1

Introduction to IT PPM

When a business wants to get control of its IT projects, two paradigms collide: the world of financial portfolio management and the world of IT project management. When implementing IT PPM, companies will either lean more towards the former by supporting executive decisions or they will lean more towards the latter by supporting PMs. The opportunity that IT PPM presents is how to combine the benefits of both approaches to best support an IT project-centric organization. This chapter will begin by looking at the origins of PPM by reviewing modern portfolio theory (MPT). Then a basic review of IT project management will be presented. Once this foundation has been established, we will start to see how the two overlap. Maximizing return, alignment with strategy, balance between investments, and properly leveraging resources are just some of the commonalities. Finally, a common theme of this book will be introduced at the end: IT PPM rollout. As will be seen, implementing IT PPM can be as big a shift in an organization as business process reengineering (BPR) and ERP implementations have been. References to organizational change strategies for rolling out the

IT PPM solution presented in the book will appear in most chapters, culminating in a complete explanation in the final chapter.

1.1 MPT

1.1.1 Financial Investments

When an individual or a company buys a stock or bond, it does so with the hope that the investment will increase in value. These investors are also more comfortable when their level of confidence in the investment's return is based more on certainty than on hope. In other words, those who invest want to place their bets on sure winners. This gives us two basic principles that guide most financial decisions: maximize return for a given risk or minimize risk for a given return. Any financial investment involves some level of risk; even U.S. Treasury bills have inflation risk. An investor will look at a particular investment instrument, establish a level of risk, and then set a level of return they would expect if they decided to go with it. Figure 1.1 shows conceptual risk-return relationships between a set of such investments. If investors decide to purchase a high-quality common stock, they would expect a higher return than if they purchased a high-quality corporate bond because of the relative risk levels. This figure also shows that the lowest level of expected return is based on the return one would receive from a "zero-risk" investment (e.g., U.S. Treasury bills).

However, because most investors understand how unreliable an economy or a business can be, they mitigate their risks (or reduce their uncertainties) further by making several other investments. This set of purchases can be referred to as a financial portfolio.

And how an investor should best manage that portfolio was the subject of the 1952 *Journal of Finance* paper, "Portfolio Selection" by Nobel Laureate Dr. Harry Markowitz. As a result of this paper, Dr. Markowitz went on to become known as the father of MPT. Dr. Markowitz proved that in order to better ensure the two main goals of any portfolio (high and dependable returns), the portfolio manager must not only diversify investments across risk levels but should also tailor the investments to the particular strategy of the investor [1].

Portfolio managers must build investment portfolios that:

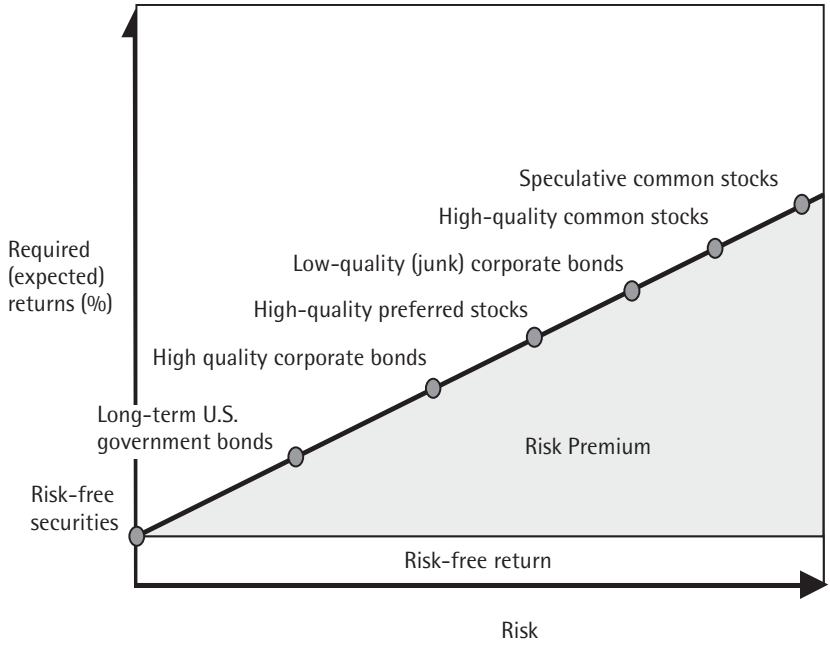

Figure 1.1 Conceptual risk/return tradeoff. (*After:* [2].)

1. Maximize return for a given risk.
2. Minimize risk for a given return.
3. Avoid high correlation.
4. Are tailored to the individual company.

Cash assets kept by companies are usually invested in a financial portfolio and managed by some organization that reports to the chief financial officer. Many times referred to as the treasury department, this organization does its best to fit its portfolio into the four criteria outlined earlier. These criteria are used to prioritize individual investments so the treasurer will quickly know which ones to sell and which ones to keep. The information that the treasurer, or one of the portfolio managers, is able to provide also allows for a structured way to react to immediate strategic shifts. For example, with a prioritized list of investments, executives can quickly sell the lower priority investments when needed.

Risk and rate of return are the most common metrics used in prioritizing a financial portfolio. For each investment approach, investors will first look at what they can earn if they placed their money in a zero-risk investment, such as a U.S. Treasury bond. Though such a bond includes the risk associated with unpredictable inflation rates, it is considered *risk free* because it won't default. Then, after understanding the level of risk other approaches provide, they establish an expected rate of return. This expected rate of return is the zero-free rate plus some risk premium. For example, if someone asked me to cross a country road, I might ask that person for a buck for my time. But if someone asked me to cross a busy freeway, I would up the ante to $100. The risk premium in this case would be $99.

With the inflation premium included in the risk-free rate, the extended risk premium is made up of four risks:

1. *Maturity risk.* The longer an investor keeps their money in a security, the more likely that security will change in an unwanted direction. Therefore, investors will get a higher risk premium for keeping their money in a bond with a longer maturity duration.
2. *Default risk.* Bond rating agencies rate how likely a bond will default, or stop paying what was promised. If the company is rated lower, an investor is taking added risk with that bond.
3. *Seniority risk.* Securities have different rights to the cash flows generated by a company. For example, an investor who has invested in a company's first mortgage bonds has a higher seniority to a return than an investor in a company's common stock.
4. *Marketability risk.* If the security can't be sold very quickly, then the investor will get a higher risk premium. That is, either the cost of the security will be lower or the interest/dividend return will be greater than similar securities that can sell quicker [2].

