer’s requirements. A framework is a skeleton support structure for building the project’s deliverables. Frameworks work well as long as the project’s requirements do not impose severe pressure on the project manager. Unfortunately, in today’s chaotic environment, this pressure exists and appears to be increasing. Project managers need framework methodologies to have the freedom to meet the customer’s needs and to cope with marketplace changes.

Project teams of the future will begin each project by determining which approach will best suit their needs. This can be accomplished with checklists and questions that address characteristics of the project such as flexibility requirements, type of leadership needed, team skill levels needed, and the culture of the organization. The answers to the questions will then be pieced together to form a framework, which may be unique to a given project. Typical questions might include the following:

Table 2–10: RIGID VS. FLEXIBLE PROJECT MANAGEMENT

Factor	Rigid Project Management	Flexible Project Management
Project size	Large projects with several teams that may be geographically dispersed.	Small project teams are either centrally located or co-located.
Requirements	Statement of work is well-defined and understood.	The scope is only partially known and expected to change over the life of the project.
Impact of time and cost	The customer or business owner does not want any changes to the budget or schedule. However, there is a well-structured change control process in place for scope enhancements and to obtain additional funding.	The budget and schedule are generally fixed and changes in scope are made to possibly maintain the budgets and schedules.
Coordination and integration	Based on the size and complexity of the project, there is a heavy emphasis on coordination and integration.	Coordination and integration requirements are light.
Resources	Heavy emphasis is placed on capacity planning efforts and resource optimization.	The length and size of the project may make resource optimization efforts easy to comply.
Outsourcing	Perhaps a large portion of the project is outsourced and requires significant coordination.	Minimal outsourcing if at all.
Reporting requirement	Reporting requirements are rigid, complex, and require significant coordination.	Reporting requirements are frequent and usually in short meetings.

**How clear are the requirements and the linkage to the strategic business objectives?** On some projects, especially when innovation and/or R&D may be required, it may be difficult to come up with well-defined objectives for the project, even though the line-of-sight to the strategic business objectives is well known. These projects may focus more so on big, hairy, audacious goals (BHAGs) rather than on more well-defined objectives.

When the requirements are unclear, then the project may be tentative in nature and subject to cancellation. You must also expect that changes will occur throughout the life of the project. These types of projects require highly flexible frameworks and a high degree of customer involvement.

**How likely is it that changes in the requirements will take place over the life of the project?** The greater the expectation of changes, the greater the need for a highly flexible approach. Changes may occur because of changing consumer tastes, needs, or expectations. Allowing for too many changes to take place may get the project off track and result in a failed project that produces no benefits or business value. The size of the project is also important because larger projects are more susceptible to scope changes.

In addition to the number of changes that may be needed, it is also important to know how much time will be allowed for the changes to take place. In critical situations where the changes may have to take place in days or weeks, a fast-paced, flexible approach may be necessary with continuous involvement by stakeholders and decision-makers.

Will the customer expect all the features and functionality as we approach the end of the project, or will the customer allow for incremental scope changes? Incremental scope changes allow the project to be broken down and completed in small increments that may increase the overall quality and tangible business value of the outcome. This may also provide less pressure on decision-making:

1. *Is the team co-located or virtual?* Projects that require a great deal of collaboration for decision-making may be more easily managed with a co-located team, especially when a large number of scope changes are expected.
2. *If the project requires the creation of new features to a product, where will the information come from for determining which features are necessary?* The answer to this question may require that the project team interface frequently with marketing and end users to make sure that the features are what the users desire. The ease by which the team can interface with the end users may be of critical importance.
3. *Is there success (and/or failure) criteria that will help us determine when the project is over?* With a poor or lack of success criteria, the project may require a great deal of flexibility, testing, and prototype development.
4. *How knowledgeable will the stakeholders be with the framework selected?* If the stakeholders are unfamiliar with the framework, a great deal of wasted time may be needed to educate the customer on the framework selected and their expected role and responsibility in the framework. This may create a problem for stakeholders that exhibit a resistance to change.

5. *What metrics will the stakeholders and business owner require?* Waterfall methodologies focus on time, cost, and scope metrics. Flexible methodologies allow for other metrics such as business benefits and value achieved.

Selecting the right framework may seem like a relatively easy thing to do. However, all methodologies and frameworks come with disadvantages as well as advantages. Project teams must then hope for the best but plan for the worst. They must understand what can go wrong and select an approach where execution issues can be resolved in a timely manner. These nine questions focusing on “What can go wrong?” should be addressed before finalizing the approach to be taken:

1. Are the customer's expectations realistic?
2. Will the needs of the project be evolving or known at the onset?
3. Can the required work be broken down and managed using small work packages and sprints or is it an all-or-nothing approach?
4. Will the customer and stakeholders provide the necessary support and in a timely manner?
5. Will the customer and/or stakeholder be overbearing and try to manage the project themselves?
6. How much documentation will be required?
7. Will the project team possess the necessary communications, teamwork, and innovation/technical skills?
8. Will the team members be able to commit the necessary time to the project?
9. Is the type of contract (i.e., fixed price, cost reimbursable, cost sharing, etc.) well-suited for the framework selected?

Selecting a highly flexible approach may seem on the surface to be the best way to go since mistakes and potential risks can be identified early, which then allows for faster corrective action to take place and prevent disasters from occurring. But what people seem to fail to realize is that the greater the level of flexibility, the more layers of management and supervision may need to be in place.

Today, there are several methodologies and frameworks available for project teams, such as Agile, Waterfall, Scrum, Prince2, and Rapid Application Development. In the future, we can expect the number of methodologies and frameworks available to increase significantly. Some type of criteria must be established to select the best approach for a given project.

## 2.19 GROWTH OF STRATEGIC PROJECT MANAGEMENT

Over the years, there has been a significant growth in the types of projects where project management is being used. One such area that is receiving a lot of attention is *strategic projects*. Traditionally, project management was used in operational projects with well-defined objectives and a business case that focused on creating a deliverable or outcome for a customer, whether an internal or external customer. Projects that were strategic in nature were often managed by functional managers and without the use of many of the traditional project management processes.

Table 2–11: SOME DIFFERENCES BETWEEN OPERATIONAL AND STRATEGIC PROJECT MANAGEMENT

Element	Operational Project Management	Strategic Project Management
Target	Project objectives	Strategic goals and objectives
Business case	Usually well-defined	May be vague or nonexistent
Project team's line-of-sight	To the business case	To strategic business goals and objectives
Unknowns	Few	Possibly many
Methodology	May use existing methodology	May need modified or new approach for each project
Success factor	Outcomes or deliverables	Creation of sustainable business value
Governance	Single person sponsorship	Committee governance including senior management and members of the board of directors
Life-cycle phases	Using a one-size-fits-all approach where all projects have the same phases	Using an investment life-cycle approach of definition, execution, and commercialization (Phases can change for each project and are used to justify the investment.)

**Table 2–11** shows some of the differences between operational and strategic project management. These differences do not necessarily exist in all companies, but if they do occur, it may be necessary to modify the use of traditional project management activities and focus on frameworks as discussed previously. These differences can also exist on certain types of projects. As an example, innovation projects that focus on small or incremental changes to a product may use operational project management

whereas innovation projects that focus on new platforms or technology breakthroughs may require strategic project management practices.

The definition of success and failure is easier to identify on operational projects than strategic projects and can be measured in shorter time frames.

## 2.20 BUSINESS MODELS

### Standard for Project Management

- 3.4 Focus on Value

There are numerous articles published that discuss the benefits that companies can derive from the successful implementation of project management. However, there is another category that does not receive as much attention; namely, the relationship between project management and the firm's business models. Given the fact that project managers today believe that they are managing part of a business rather than merely a project, the relationship with business models is important.

The construction of a business model describes the organization's business strategy related to how the organization will create, capture, and deliver business value. The literature has diverse interpretations and definitions of a business model which often makes it difficult to define business model success. Some components of a business model are shown in [Table 2–12](#).

Table 2–12: COMPONENTS OF A BUSINESS MODEL

Business Model Components	Description
Value propositions	A description of the company's products and services that add value to the company
Target customer segments	Company's market segments for offering value
Distribution channels	How the company delivers its value
Customer relationships	How the company keeps in touch with its customer base
Value configurations	How the company organizes its activities and resources
Core capabilities	The core competencies that exist within the firm or through external relationships
Commercial network	The value chain of suppliers, distributors, and end-user clients
Partner network	Agreements for cooperation with external sources to bring value to the clients
Cost structure	Cost for maintaining the business model
Revenue model	The various sources of revenue
Project management	Forms, guidelines, templates, and checklists for project management activities and processes designed to create business value

There can be different versions of each of the forms, guidelines, templates, and checklists that project management uses for each of the components of a business model. Project management has matured into a business process that supports each of the firm's business models. Firms can have several business models based on their diversity.