A portfolio manager needs to apply these (and possibly other) risks to each investment in order to satisfy the first two metrics of portfolio

prioritization. But, what can be seen clearly here is the level of subjectivity involved in determining the return on an investment. While much research is spent on determining these risks, the *money out* is heavily based on speculation by rating agencies, the investor, and the market (see Figure 1.2).

In determining how correlated a set of stocks are, a little more research is usually needed. For example, the portfolio manager may need to look at the spread of industries, risk levels, and investment vehicles of the portfolio and then adjust the priority value of each accordingly. Also, portfolio managers would have to be in tune with how their company is shifting their strategy to know whether an investment fits with the goals of the company. "A good portfolio is more than a long list of good stocks and bonds. It is a balanced whole, providing the investor with protections and opportunities with respect to a wide range of contingencies" [1].

Today, modern technology allows such portfolios to be constantly checked in real time. One of the tricks to maintaining a successful portfolio is to make these changes as quickly as the modern markets demand. Each day a strategic shift or some news about the market can change the last three metrics and thus reorder the priority of each investment in the portfolio. For example, if a company suddenly realizes a planned acquisition will require a lot of capital, it may decide to protect its current cash levels by opting for less risky investments with possibly lower returns. Also, if a country is adversely affected by political conflict, a portfolio heavily invested in natural resources from that country may try to reinvest in less correlated risks. Finally, to tailor

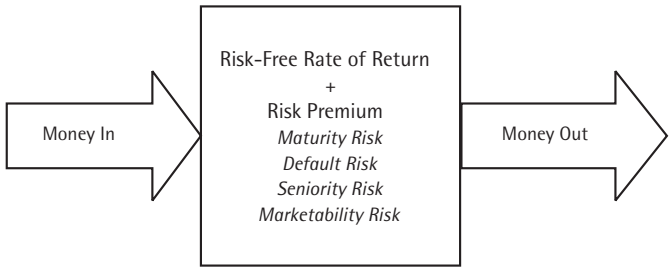

Figure 1.2 Risks associated with financial investments.

investments to the company, PepsiCo may feel that it would be inappropriate to invest in Coca-Cola or Dr Pepper/Seven Up, Inc. The important point here is that a financial portfolio manager doesn't just look at investment return when reprioritizing the portfolio.

1.1.2 Project Investments

As Dr. Markowitz's theories became accepted through the 1950s and into the 1960s, manufacturers saw an analogy to financial portfolios [3]. But when asked if MPT could be applied not just to financial investments, but also to projects, he had some questions. His main concerns focused on the introduction of new uncertainties that aren't found in financial portfolio analysis. "There are different constraints regarding projects, like management expertise, human skill sets, physical production capabilities and other factors that come into play" [4]. To understand what these constraints may be, let's first understand what types of risks projects may encounter. We can start by categorizing the many types of project risks into four buckets:

1. *Market (or commercial) risks.* These risks refer to when unforeseen changes in market demands cause executives to change the strategy, and thus the scope, of an ongoing project. If a company shifts its strategy in the middle of a project, the deliverables can be rejected. Also, if the results of a project are to interface with the external market (e.g., Web portals), they need to be flexible to unforeseen market changes. To maintain a healthy suite of such projects, the IT portfolio will need to be reprioritized quickly to meet such fluid demands.
2. *Organizational risks.* This refers to how well the stakeholders embrace some new IT solution to a business problem. The down side of this risk is the chance that the target organization rejects the IT-based solution (a cause for project failure). If project sponsors aren't satisfied with the end results, they won't dictate its usage among the organization—another cause for project failure. This same risk category, as we will see throughout this book, is central to the success of rolling out an IT PPM initiative.

3. *Technical risks.* This category focuses more on meeting a predetermined set of functionality. Designs, implementations, interfaces, verification and Q/A, maintenance, specification ambiguity, technical uncertainty, technical obsolescence, and *bleeding-edge* technology are all examples of technical risks. While most of these risks are dictated by the project architect, many of them can be mitigated through the aid of central IT architecture and IT asset management offices (Chapters 6 and 7).
4. *Project (or process) risks.* Meeting a predetermined budget and schedule are the central risks associated with this category. Other risks that fit in this category include gathering the correct requirements from project stakeholders and managing human resources efficiently. A central IT resource management office would be ideal in making sure projects leverage underutilized IT resources in the company (Chapter 8) [5].

Figure 1.3 shows that the core goal of any project is for project investors (or sponsors) to realize the expectations they *ultimately* had

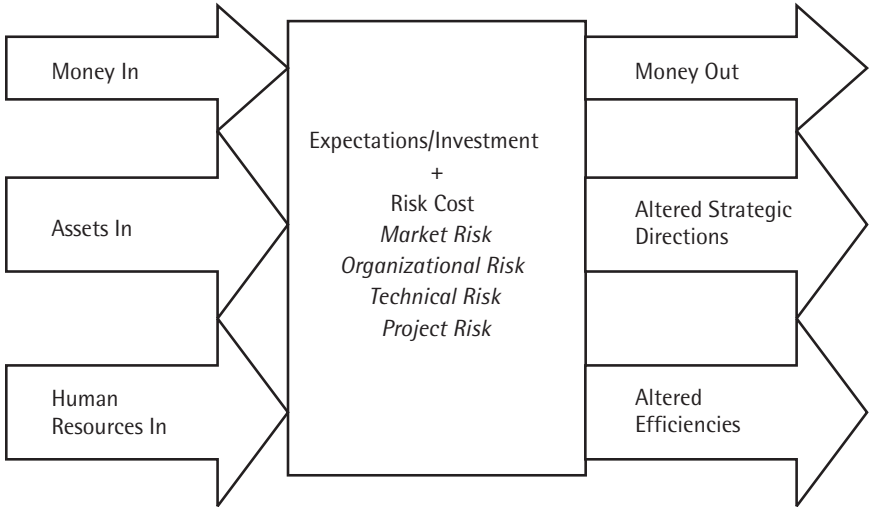

Figure 1.3 Risks associated with project investments.

for the money, assets, and human resources they invested in the project. However, IT projects have a set of risks that can expand or diminish what the sponsor envisioned. The result can be a combination of changes in cash flow, strategic directions, and business efficiencies.

The example of crossing the road was used to explain the additional return one would expect from a riskier crossing—called the *risk premium*. If I decided to build a product that would get me across the road safely (e.g., a tank), I would have to start a project to build it. With a fixed budget and a fixed timeframe, I would want to make sure that there weren't any surprises that would increase the costs or delay getting the tank built and tested. If I don't plan, design, and understand the requirements of the product, the opportunity (and, thus, the cost) of surprises can go up—called the *risk cost*. While financial managers rely on risk management techniques such as trend analysis to calculate the risk premiums, PMs implement risk management techniques such as time buffers, decision-tree analysis, and Monte Carlo analysis to calculate risk costs.

Markowitz proved through quadratic programming that a portfolio of riskier investments had a higher return potential. But "unlike financial investments, higher project risk is not necessarily correlated with higher potential project return. Measuring project risk and return is much more complex" [6]. While financial investors try to increase return (or their risk premium), project investors try to decrease surprises (or their risk expense) by ensuring the desired functionality arrives on time and on budget. When combined into an IT project portfolio, these risk expenses can be mitigated even more efficiently through a central IT portfolio management office. By maintaining awareness of the health and needs of all projects, such a central organization can extend the vision of each project to leverage previously unseen resources.

The IT PPM in Action section at the end of the chapter illustrates the importance that recent government regulations are putting on operational risks, of which project risks are a part. European and U.S. governments are responding to shareholder's, taxpayer's, and insurer's complaints of chaotic (and, in many cases, criminal) organizations. With the Sarbanes-Oxeley, Clinger-Cohen, and Basil II acts, regulators

hope to squeeze organizations into adopting better operational control frameworks, such as PPM.

1.2 IT Project Management

The Project Management Body of Knowledge (PMBOK), 2000 release, defines a project as "a temporary endeavor undertaken to create a unique product or service." Projects, as opposed to ongoing corporate operations, are temporary because they have a beginning and an end. In addition, the product or service of the project is unique because it is "different in some distinguishing way." This, and the notion that projects are more strategically focused, is what distinguishes projects from ongoing corporate operations. Still, temporary projects and ongoing operations do have some common traits: they both require resources as input, they both produce an output, and they both can show up as expense in the income statement. "In general, IT can be classified as either systems that address day-to-day operations or project-specific initiatives" [7]. IT-based projects specifically involve the implementation or modification of a business unit's access to information using some technical medium, such as computers, cables, or phone switches. As with other types of projects, the methods used to manage IT projects can vary between countries, companies, and specialty groups. This book will not try to tackle the hundreds of methodologies used in IT project management. Rather, we will start by looking at some basic elements of an IT project. Then, after incorporating some of the concepts found in MPT, we will develop a definition for an IT PMO.

PMs live by an elastic triad of functionality versus schedule versus cost (see Figure 1.4). For example, if cost goes up, schedule may increase and functionality may decrease. As one of these points change, the other two are affected. Since the 1970s, as lessons have been learned from various projects, different views of this triad have evolved. As an example, the Project Management Institute's (PMI) PMBOK adds risk and splits functionality into scope and quality. This modification of the original triad shows the importance PMs also put on mitigating risk and ensuring the quality of the ultimate functionality. A further refinement of the triad would be to prioritize the points by putting weights on

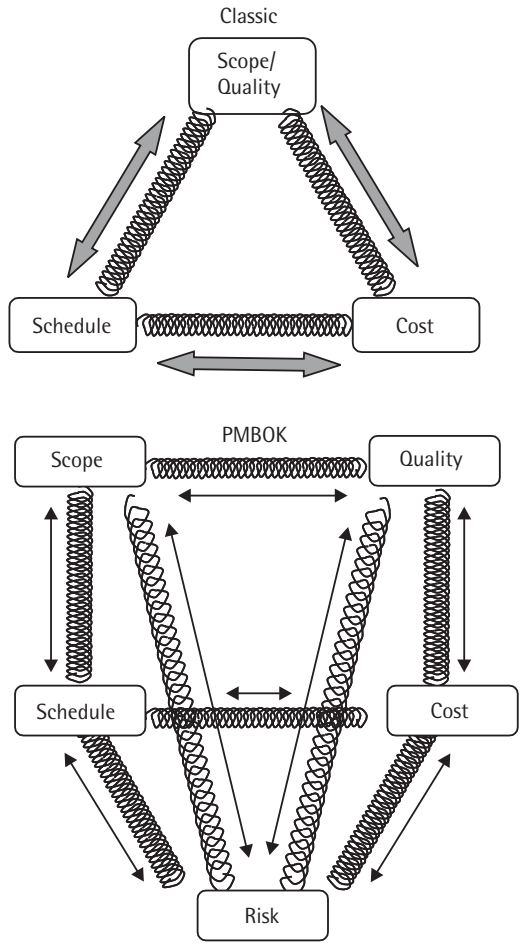

Figure 1.4 Comparison of forces that drive project success.

them. For example, some feel that PMs should stress "quality, schedule, and budget in that order" [8]. However the triad may be modified for each project, it still serves as a good springboard for reviewing project management concepts.

1.2.1 Variable Schedule

The timing of a project deliverable can be critical to how the return on investment (ROI) was calculated. As an example, let's look at a

customer relationship management (CRM) system that needs to be modified to handle a larger amount of customer feedback for a marketing campaign. If the CRM system isn't delivered by certain date, then the marketing department could incur added expenses from postponed contracts with advertisers and print shops. So, how can the PM develop a timeline that is reliable enough to reduce these kinds of risks? A time-tested approach would be to use timelines from past projects as a guide and then build in buffers to account for unexpected events.

As long as no unexpected events cause the deadline to change, this approach will do a good job of comforting the investor. One example of an unplanned change that could cause a delay would be if the project sponsor decided to change the final functionality (a tug on the functionality point of the triad) to accommodate some new market requirement. Though the sponsor may feel that the final product may better accommodate the needs of the market, they may not understand the penalties associated with a delayed project [9]. Such penalties can come in the form of additional labor, facility, and licensing costs. That is, a tug on the time point of the triad can cause the cost point of the triad to move as well.

No matter what the changes to functionality are, the PM will try to get the project back on schedule using methods from previously successful projects. But, what if the past project guides are flawed? What if a PM has chosen a corrective timeline from the IT knowledge base that actually was associated with a failed project? The PM needs to feel comfortable that the tools they are using come from a suite of past projects that have succeeded. No company wants to repeat past failures while the competition moves nimbly forward with the market. To combat this, many IT departments will have a staff member maintain a knowledge base of successful project collateral that can be accessed by future PMs. Chapter 8 will show how an IT PMO may be better equipped to manage such a database. Specifically, IT PMOs can ensure that project guidelines associated with successful, rather than flawed, projects are saved when building a central knowledge base.