## 2.21 METHODOLOGIES CAN FAIL

Most companies today seem to recognize the need for one or more project management methodologies but either create the wrong methodologies or misuse the methodologies that have been created. It may not be possible to create a single enterprise-wide methodology that can be applied to each and every project. Some companies have been successful doing this, but there are still many companies that successfully maintain more than one methodology. Unless the project manager is capable of tailoring the enterprise project management methodology to his or her needs, perhaps by using a framework approach, more than one methodology may be necessary. Regardless of the approach taken, project management execution must be aligned to the firm's business model.

There are several reasons why good intentions often go astray. At the executive levels, methodologies can fail if the executives have a poor understanding of what a methodology is and believe that a methodology is:

- A quick fix
- A silver bullet
- A temporary solution
- A cookbook approach for project success<sup>[2]</sup>

At the working levels, methodologies can also fail if they:

- Are abstract and high level
- Contain insufficient narratives to support these methodologies
- Are not functional or do not address crucial areas
- Ignore the industry standards and best practices
- Look impressive but lack real integration into the business
- Use nonstandard project conventions and terminology
- Compete for similar resources without addressing this problem
- Don't have any performance metrics
- Take too long to complete because of bureaucracy and administration<sup>[3]</sup>

A methodology can also lead to project failure unless it accomplishes the following:

- Can be adjusted if the assumptions and environmental input factors have changed
- Focuses on linear thinking
- Allows for out-of-the-box thinking
- Allows for value-added changes that are not part of the original requirements
- Fits the type of project
- Uses standard terminology
- Is thought-out—neither too abstract nor too detailed
- Considers bottlenecks and concerns of the user community
- Does not take too long to use
- Has sufficient, correct metrics

If the methodology is too complex for the market, clients and stakeholders will not understand it. The methodology must be well planned from the beginning, not rushed in the design.

<sup>[2]</sup>J. Charvat, *Project Management Methodologies* (Hoboken, NJ: John Wiley & Sons), 2003, p. 4.

<sup>[3]</sup>Charvat, *Project Management*, p. 5.

## 2.22 LEAN PROJECT MANAGEMENT

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### **PMBOK® Guide, 7th Edition**

- 2.5.1 Project Processes

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### **Standard for Project Management**

- 3.9 Navigate Complexity

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When a company decides to use project management as a means for executing its business model, emphasis is initially placed on the creation of a singular methodology that can be used on most of the projects. Although the one-size-fits-all option is not always the best approach, it serves as a starting point and builds up some degree of confidence that project management can work. Unfortunately, on some projects, the one-size-fits-all methodology can be accompanied by more than 50 percent waste due to

ineffectiveness and inefficiency.

Most singular methodologies use the *waterfall approach* where all steps appear to be accomplished sequentially in a downward flow like a waterfall. The waterfall approach requires a great deal of planning before the execution phase which has constraints on requirements, schedule, and budget. Even though the approach is rigid and not necessarily cost-effective, it is still used and required on several types of projects, especially those with clear requirements that are unlikely to change during the execution of the project.

The landscape for project management is changing as we undertake new types of projects, and many companies are fearful of continuous improvement efforts and prefer the one-size-fits-all waterfall approach even though they recognize some of the pitfalls. Companies that focus on maintaining a sustainable competitive advantage are willing to address the changes needed even though the changes might remove them from their comfort zone.

Project management maturity is a never-ending journey rather than a destination. Eventually, companies look for higher levels of maturity in project management by creating customized approaches or frameworks that have some degree of flexibility. One such approach is lean project management, which applies the concepts of lean manufacturing, lean thinking, and lean construction to project management. Lean project management focuses on delivering more value for the customer and eliminating waste that exists in the various activities in the project management methodology. This can make deliverables more cost-effective for customers by eliminating steps that may be unnecessary and do not add value to the desired outcome. For example, in one company the decision was made not to prepare a written risk management report on one project because the risks were low. The cost savings was significant, and the decision was then made to make this an option as part of the methodology rather than a requirement. Lean project management practices usually appear after a firm has at least a cursory understanding of project management, has been using it, and wants to improve it.

Some of the changes that companies have recognized from implementing lean project management practices are shown in [Table 2-13](#).

Identifying lean enablers is not that difficult. Some enablers are quite apparent – such as nonproductive meetings and too many reports, many of which remain unread. Some enablers can be mapped against specific project metrics. Enablers can also be found by capturing best practices and lessons learned. There are also people-driven lean enablers that focus on the organizational changes that may be necessary because of implementing lean project management. Identifying the lean enablers and implementing the changes cannot be accomplished overnight.

One of the benefits of using techniques other than the waterfall approach is that they may more easily accept the principles of lean project management practices. Examples are Agile and Kaizen Kanban, both of which encourage creativity and innovation with a heavy focus on customer value added and waste elimination. Agile (discussed in Section 8.12), which uses adaptive life-cycle phases, can respond more easily than the waterfall approach to high levels of change and continuous stakeholder involvement. Kaizen Kanban promotes the use of establishing improvement boards to maximize project success through continuous improvement projects. Six Sigma practices (discussed in Section 20.7) can also be included in lean project management to help reduce defects. By establishing a flexible project management approach that includes lean project management, Agile, Kaizen Kanban, and Six Sigma, companies are more likely to maximize business value and reduce waste in time and resources.

Table 2-13: COMPARISON OF TRADITIONAL AND LEAN PROJECT MANAGEMENT

Factor	Traditional Approach	Lean Approach
Success criteria	Time, cost, and scope	Deliverables with maximized business value and minimum waste
Processes	Same for each project	Can change for each project
Adapt to volatile environment or changing technology, consumer needs, and markets	Slow response time	Rapid response time
Decision-making	As quickly as possible	Deferred until last moment to consider all alternatives
Procurement	Contractors selected before requirements are finalized	Procurement later in project to minimize costly scope changes
Role of participants	Unclear	Usually clear
Stakeholder interfacing	At end of the project	Throughout the project
Planning	Consideration only in early life-cycle phases	Consideration in all life-cycle phases
Life-cycle phases	The same for all projects and cannot overlap	Can be different for each project and will overlap

As project management changes from requirements-driven to value-driven project management, new tools and artifacts will be utilized such as value streams and value stream mapping. Value streams are artifacts that depict the value-added activities used

to create value for customers or stakeholders. The value stream can also identify the non-value-added activities that are wasteful and should be eliminated if possible. Value stream mapping is a visual tool that looks at the flow of both materials and information as they flow through the project management processes.

## 2.23 ORGANIZATIONAL CHANGE MANAGEMENT AND CORPORATE CULTURES

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### ***PMBOK® Guide, 6th Edition***

- Chapter 4 Integration Management
  - 4.6 Perform Integrated Change Control
  - 1.2.1 Projects
- 

### ***PMBOK® Guide, 7th Edition***

- 2.2.2 Project Team Culture
- 

### **Standard for Project Management**

- 3.2 Create a Collaborative Project Team Environment
- 

It has often been said that the most difficult projects to manage are those that involve the management of change. [Figure 2–17](#) shows the four basic inputs needed to develop a project management methodology. Each has a “human” side that may require that people change.