1.2.2 Variable Cost/Budget

As a PM is working hard to keep a project on schedule, unanticipated costs can appear. And just as time buffers are included in a project's original schedule, so are cost buffers included in the project's original budget. These buffers help keep the final cost, and thus the ROI, of the deliverable within the bounds of the original investment. In some cases, as a project extends beyond the planned timeline, PMs may find comfort in the fact that they are still within their planned budget. However, PMs may be deceiving themselves if they think that though a schedule is not being met, they are still maintaining costs. The example in the previous section explained how a delay in the marketing system's rollout could lead to additional labor, facility, and licensing costs. Other hidden or unforeseen costs that could result from delays include strategic misalignment, resource reallocation delays, salvage costs (if the project is ultimately scrapped), ruined business relationships, and lawsuits. But if a project plan includes well-designed time and cost buffers, it should be able to adjust to many of the blind sides inherent in IT-based projects.

1.2.3 Variable Functionality/Scope/Quality

As mentioned earlier, while a project progresses along the cost/timeline tightrope, project investors may want to change the final functionality to accommodate a market shift or to increase the calculated ROI. As has been explained, such midstream shifts in scope can result in timeline and cost changes. On the other side of the coin, if the project sponsor sees an increase to potential project ROI by rolling it out earlier than planned, then the functionality or quality of the project may decrease. Either way, if a project does not meet the ultimate expectations of the project sponsor, then the final ROI can vary dramatically. Unfortunately, such releases that fail to deliver the expected product are fairly common with IT projects. For example, "surveys indicate that 20%–33% of [completed] projects fail to deliver on sponsor/stakeholder expectations" [10]. If we include projects that fail to stay within budget or fail to deliver on time, this statistic will show an even greater percentage of projects that do not succeed.

Project mismanagement can be another huge factor in causing the final functionality to diverge. A company cannot depend on the quality of project management to be constant. "It changes with the projects and the people. It may be good one year, bad the next" [11]. With such variability comes an increased risk of a sponsor getting a PM that mismanages the project. And a project sponsor surely knows that "a mismanaged implementation can result in a loss equal to ten times the implementation cost" [12]. IT PMOs will look at more than just ensuring quality across the project landscape; they will also look at the quality of the project management staff. Through training classes, knowledge management, and efficient resource management, an IT PMO can help build and maintain the high-quality PMs required for a healthy portfolio.

1.2.4 Risk

The PMI felt that risk is sufficiently central to project management to be given its own balancing point in the classic triad. Others take the approach that risk holds its own separate dimension that is present in all three points of the classical triad. That is, risk exists in the variances of cost, functionality, and schedule. If any of these three points runs into trouble, then other points of the triad can be affected through "side effects of the project and its unforeseen consequences" [13]. Whichever view you take, risk management is a critical piece to any IT project's success.

How can a PM monitor risk levels on their project? Can they categorize and measure increases and decreases in risk levels as a project progresses? While we introduced four types of project risks earlier, we can generalize them from a different angle into two types: technical risk, which is the probability that a project will not complete successfully, and commercial risk, which is the probability that the project's end product or service will not be successful in the marketplace [14]. Two additional risks that we can add to this are the risks associated with budget, cost, and methodology (project/process risk), and the risk associated with the customer not getting involved with the development process (organizational risk). Figure 1.5 shows how by layering these risks, a PM will be able to see how some risks decrease through the life of

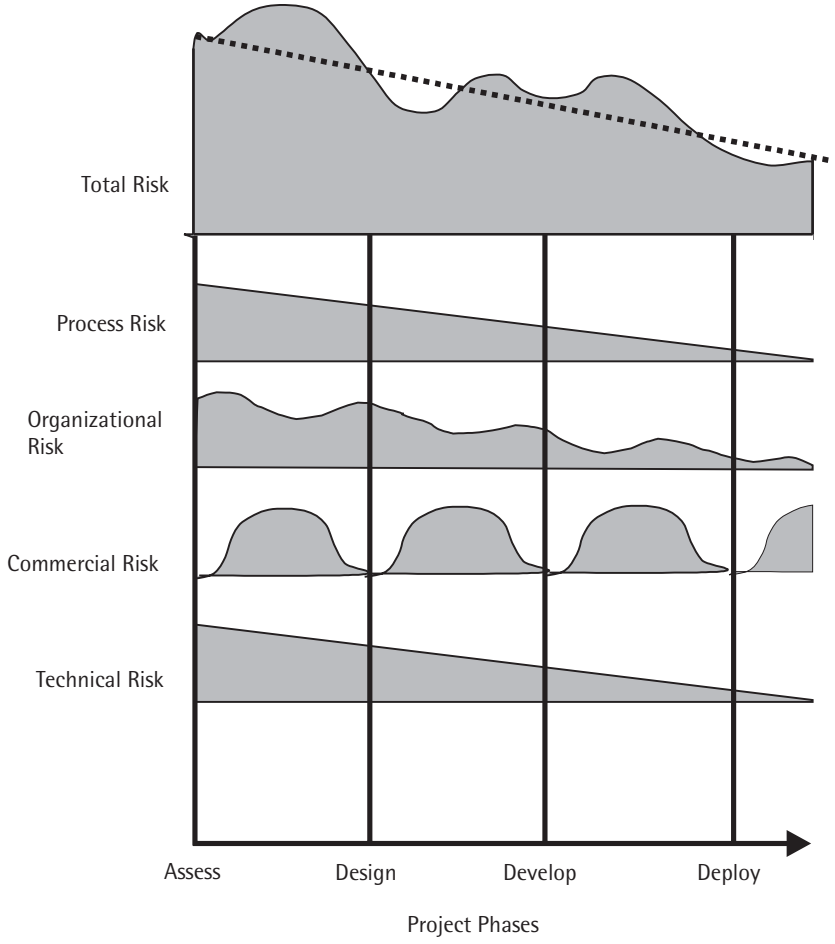

Figure 1.5 Additive nature of risks during a project's lifetime.

the project while others vary. The total risk at any phase in the project is a summation of the various types of risks.

Constructive Cost Model (COCOMO), Monte Carlo, and Real Options analyses are just a few tools a PM can use to gauge the risk his project is in. An IT PMO, on the other hand, is interested in normalizing the risk levels across all projects. It would be impractical for the PMO to rely on the subjective risk levels determined by the different

PMs. Rather, the PMO needs to establish an auditing team that can review a random sampling of projects to ensure they are calculating their risk levels the same as other projects. This is where the IT PMO establishes a common set of metrics to be used by each project to measure risk and to use in the prioritization process.

But IT project portfolio risk doesn't reside solely in the status of ongoing projects. Portfolio risk also must be gauged in the portfolio selection process. "There is more uncertainty about projects which are proposed but not yet underway, as compared to projects which are already underway and for which there is more data available" [14]. If the IT PMO isn't actively managing the IT business initiatives that act as the input stream to the project portfolio, then the opportunity for increased risks can balloon. An IT PMO initiative review committee can establish certain auditable hurdle points for each project before they start. "Any hurdle rate that does not fully account for risk puts the investor in the dangerous position of accepting too much risk in the firm's IT portfolio. And unless companies start managing risk better, they will be forced to require astronomical hurdle rates or get far too little return on their IT investments" [15]. In short, the IT PMO will need to:

1. Provide risk management support to individual projects.
2. Mitigate risk of the portfolio by reviewing the initiative pipeline.
3. Normalize risk assessments through a project audit team.
4. Use risk levels as a metric in prioritizing projects.

Such enterprisewide management of IT project risks has taken on new urgency as governments are passing regulations that require, or strongly recommend, formalized risk management processes (see Appendix 1A).

Project risk management is a well-documented subject that this book will not try to tackle. However, items 2, 3, and 4 are important elements of a successful IT PMO. Chapters 9 and 10 will go into more details on how an IT PMO should address portfolio risk management.

1.3 Portfolio Selection

While MPT shows how to manage the risk of a financial portfolio by selecting the proper range of investments, managing the risk for project portfolios can be more complex. Dr. Markowitz feels that quadratic programming alone can't resolve the additional complexities project management brings to MPT. Though PPM can be more complex than MPT, we can still leverage some of the basics, such as how the portfolio is selected. Three criteria can be used to select and prioritize projects that can be easily mapped to MPT: maximization, balance, and strategic alignment (see Figure 1.6) [16]. While these criteria should be used in selecting projects for the portfolio, resource balancing is the constraining criterion that limits the size of the portfolio. We can thus define project portfolio selection as follows [17]:

> Project portfolio selection is the periodic activity involved in selecting a portfolio, from available project proposals and projects currently underway, that meets the organization's stated objectives in a desirable manner without exceeding available resources or violating other constraints.

1.3.1 Maximization

A project begins by being designed around a set of initial stakeholder expectations. As the project progresses, the expectations of the project stakeholders tend to change. Managing these changing expectations

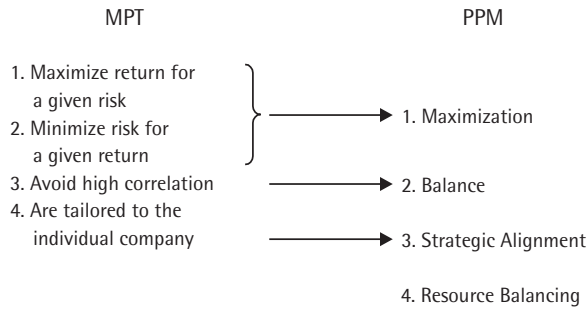

Figure 1.6 Selection and prioritization (S&P) criteria for financial and project portfolios.

falls under the category of project scope management and project rollout marketing. The PM needs to make sure that:

1. The acceptance of scope changes does not adversely affect the success of the project (scope management).
2. The rejection of scope changes does not adversely affect the enthusiasm of the stakeholders (rollout marketing).

The combination of these two make up what we can refer to as expectations management. Being strict with scope management can lead to diminished enthusiasm by the stakeholders and thus ultimate rejection of the solution. Being too loose with scope management can cause the project to increase cost and bypass deadlines (increased risk expenses). Through constant negotiation, the PM must work toward an end result that fits both the managed expectations and the managed enthusiasms of the stakeholder. In other words, a project maximizes its value when the ultimate (or final) expectations of the stakeholder are met or exceeded.

When selecting IT-based business initiatives, a project portfolio team should consider the likelihood that the individual project's end results will satisfy the ultimate expectations of the stakeholders. Then, by attaching auditable metrics to the business case, the project portfolio team will ensure that future auditing teams will be able to gauge whether stakeholders will embrace the end result. For example, a business case could state that an IT implementation will reduce the costs of tracking inventories of *certain* items. After confirming that this is what the end users truly need, the project portfolio team may approve the initiative. Then, during a mid-project audit, if the portfolio team discovers that the end users have changed their needs (e.g., they now want to reduce the costs of tracking the inventories of *different* items), then the project could be rated as unhealthy. This shows how a project portfolio team can contribute to each project's expectation management process.

1.3.2 Strategic Alignment

PPM needs to ensure that the suite of projects furthers the goals of the corporate strategy. If a group of related projects (a program) is focused

on building better swimming pools while the executive staff wants to focus on building railroad tracks, then this group of projects would be considered to be out of alignment with the corporate strategy. Figure 1.7 shows how the IT portfolio should first be built and then maintained to ensure strategic alignment.