Successful development and implementation of a project management methodology requires:

- Identification of the most common reasons for change in project management
- Identification of the ways to overcome the resistance to change
- Application of the principles of organizational change management to ensure that the desired project management environment will be created and sustained



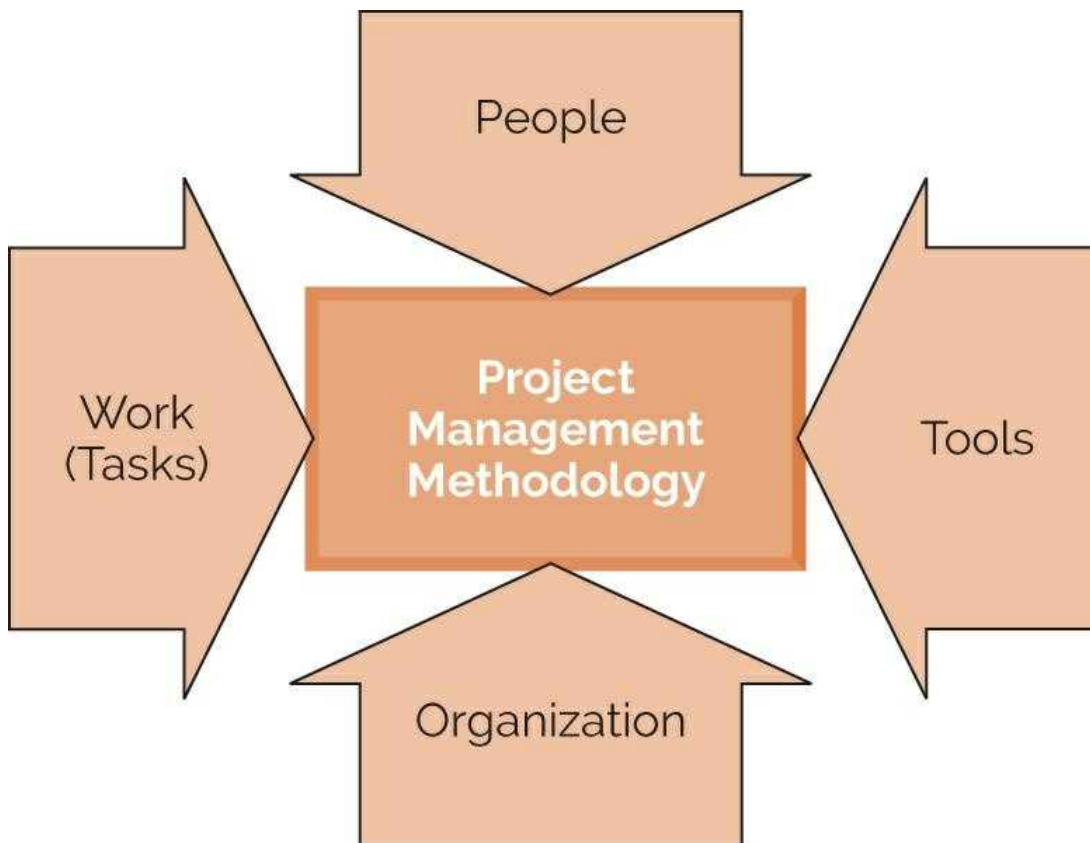


Figure 2–17: Methodology inputs.

For simplicity's sake, resistance can be classified as professional resistance and personal resistance to change. Professional resistance occurs when each functional unit as a whole feels threatened by project management. This is shown in [Figure 2–18](#). Examples include:

- **Sales.** The sales staff's resistance to change arises from fear that project management will take credit for corporate profits, thus reducing the year-end bonuses for the sales force. Sales personnel fear that project managers may become involved in the sales effort, thus diminishing the power of the sales force.
- **Marketing.** Marketing people fear that project managers will end up working so closely with customers that project managers may eventually be given some of the marketing and sales functions. This fear is not without merit because customers often want to communicate with the personnel managing the project rather than those who may disappear after the sale is closed.

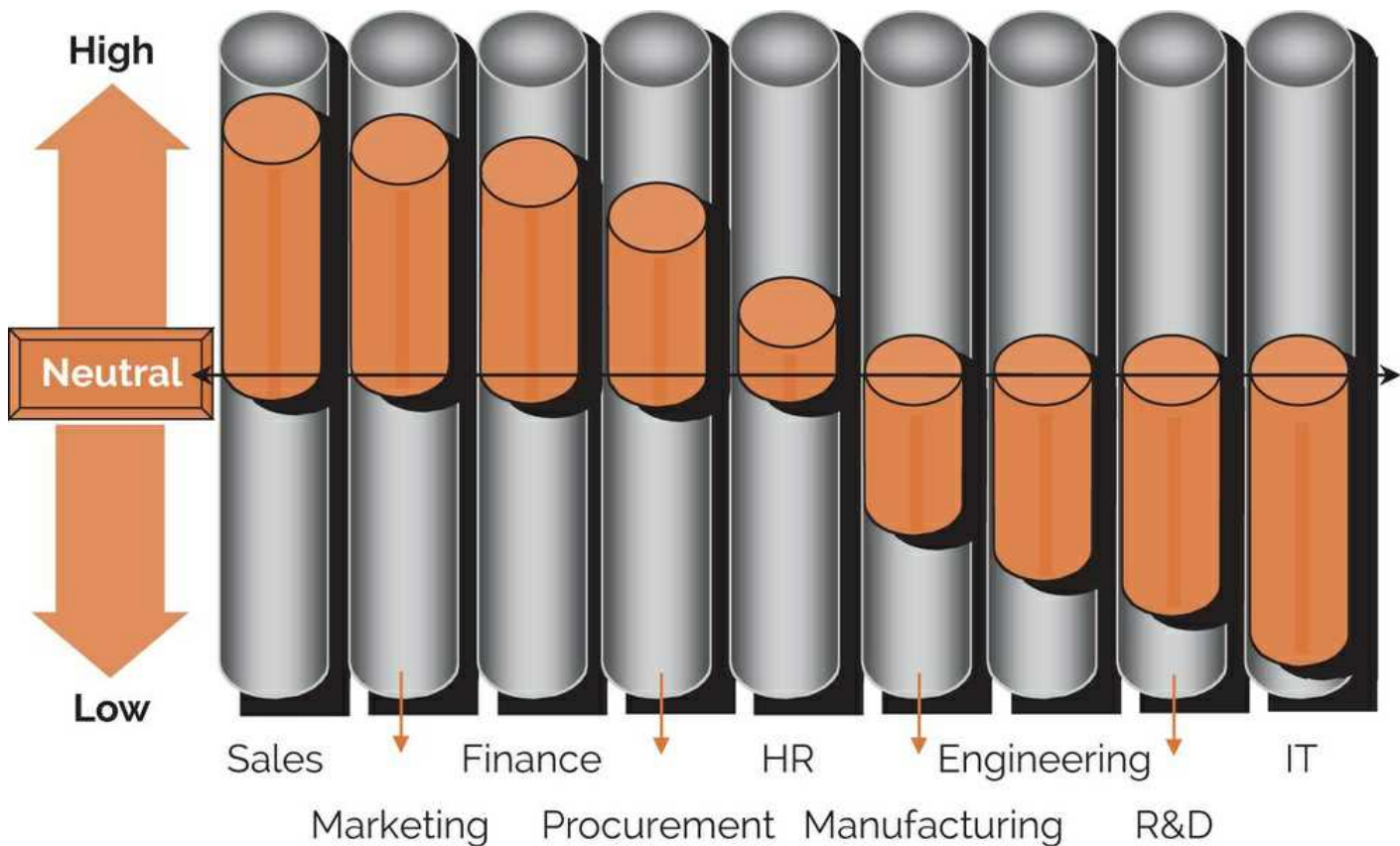


Figure 2-18: Resistance to change.

- **Finance (and Accounting).** These departments fear that project management will require the development of a project accounting system (such as earned value measurement) that will increase the workload in accounting and finance, and that they will have to perform accounting both horizontally (i.e., in projects) and vertically (i.e., in line groups).
- **Procurement.** The fear in this group is that a project procurement system will be implemented in parallel with the corporate procurement system, and that the project managers will perform their own procurement, thus bypassing the procurement department.
- **Human resources management.** The HR department may fear that a project management career path ladder will be created, requiring new training programs. This will increase their workloads.
- **Manufacturing.** Little resistance is found here because, although the manufacturing segment is not project-driven, there are numerous capital installation and maintenance projects that will have required the use of project management.
- **Engineering, R&D, and information technology.** These departments are almost entirely project-driven with very little resistance to project management.

Getting the support of and partnership with functional management can usually overcome the functional resistance. However, the individual resistance is usually more complex and more difficult to overcome. Individual resistance can stem from:

- Potential changes in work habits
- Potential changes in the social groups
- Embedded fears
- Potential changes in the wage and salary administration program

[Tables 2-17](#) show the causes of resistance and possible solutions. Workers tend to seek constancy and often fear that new initiatives will push them outside their comfort zones. Most workers are already pressed for time in their current jobs and fear that new programs will require more time and energy.

Some companies feel compelled to continually undertake new initiatives, and people may become skeptical of these programs, especially if previous initiatives have not been successful. The worst-case scenario is when employees are asked to undertake

new initiatives, procedures, and processes that they do not understand.

It is imperative that we understand resistance to change. If individuals are happy with their current environment, there will be resistance to change. But what if people are unhappy? There will still be resistance to change unless (1) people believe that the change is possible, and (2) people believe that they will somehow benefit from the change.

Table 2–14: RESISTANCE: WORK HABITS

Cause of Resistance	Ways to Overcome
<ul style="list-style-type: none"> <li>• New guidelines/processes</li> <li>• Need to share “power” information</li> <li>• Creation of a fragmented work environment</li> <li>• Need to give up established work patterns (learn new skills)</li> <li>• Change in comfort zones</li> </ul>	<ul style="list-style-type: none"> <li>• Dictate mandatory conformance from above</li> <li>• Create new comfort zones at an acceptable pace</li> <li>• Identify tangible/intangible individual benefits</li> </ul>

Table 2–15: RESISTANCE: SOCIAL GROUPS

Cause of Resistance	Ways to Overcome
<ul style="list-style-type: none"> <li>• Unknown new relationships</li> <li>• Multiple bosses</li> <li>• Multiple, temporary assignments</li> <li>• Severing of established ties</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain existing relationships</li> <li>• Avoid cultural shock</li> <li>• Find an acceptable pace for rate of change</li> </ul>

Table 2–16: RESISTANCE: EMBEDDED FEARS

Cause of Resistance	Ways to Overcome
<ul style="list-style-type: none"> <li>• Fear of failure</li> <li>• Fear of termination</li> <li>• Fear of added workload</li> <li>• Fear or dislike of uncertainty/unknowns</li> <li>• Fear of embarrassment</li> <li>• Fear of a “we/they” organization</li> </ul>	<ul style="list-style-type: none"> <li>• Educate workforce on benefits of changes to the individual/corporation</li> <li>• Show willingness to admit/accept mistakes</li> <li>• Show willingness to pitch in</li> <li>• Transform unknowns into opportunities</li> <li>• Share information</li> </ul>

Table 2–17: RESISTANCE: WAGE AND SALARY ADMINISTRATION

Causes of Resistance	Ways to Overcome
<ul style="list-style-type: none"> <li>• Shifts in authority and power</li> <li>• Lack of recognition after the changes</li> <li>• Unknown rewards and punishment</li> <li>• Improper evaluation of personal performance</li> <li>• Multiple bosses</li> </ul>	<ul style="list-style-type: none"> <li>• Link incentives to change</li> <li>• Identify future advancement opportunities/career path</li> </ul>

Management is the architect of the change process and must develop the appropriate strategies so the organization can change. This is done best by developing a shared understanding with employees by doing the following:

- Explaining the reasons for the change and soliciting feedback
- Explaining the desired outcomes and rationale
- Championing the change process
- Empowering the appropriate individuals to institutionalize the changes
- Investing in training necessary to support the changes

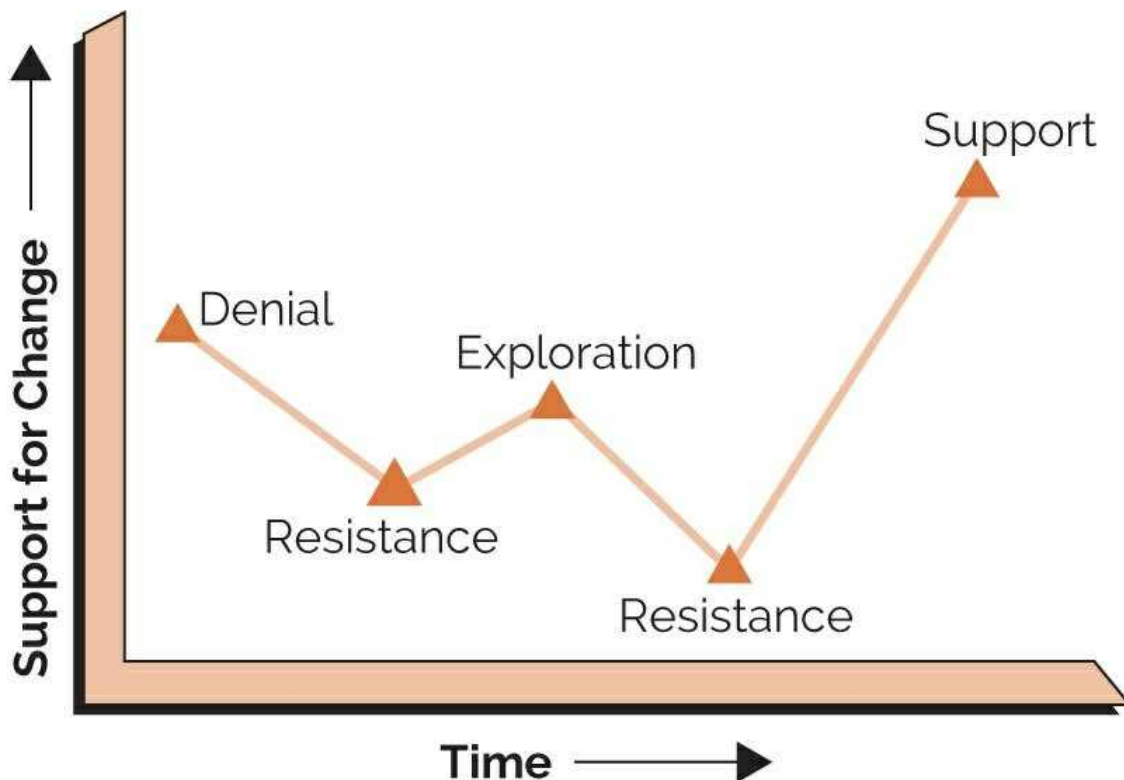


Figure 2-19: Change process.

For most companies, the change management process will follow the pattern shown in [Figure 2-19](#). Employees initially refuse to admit the need for change. As management begins pursuing the change, the support for the change diminishes and pockets of resistance crop up. Continuous support for the change by management encourages employees to explore the potential opportunities that will result from the change about to take place. Unfortunately, this exploration often causes additional negative information to surface, thus reinforcing the resistance to change. As pressure by management increases, and employees begin to recognize the benefits of the proposed change, support begins to grow.

The ideal purpose of change management is to create a superior culture. There are different types of project management cultures based on the nature of the business, the amount of trust and cooperation, and the competitive environment. Typical types of cultures include:

- *Cooperative cultures.* These are based on trust and effective communications, internally and externally.
- *Noncooperative cultures.* In these cultures, mistrust prevails. Employees worry more about themselves and their personal interests than what's best for the team, company, or customer.
- *Competitive cultures.* These cultures force project teams to compete with one another for valuable corporate resources. In these cultures, project managers often demand that the employees demonstrate more loyalty to the project than to their line managers. This can be disastrous when employees are working on many projects at the same time.
- *Isolated cultures.* These occur when a large organization allows functional units to develop their own project management cultures and can result in a culture-within-a-culture environment.
- *Fragmented cultures.* These occur when part of the team is geographically separated from the rest of the team. Fragmented cultures also occur on multinational projects, where the home office or corporate team may have a strong culture for project management but the foreign team has no sustainable project management culture.