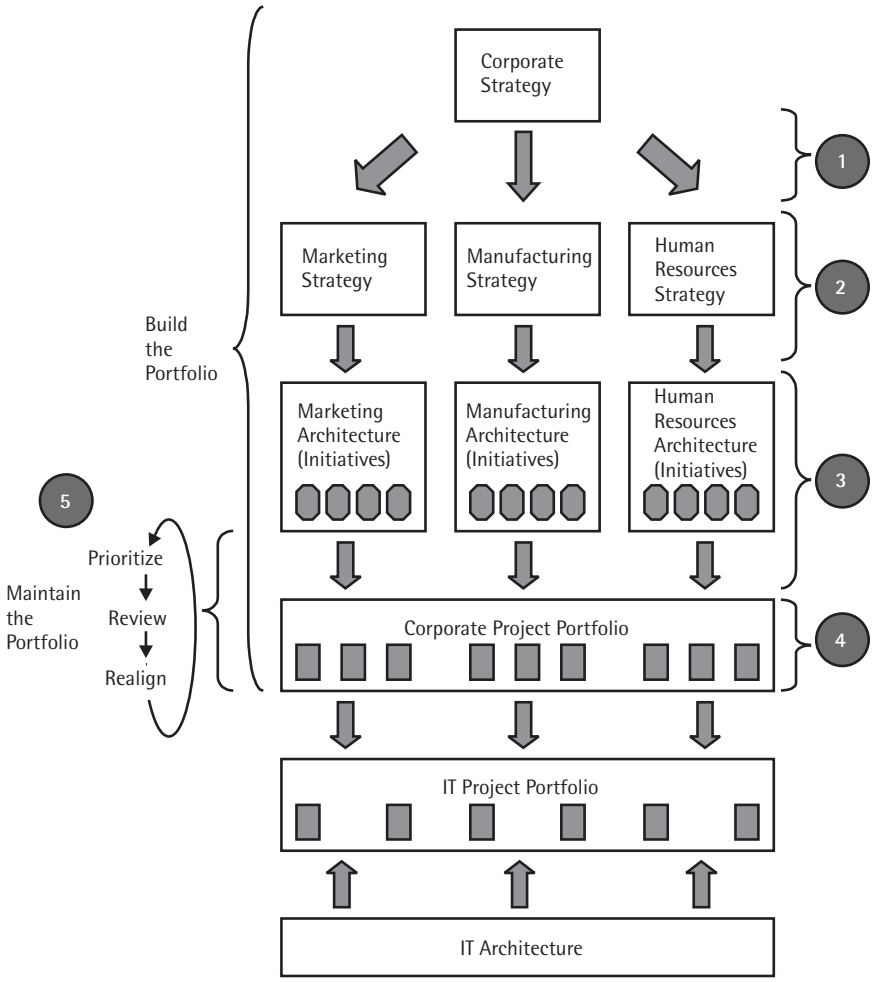

Figure 1.7 Building and maintaining the project portfolio for strategic alignment.

1. A company's resources can be allocated among business units through centralized corporate planning.
2. The corporate strategy can evolve by developing business unit level strategies—similar to the Balanced Scorecard approach.
3. A business unit can implement its strategies for growth or productivity gains by developing detailed plans. This could be in the form of a portfolio of initiatives (or business cases) for projects.
4. A periodic review process for all initiatives that get funded as projects can be established [18].
5. Then, once the portfolio is determined, it can then be maintained through "decision-making, prioritization, review, realignment, and reprioritization" [6].

1.3.3 Balance

Another major goal of portfolio selection is to create and manage a balanced portfolio. The portfolio should first be balanced between what the company needs and what the company is capable of achieving. "Balancing capability and need generally results in defining the best that can be achieved with the limited resources available, rather than attempting to find the perfect solution (which in a perfect world would include infinite resources)" [19]. After determining what the company is capable of successfully implementing, it can then approve those projects that fit its strategic and tactical objectives.

Corporate PPM focuses on balancing the project portfolio among all projects that are critical to furthering the corporate strategy. For a construction company, these projects could include building bridges; for a toy company—new dolls; and for a bank—new financial services. But within each of these companies, projects, products, and services tend to be balanced among a set of risk levels that can provide various levels of return. Similar to how a financial portfolio is balanced among high-risk/high-return stocks and low-risk/low-return bonds, project-oriented companies can also hedge their risks. The construction company could build low-risk foot bridges while also building high-risk

interstate suspension bridges. The toy company can produce low-risk dolls for carefree toddlers and high-risk dolls for picky preteens. This same concept applies to how a company balances its portfolio of IT projects across its enterprise. Chapter 9 will show how more elaborate balancing techniques can be used to better tailor the PPM to the company.

1.3.4 Resource Allocation

Most IT projects have a threshold of resources they need in order to satisfy their cost/time/functionality requirements. When developing the business plan for the project, known at this stage as an IT-based business initiative, minimum requirements should be set for hardware, software licenses, human resources, and facilities. While the sponsoring business unit will be best suited to satisfy many of the project expenses, the IT PMO will be best positioned to know what resources are available from within the current portfolio of projects. If these resources are spread too "finely," then each individual project may go below its minimum threshold of resources for success. This, in turn, will lead to an overall failure of the portfolio. Financial portfolio managers, on the other hand, have more control on how finely their resources can be distributed among investment instruments. One major difference between MPT and project portfolio management is in how finely risk is distributed [4]. Dr. Markowitz explains that "in the typical investment situation one can finely subdivide one's funds among many fairly liquid assets. The same cannot be said of portfolios of projects… If a company manager subdivides his resources too finely among many projects in order to diversify, he may give each project too little to succeed" [4].

With PPM, we ask "what mix of potential projects will provide the best utilization of human and cash resources to maximize long-range growth and ROI for the firm?" [20]. We also want to ask, how can the mix of projects best leverage underutilized IT assets to maximize project value? Figure 1.8 shows how IT resources are divided. IT assets on the right are split up into hardware, software, facilities, and contracts/licenses. IT-focused human resources on the left and middle are split into outsourced IT and internal IT technicians. Focusing on the human resources, we see that many large companies allow strategic

business units (SBUs) (e.g., marketing, manufacturing, and finance) to have their own quick-response team of technicians. The central IT department will have a more expansive set of IT resources specializing in help desk, database design, systems integration, and IT project management, just to name a few specialties. In short, for a PMO to better leverage IT resources among the various projects, it may be better to categorize those resources into manageable subsets, as shown in Figure 1.8.

1.4 The IT PMO

In order to achieve and maintain a portfolio of projects that meet the selection and prioritization goals outlined in Figure 1.6, certain tasks should be completed. Again, we can look to MPT and map tasks needed to manage financial portfolios to those needed to manage project portfolios. To ensure that the four goals of MPT are satisfied for a financial portfolio, the portfolio manager needs to review investment proposals, monitor the investments as they mature, and constantly valuate and