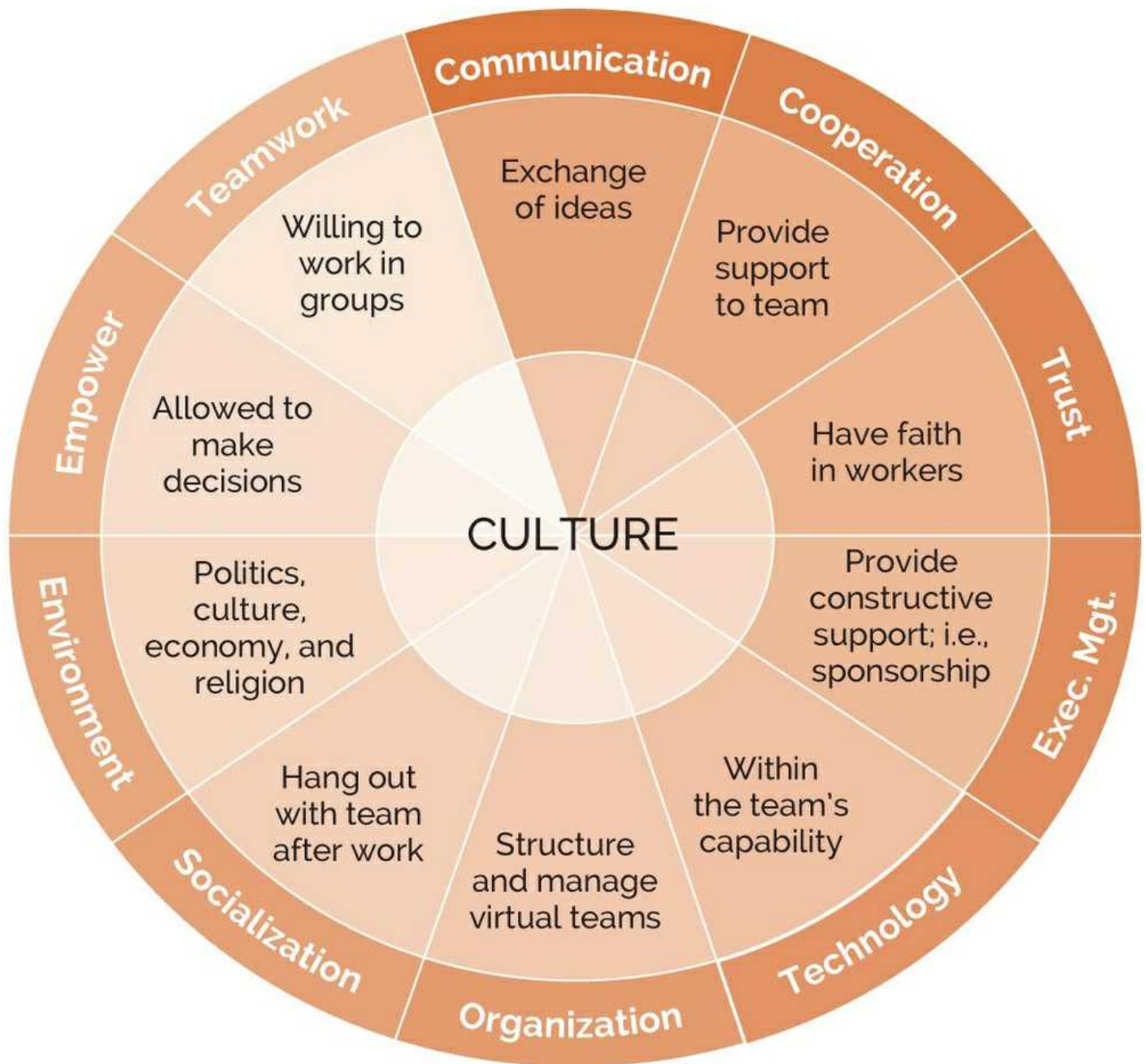


Figure 2–20: Facets of a project management culture.

Some of the facets for an effective project management culture are shown in [Figure 2–20](#).

The critical facets of a good culture are teamwork, trust, communication, and cooperation. Some project management practitioners argue that communication and cooperation are the essential ingredients for teamwork and trust. In companies with excellent cultures, teamwork is exhibited by:

- Employees and managers sharing ideas with each other and establishing high levels of innovation and creativity in work groups
- Employees and managers trusting each other and demonstrating loyalty to each other and the company
- Employees and managers being committed to the work they do and the promises they make
- Employees and managers sharing information freely
- Employees and managers consistently being open and honest with each other

When teamwork exists, trust usually follows, and this includes trust among the workers within the company and trust in dealing with clients. When trust occurs between the buyer and the seller, both parties eventually benefit, as shown in [Table 2–18](#).

Table 2–18: TRUST IN CUSTOMER–CONTRACTOR RELATIONSHIPS

Without Trust	With Trust
Continuous competitive bidding	Long-term contracts, repeat business, single- and sole-source contract awards
Massive project documentation	Minimal documentation
Excessive number of customer–contractor team meetings	Minimal number of team meetings
Team meeting with excessive documentation	Team meeting without documentation or minimal documentation
Sponsorship at the executive levels	Sponsorship at lower and middle levels of management

## 2.24 BENEFITS HARVESTING AND CULTURAL CHANGE

### *PMBOK® Guide, 6th Edition*

- Chapter 4 Integration Management

### Standard for Project Management

- 3.4 Focus on Value

On some projects, the true benefits and resulting value are not obtained until sometime after the project is over. An example might be the development of a new software program where the benefits are not achieved until the software program is implemented and being used. This is often called the *go live stage* of a project, or the *benefits harvesting stages*, which is the actual realization of the benefits and accompanying value. Harvesting may necessitate the implementation of an organizational change management plan that may remove people from their comfort zone. Full benefit realization may face resistance from managers, workers, customers, suppliers, and partners. There may be an inherent fear that change will be accompanied by loss of promotion prospects, less authority and responsibility, and possible loss of respect from peers.

Benefits harvesting may also increase the benefits realization costs because of:

- Hiring and training new recruits
- Changing the roles of existing personnel and providing training
- Relocating existing personnel
- Providing additional or new management support
- Updating computer systems
- Purchasing new software
- Creating new policies and procedures
- Renegotiating union contracts
- Developing new relationships with suppliers, distributors, partners, and joint ventures

## 2.25 AGILE AND ADAPTIVE PROJECT MANAGEMENT CULTURES

### *PMBOK® Guide, 6th Edition*

- 1.2.5.1 Project Management Tailoring
- 1.2.5.2 Project Management Methodology Tailoring

### *PMBOK® Guide, 7th Edition*

- 2.2.2 Project Team Cultures
- 3.1 Tailoring Overview

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## Standard for Project Management

- 3.7 Tailor Based on Context

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One of the reasons why agile project management has been successful is because executives are now placing more trust in the hands of the project managers to make the correct project and business decisions. Years ago, project management methodologies were created based on rigid policies and procedures with the mistaken belief that only through project management standardization on every project can we get repeatable project success. Tailoring the project management methodology to a particular project or client was rarely allowed.

Agile project management practices have demonstrated that project management tailoring can work. Most methodologies today are made of forms, guidelines, templates, and checklists. The project manager then selects what is appropriate for a particular client and creates a flexible methodology or framework that can be unique for each client. We live in a world of adaptive environments. This is particularly important for external clients that would prefer that the framework be adapted to their business model and way of doing business rather than how your parent company does business. Framework success can lead to repeat business.

## 2.26 PROJECT MANAGEMENT INTELLECTUAL PROPERTY

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### *PMBOK® Guide, 6th Edition*

- 1.2.4.7 Project Management Data and Information
- 1.2.6 Project Management Business Documents
- 2.3.2 Corporate Knowledge Repositories

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We believe today that we are managing our business by projects. As such, project managers are expected to make business decisions as well as project decisions. Throughout the life of a project, there is a significant amount of data that must be collected including information related to the project business case, project benefits realization plan, project charter, and project plan.

When a project comes to an end, the focus is now on capturing lessons learned and best practices. We must capture not only project-related best practices, but business best practices as well. But as we capture business best practices, we begin replacing the project management best practices library with a knowledge repository that includes both project management and business-related best practices. This is shown in [Figure 2-21](#).

Another reason for the growth in intellectual property is because of the benchmarking activities that companies are performing, most likely using the project management office. [Figure 2-22](#) shows typical benchmarking activities and the types of information being sought.



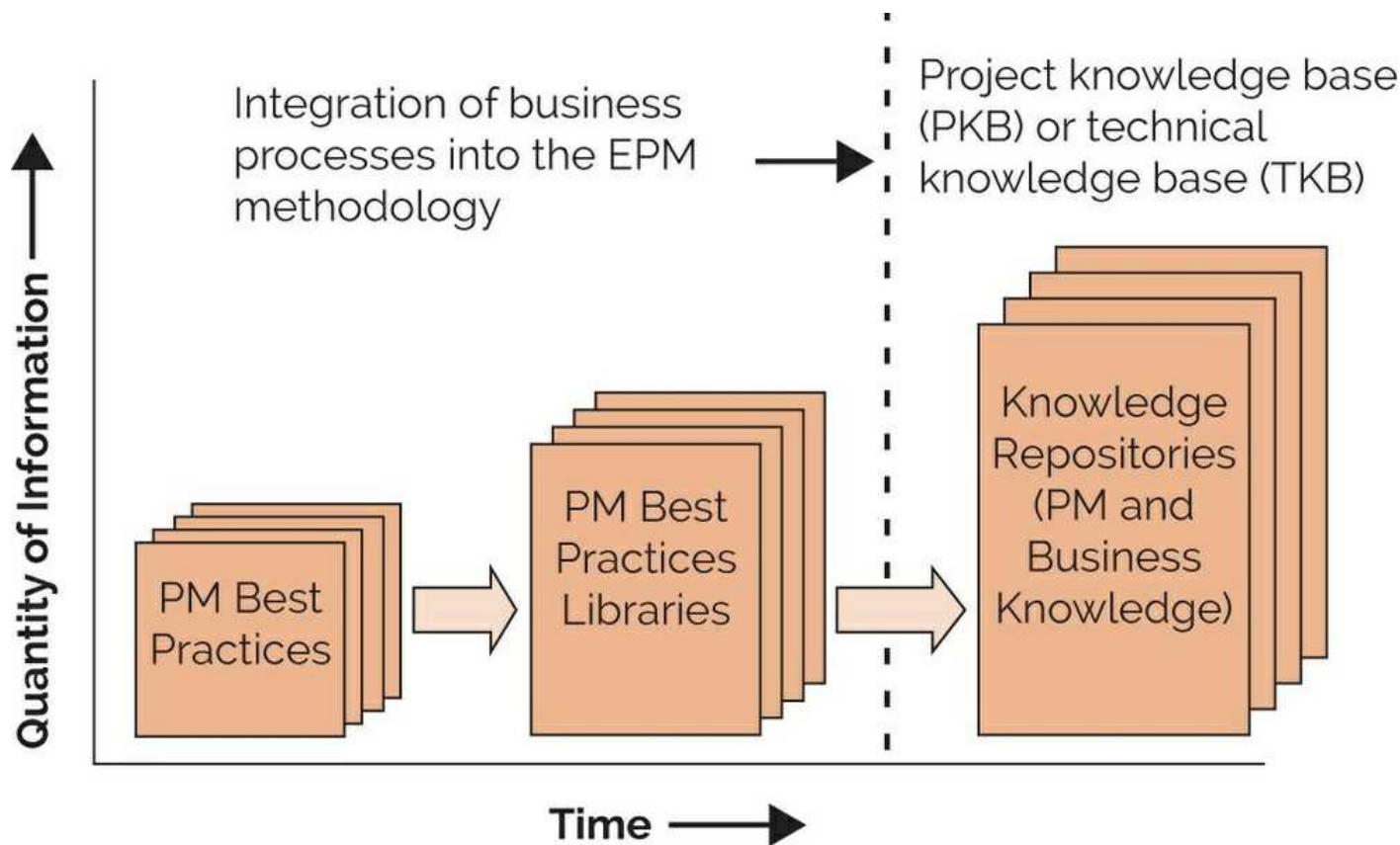


Figure 2-21: Growth of knowledge management.

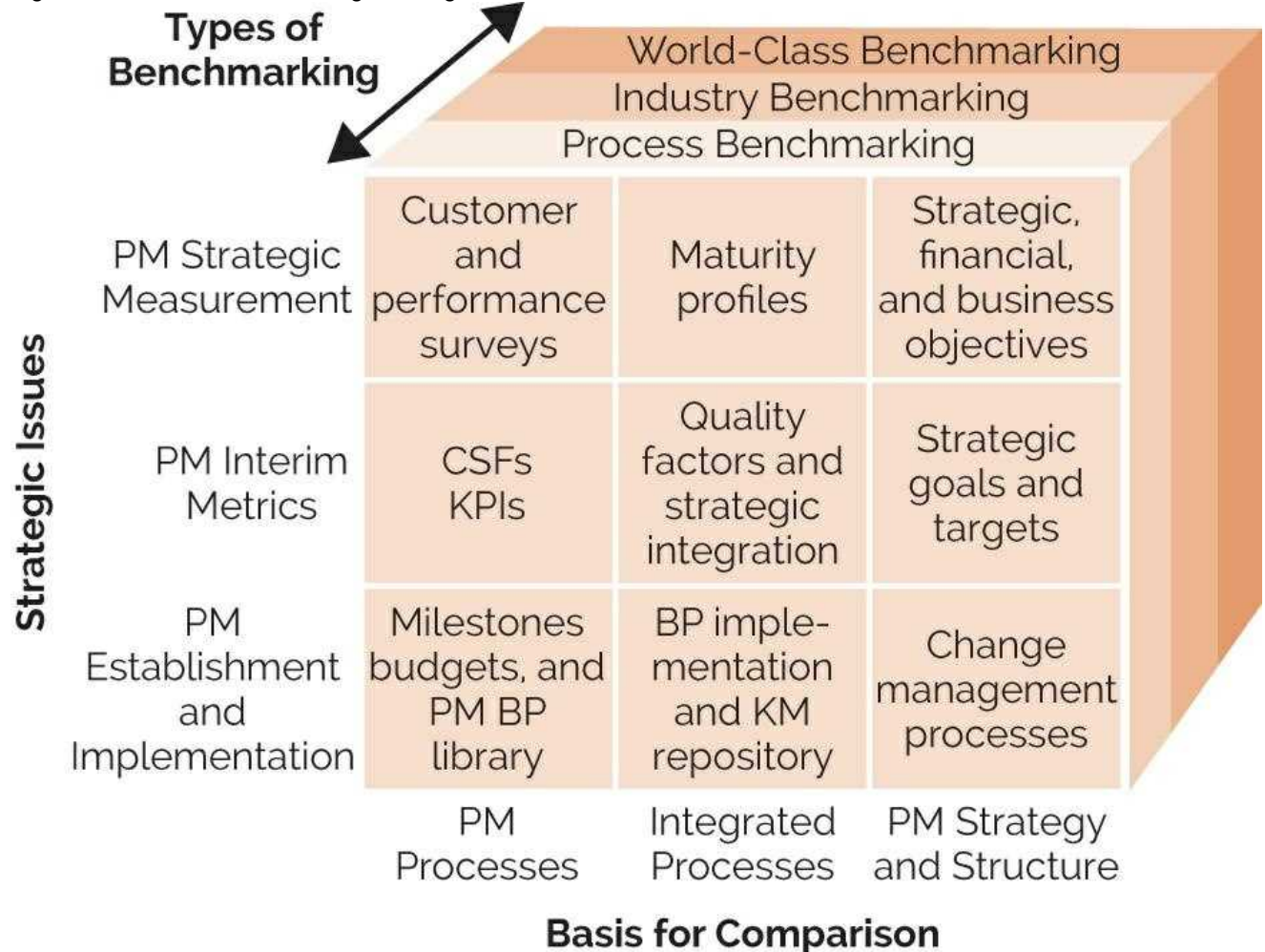


Figure 2-22: PM benchmarking and knowledge management (KM).

The growth in knowledge repositories and cloud computing has provided companies with the opportunities for data warehouses. According to Melik:

Many organizations use diverse applications and information systems, each having their own database. The data from disparate systems can be merged into one single database (centralized data) in a process known as *data warehousing*. For example, a company could use a customer relations management (CRM) solution from Vendor A, a project management system from Vendor B, and an enterprise resource planning (ERP) or accounting system from Vendor C; data warehousing would be used to aggregate the data from these three sources. Business intelligence and reporting tools are then used to perform detailed analysis on all of the data. Data warehouse reports are usually not real time, since the data aggregation takes time to complete and is typically scheduled for once per week, month, or even quarter. [4]

One often overlooked item during the early stages of projects with partnerships and joint ventures is the control of intellectual property (IP). The partnership agreement must contain information on how the IP rights will be shared and how they will be disposed of in case one of the partners exits the partnership.

Issues with the control of intellectual property will always exist but the risks are usually greater when partnerships are considered. Some of the issues are shown in [Table 2–19](#).

Table 2–19: ISSUES WITH INTELLECTUAL PROPERTY

Issue	Using Internal Employees	Using Partnerships
Access to needed expertise	Limited to internal workers	Access to much more expertise and feedback options
Ownership	Owned and patented by the company	May need legal/licensing agreements and partnerships agreements
Transactional costs including non-disclosure agreements and employment agreements	Minimal filing and control costs	High transactional costs
Potential for leakage of business strategy	Low	Very high
Potential for leakage of significant amount of intellectual property	Low	Very high
Product development cost	Perhaps very high	Perhaps very low using strategic partners
Ability to block or counteract competitive actions	High	Low, especially if partners have significant cash flow for legal battles
Access to talent	Limited	Very high
Financial rewards for contributors	Cash or prizes to individuals	Contracts, partnership agreements, licensing agreements, revenue sharing and equity investment options

[4]Rudolf Melik, *The Rise of the Project Workforce* (Hoboken, NJ: John Wiley & Sons, 2007), p. 238.

## 2.27 SYSTEMS THINKING

### Standard for Project Management

- 3.5 Recognize, Evaluate, and Responding to Systems Interactions

Ultimately, all decisions and policies are made on the basis of judgments; there is no other way, and there never will be. In the end, analysis is but an aid to the judgment and intuition of the decision maker. These principles hold true for project management as well as for systems management.

The systems approach may be defined as a logical and disciplined process of problem solving. The word *process* indicates an active ongoing system that is fed by input from its parts. The systems approach:

- Forces review of the relationship of the various subsystems
- Is a dynamic process that integrates all activities into a meaningful total system
- Systematically assembles and matches the parts of the system into a unified whole
- Seeks an optimal solution or strategy in solving a problem

The systems approach to problem-solving has phases of development similar to traditional life-cycle phases. These phases are defined as follows:

- *Translation*. Terminology, problem objective, and criteria and constraints are defined and accepted by all participants.
- *Analysis*. All possible approaches to or alternatives to the solution of the problem are stated.
- *Trade-off*. Selection criteria and constraints are applied to the alternatives to meet the objective.
- *Synthesis*. The best solution in reaching the objective of the system is the result of the combination of analysis and trade-off phases.