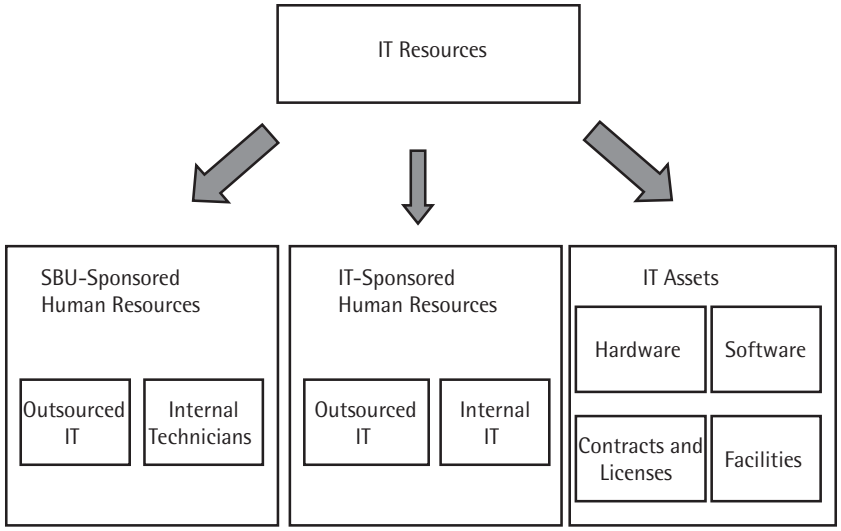

Figure 1.8 Categorizing resources for IT-based projects.

prioritize the portfolio as a whole. As shown in Figure 1.9, these core financial portfolio management tasks can be mapped to the basic processes of project portfolio management: initiative reviews, project audits, and ongoing portfolio valuation.

IT PPM is in the unique position of being able to support the projects in their portfolio and report on them to the executive committee. This support helps reduce the risk expenses by leveraging AARK from other projects. While classic PPM uses resource-balancing techniques to support the PPM S&P process, IT PPM uses an expanded version of resource balancing called AARK management. AARK management splits the classic definition of resources into four subcategories of resources that are each valuable to the success of any IT project. For the rest of this book, when a reference is made to resources, we mean human resources. This is a fairly standard practice in IT, where nonhuman resources can be referred to as assets, architectures, or knowledge. Figure 1.10 shows how the previous figure changes to show the tasks and the goals associated with IT PPM.

With tasks and goals starting to form for IT PPM, we can now introduce the concept of an actual organization charted with the

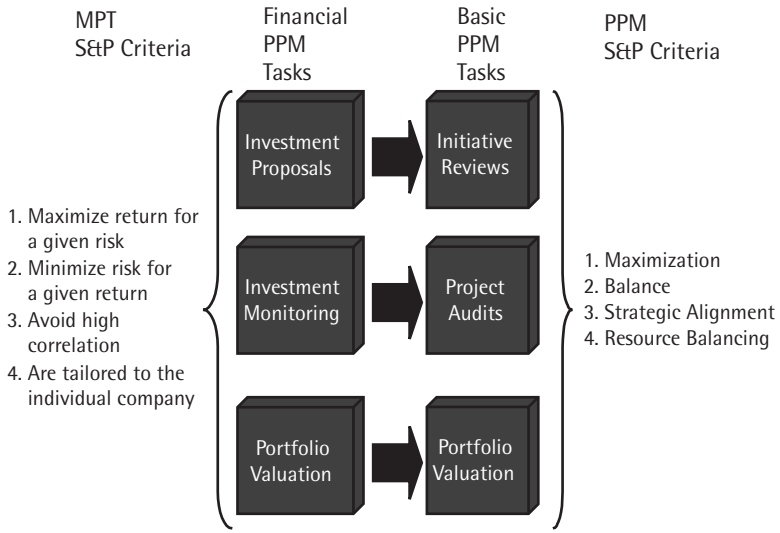

Figure 1.9 Mapping S&P criteria from MPT to PPM via tasks.

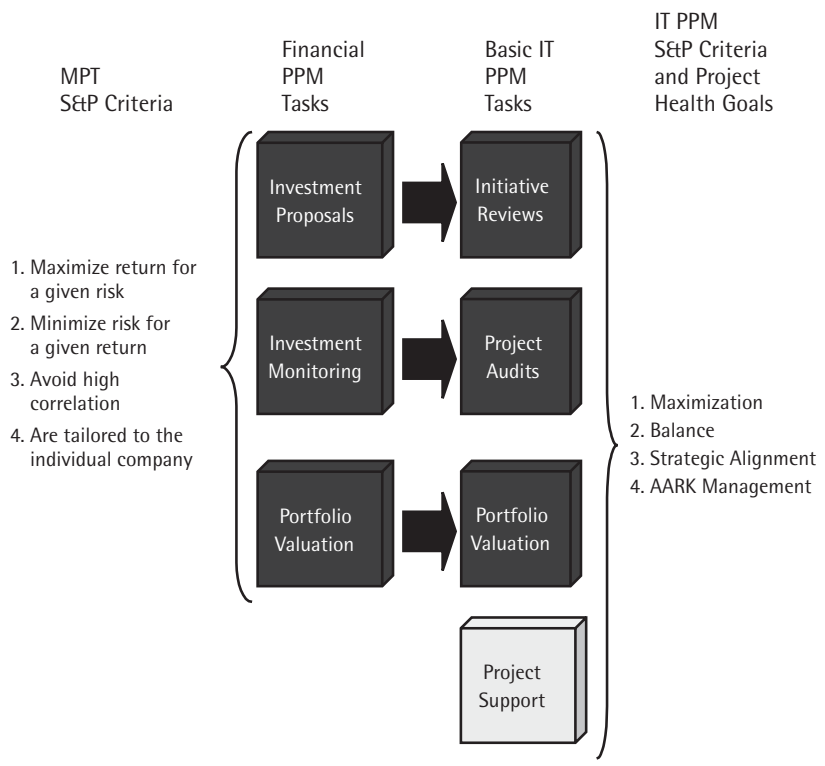

Figure 1.10 Mapping S&P criteria from MPT to PPM via tasks with project support.

responsibilities of running IT PPM. While the IT PMO will be covered in much more detail in Chapter 4, we can show how it relates to a corporate PMO. Corporate PMOs need to manage all of the projects in the company, whether they are IT related or not. With such different goals, there are different ways of aligning project with the corporate strategy. Figure 1.11 shows that while the corporate PMO may balance its PPM strategy evenly between growth-oriented projects and productivity-oriented projects, the IT PMO tends to have its strategy lean more towards productivity-oriented projects. Because a company's income relies more on its products or services, IT is used more to improve the efficiency of producing those products or services. Sometimes IT can contribute directly to growth if it develops its own product or service.