Other terms essential to the systems approach are:

- *Objective*. The function of the system or the strategy that must be achieved
- *Requirement*. A partial need to satisfy the objective
- *Alternative*. One of the selected ways to implement and satisfy a requirement
- *Selection criteria*. Performance factors used in evaluating the alternatives to select a preferable alternative
- *Constraint*. An absolute factor that describes conditions that the alternatives *must* meet

A common error by potential decision makers (those dissatisfied individuals with authority to act) who base their thinking solely on subjective experience, judgment, and intuition is that they fail to recognize the existence of alternatives. Subjective thinking is inhibited or affected by personal bias.

Objective thinking, on the other hand, is a fundamental characteristic of the systems approach and is exhibited or characterized by emphasis on the tendency to view events, phenomena, and ideas as external and apart from self-consciousness. Objective thinking is unprejudiced.

The systems analysis process, as shown in [Figure 2–23](#), begins with systematic examination and comparison of those alternative actions that are related to the accomplishment of the desired objective. The alternatives are then compared on the basis of the resource costs and the associated benefits. The loop is then completed using feedback to determine how compatible each alternative is with the objectives of the organization.

The above analysis can be arranged in steps:

- Input data to mental process
- Analyze data
- Predict outcomes
- Evaluate outcomes and compare alternatives
- Choose the best alternative
- Take action
- Measure results and compare them with predictions

The systems approach is most effective if individuals can be trained to be ready with alternative actions that directly tie in with the prediction of outcomes. The basic tool is the outcome array, which represents the matrix of all possible circumstances. This outcome array can be developed only if the decision maker thinks in terms of the wide scope of possible outcomes. Outcome descriptions force the decision maker to clearly spell out the objectives (i.e., the goal to achieve).

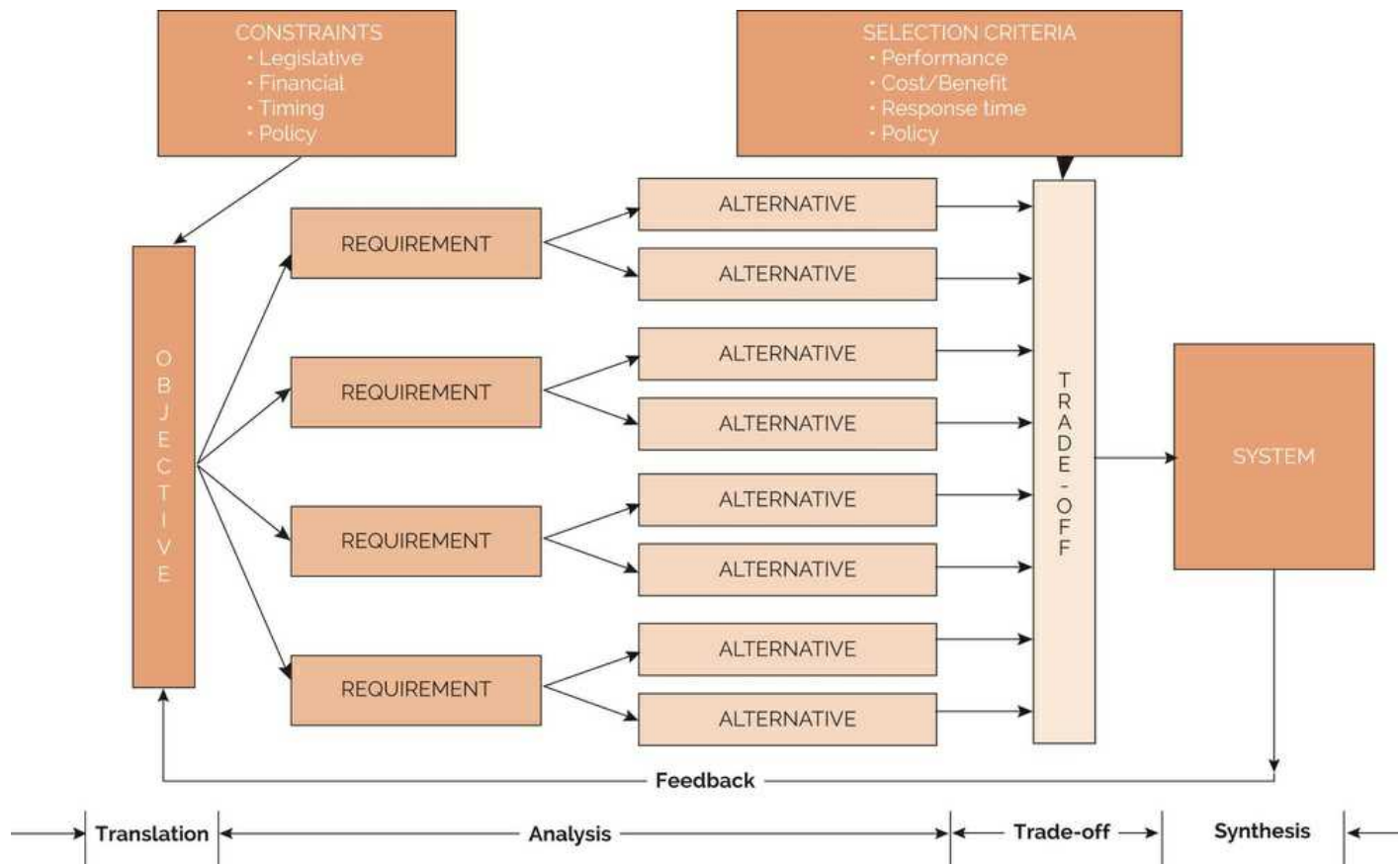


Figure 2-23: The systems approach.

Systems thinking is vital for the success of a project. Project management systems urgently need new ways of strategically viewing, questioning, and analyzing project needs for alternative nontechnical and technical solutions. The ability to analyze the total project, rather than the individual parts, is essential for successful project management.

Related Case Studies (from Kerzner/Project Management Case Studies, 6th ed.)	PMBOK® Guide, 6th ed., Reference Section for the PMP® Certification Exam	PMBOK® Guide, 7th ed., Reference Section for the PMP® Certification Exam
<ul style="list-style-type: none"><li>• Goshe Corporation</li><li>• MIS Project Management at First National Bank</li><li>• Cordova Research Group</li><li>• Cortez Plastics</li><li>• Apache Metals, Inc.</li><li>• Haller Specialty Manufacturing</li><li>• Creating a Methodology*</li><li>• Disney (A), (B)</li><li>• Zane Corp.</li><li>• Jill's Dilemma</li></ul>	<ul style="list-style-type: none"><li>• Integration Management</li><li>• Scope Management</li></ul>	<ul style="list-style-type: none"><li>• Project, Program and Product Management Focus on Value Life-Cycle Performance Domain Project ProcessesTailoring the Delivery Approach</li><li>• Project Team Culture</li></ul>

\*Case Study appears at end of the chapter

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2.28 STUDYING TIPS FOR THE PMI® PROJECT MANAGEMENT CERTIFICATION EXAM

This section is applicable as a review of the principles to support the knowledge areas and domain groups in the *PMBOK® Guide*. This chapter addresses:

- Integration management
- Scope management
- Closure

Understanding the following principles is beneficial if the reader is using this text to study for the PMP® Certification Exam:

- Brief historical background of project management
- That, early on, project managers were assigned from engineering
- Benefits of project management
- Barriers to project management implementation and how to overcome them
- Differences between a program and a project
- What is meant by informal project management
- How to identify success and failure in project management
- Project life-cycle phases
- What is meant by closure to a life-cycle phase or to the entire project
- What is meant by a project management methodology
- What is meant by critical success factors (CSFs) and key performance indicators (KPIs)

In Appendix C, the following Dorale Products mini–case studies are applicable:

- Dorale Products (A) [Integration and Scope Management]
- Dorale Products (B) [Integration and Scope Management]
- Dorale Products (C) [Integration and Scope Management]
- Dorale Products (D) [Integration and Scope Management]
- Dorale Products (E) [Integration and Scope Management]
- Dorale Products (F) [Integration and Scope Management]

The following multiple-choice questions will be helpful in reviewing the principles of this chapter.

1. A structured process for managing a multitude of projects is most commonly referred to as:

?

- A. Project management policies
- B. Project management guidelines
- C. Industry-wide templates
- D. A project management methodology

2. The most common terminology for a reusable project management methodology is:

?

- A. Template
- B. Concurrent scheduling technique
- C. Concurrent planning technique
- D. Skeleton framework document

3. The major behavioral issue in getting an organization to accept and use a project management methodology effectively is: ?
- A. Lack of executive sponsorship
  - B. Multiple boss reporting
  - C. Inadequate policies and procedures
  - D. Limited project management applications
4. The major difference between a project and a program is usually: ?
- A. The role of the sponsor
  - B. The role of the line manager
  - C. The time frame
  - D. The specifications
5. Projects that remain almost entirely within one functional area are best managed by the: ?
- A. Project manager
  - B. Project sponsor
  - C. Functional manager
  - D. Assigned functional employees
6. Large projects are managed by: ?
- A. The executive sponsor
  - B. The project or program office for that project
  - C. The manager of project managers
  - D. The director of marketing
7. The most common threshold limits on when to use the project management methodology are: ?
- A. The importance of the customer and potential profitability
  - B. The size of the project (i.e., \$) and duration
  - C. The reporting requirements and position of the sponsor
  - D. The desires of management and functional boundaries crossed
8. A grouping of projects is called a: ?
- A. Program
  - B. Project template
  - C. Business template
  - D. Business plan
9. Project management methodologies often work best if they are structured around: ?
- A. Rigid policies
  - B. Rigid procedures
  - C. Minimal forms and checklists
  - D. Life-cycle phases
10. One way to validate the successful implementation of project management is by looking at the number and magnitude of the conflicts requiring: ?
- A. Executive involvement
  - B. Customer involvement

- C. Line management involvement
  - D. Project manager involvement
11. Standardization and control are benefits usually attributed to: ?
- A. Laissez-faire management
  - B. Project management on R&D efforts
  - C. Use of life-cycle phases
  - D. An organization with weak executive sponsorship
12. The most difficult decision for an executive sponsor to make at the end-of-phase review meeting is to: ?
- A. Allow the project to proceed to the next phase based on the original objective.
  - B. Allow the project to proceed to the next phase based on a revised objective.
  - C. Postpone making a decision until more information is processed.
  - D. Cancel the project.
13. Having too many life-cycle phases may be detrimental because: ?
- A. Executive sponsors will micromanage.
  - B. Executive sponsors will become "invisible."
  - C. The project manager will spend too much time planning for gate review meetings rather than managing the phases.
  - D. The project manager will need to develop many different plans for each phase.
14. A project is terminated early because the technology cannot be developed, and the resources are applied to another project that ends up being successful. Which of the following is true concerning the first project? ?
- A. The first project is regarded as a failure.
  - B. The first project is a success if the termination is done early enough before additional resources are squandered.
  - C. The first project is a success if the project manager gets promoted.
  - D. The first project is a failure if the project manager gets reassigned to a less important project.
15. Which of the following would *not* be regarded as a secondary definition of project success? ?
- A. The customer is unhappy with the deliverable, but follow-on business is awarded based on effective customer relations.
  - B. The deliverables are met but OSHA and EPA laws are violated.
  - C. The customer is displeased with the performance, but you have developed a new technology that could generate many new products.
  - D. The project's costs were overrun by 40 percent, but the customer funds an enhancement project.

## Answers

- 1. D
- 2. A
- 3. B
- 4. C
- 5. C
- 6. B
- 7. B
- 8. A
- 9. D
- 10. A
- 11. C
- 12. D
- 13. C
- 14. B



**15. B**

## PROBLEMS

- **2–1** Do you think that someone could be a good systems manager but a poor project manager? What about the reverse situation? State any assumptions that you may have to make.
- **2–2** For each of the following projects, state whether we are discussing an open, closed, or extended system:
  - a. A high-technology project
  - b. New product R&D
  - c. An online computer system for a bank
  - d. Construction of a chemical plant
  - e. Developing an in-house cost accounting reporting system
- **2–3** What impact could the product life cycle have on the selection of the project organizational structure?
- **2–4** In the development of a system, what criteria should be used to determine where one phase begins and another ends and where overlap can occur?
- **2–5** Can a company be successful at project management without having or using a project management methodology?
- **2–6** Who determines how many life-cycle phases should be part of a project management methodology?
- **2–7** Under what conditions can a project be considered as both a success and a failure at the same time?
- **2–8** Is it possible to attain an informal project management approach without first going through formalized project management?

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## CASE STUDY

### CREATING A METHODOLOGY

#### Background

John Compton, the president of the company, expressed his feelings quite bluntly at the executive staff meeting:

We are no longer competitive in the marketplace. Almost all of the requests for proposal (RFP) that we want to bid on have a requirement that we must identify in the proposal the project management methodology we will use on the contract should we be awarded the contract. We have no project management methodology. We have just a few templates we use based on the *PMBOK® Guide*. All of our competitors have methodologies, but not us.

I have been asking for a methodology to be developed for more than a year now, and all I get are excuses. Some of you are obviously afraid that you might lose power and authority once the methodology is up and running. That may be true, but losing some power and authority is obviously better than losing your job. In six months I want to see a methodology in use on all projects or I will handle the situation myself. I simply cannot believe that my executive staff is afraid to develop a project management methodology.

#### Critical Issues

The executive staff knew this day was inevitable; they had to take the initiative in the implementation of a project management methodology. Last year, a consultant was brought in to conduct a morning three-hour session on the benefits of project management and the value of an enterprise project management methodology (EPM). As part of the session, the consultant explained that the time needed to develop and implement an EPM system can be shortened if the company has a project management office (PMO) in place to take the lead role. The consultant also explained that whichever executive gets control of the PMO may become more powerful than other executives because he or she now controls all of the project management intellectual property. The executive staff fully understood the implications of this and therefore became reluctant to visibly support project management until they could see how their organization would be affected. In the meantime, project management suffered.

Reluctantly, a PMO was formed reporting to the chief information officer. The PMO comprised a handful of experienced project managers who could hopefully take the lead in the development of a methodology. The PMO concluded that there were five steps

that had to be done initially. After the five steps were done, the executive committee would receive a final briefing on what had been accomplished. The final briefing would be in addition to the monthly updates and progress reports. The PMO believed that getting executive support and sign-offs in a timely manner would be difficult.

The first step that needed to be done was the establishment of the number of life-cycle phases. Some people interviewed wanted 10–12 life-cycle phases. That meant that there would be 10–12 gate review meetings and the project managers would spend a great deal of time preparing paperwork for the gate review meetings rather than managing the project. The decision was then made to have no more than six life-cycle phases.

The second step was to decide whether the methodology should be designed around rigid policies and procedures or go the more informal route of using forms, guidelines, checklists, and templates. The PMO felt that project managers needed some degree of freedom in dealing with clients and therefore the more informal approach would work best. Also, clients were asking to have the methodology designed around the client's business needs and the more informal approach would provide the flexibility to do this.

The third step was to see what could be salvaged from the existing templates and checklists. The company had a few templates and checklists but not all of the project managers used them. The decision was made to develop a standardized set of documents in accordance with the information in the *PMBOK® Guide*. The project managers could then select whatever forms, guidelines, templates, and checklists were appropriate for a particular project and client.

The fourth step would be to develop a means for capturing best practices using the EPM system. Clients were now requiring in their RFP that best practices on a project must be captured and shared with the client prior to the closeout of the project. Most of the people in the PMO believed that this could be done using forms or checklists at the final project-debriefing meeting.

The fifth step involved education and training. The project managers and functional organizations that would staff the projects would need to be trained in the use of the new methodology. The PMO believed that a one-day training program would suffice and the functional organizations could easily release their people for a one-day training session.

## QUESTIONS

1. What can you determine about the corporate culture from the fact that they waited this long to consider the development of an EPM system?
2. Can a PMO accelerate the implementation process?
3. Is it acceptable for the PMO to report to the chief information officer or to someone else?
4. Why is it best to have six or fewer life-cycle phases in an EPM system?
5. Is it best to design an EPM system around flexible or inflexible elements? Generally, when first developing an EPM system, do companies prefer to use formality or informality in the design?
6. Should an EPM system have the capability of capturing best practices?

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## NOTES

- Adapted from Robert D. Gilbreath, *Winning at Project Management* (New York: John Wiley & Sons, 1986), pp. 2–6.
1. Rachel Alt-Simmons, *Agile by Design* (Hoboken, NJ: John Wiley, 2016), p. 33.
  2. J. Charvat, *Project Management Methodologies* (Hoboken, NJ: John Wiley & Sons), 2003, p. 4.
  3. Charvat, *Project Management*, p. 5.
  4. Rudolf Melik, *The Rise of the Project Workforce* (Hoboken, NJ: John Wiley & Sons, 2007), p. 238.
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