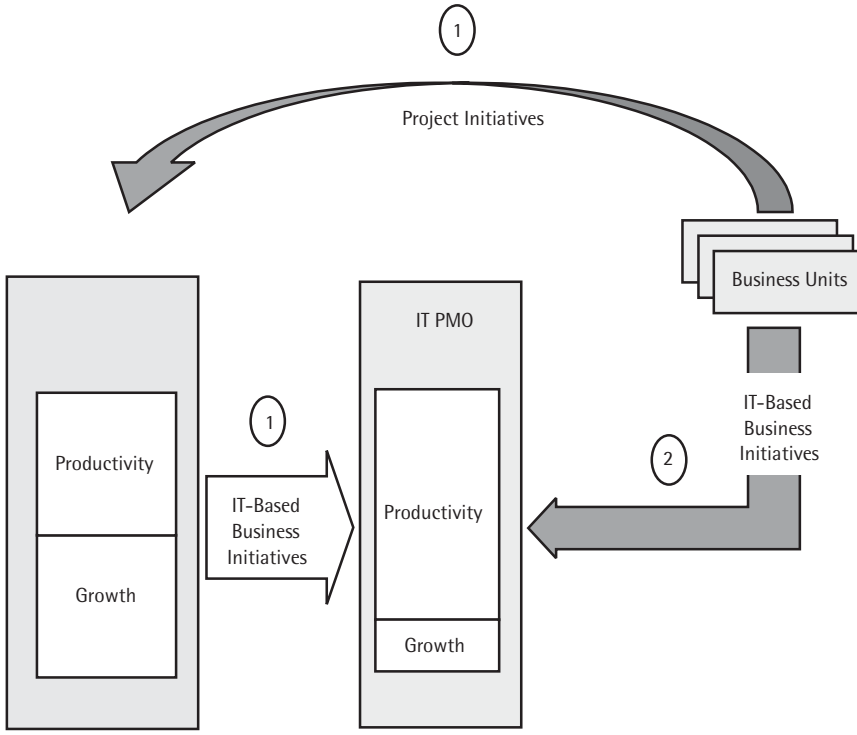

Figure 1.11 Corporate versus IT PMO handling of business initiatives.

However, this is so rare that we can go so far as to claim that "we don't have IT initiatives anymore; we only have business initiatives, and IT supports them" [21].

Figure 1.11 also shows how a corporate PMO receives IT- and non-IT-based project initiatives from business units (path #1). After projects are properly prioritized and then funded, many of them will be passed to an IT PMO—to go through another IT project-specific prioritization. These initiatives tend to fall into one of three required project types [13]:

1. *The sacred cow.* The project is "sacred" in the sense that it will be maintained until successfully concluded or until the boss, personally, recognizes the idea as a failure and terminates it. Sony refers to these types of projects as "skunk works" projects that circumvent the formal project approval process [22].
2. *The operating necessity*. It is needed to keep the business running.
3. *The competitive necessity.* It is needed to keep the business growing.

In some cases, companies can establish their own balance between corporate project control with a central PMO and business unit project control with disparate business unit PMOs. A groundbreaking survey of over 250 companies showed that "a significant number of businesses do both; that is, they operate portfolio management within the business unit, and they also have a centralized or corporate portfolio management method (44.7 percent of respondents)" [19]. This leads to project initiatives coming into an IT PMO from two directions (see Figure 1.11, paths 1 and 2).

As mentioned earlier, an IT prioritization process is much more specific than a general corporate PPM process. Chapter 9 will go into some of the details of how to best prioritize IT projects. But before we can know how to prioritize projects, Chapters 5 through 8 will help us understand the building blocks of an IT PMO. These building blocks will better define how a portfolio should be selected and managed. Figure 1.12 shows how from the goals of an IT PMO we can derive these building blocks. The goals of an IT PMO are to:

1. *Support executives.* Executives need to know the real-time health of their project portfolios so that accurate prioritizations can be made. The PMO can provide this information through project and initiative collaboration tools. Such decision support systems should not only allow decision makers to make adjustments to the portfolio, but these systems should also provide "feedback on the resulting consequences, in terms of

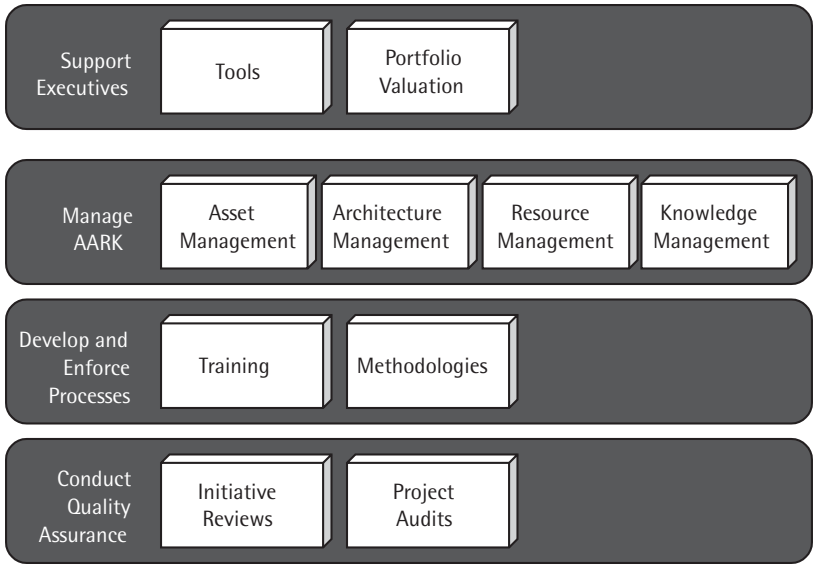

Figure 1.12 IT PMO building blocks.

optimality changes and effects on resources" [17] (see Chapter 9).

2. *Manage AARK.* Redundant and underutilized assets, overlapping architectures, misused resources, and lost experiences are common problems in a large, project-centric organization. These problems are especially acute in organizations that have dispersed power and strategic responsibility among many business units. By getting control of all four of these loose cannons, the PMO can provide a foundation for robust interinitiative and interproject communication (see Chapters 5 through 8).

3. *Develop and enforce processes.* To ensure consistent tracking and evaluation of different initiatives and projects, standard, company-specific touch points need to be added to industry-standard methodologies. Not only should a central body such as the PMO make these modifications, it should develop a training curriculum for the methods. This group would market and train the company on not only these methodology touch points but also on general PMO processes, such as AARK

management, executive support, and project and initiative portfolio quality assurance (QA) (see Chapter 3).

4. *Conduct initiative and project audits (QA).* Because some creative freedom is needed in writing business cases and because project health ratings vary between PMs, a third-party auditing process needs to be supported by a central PMO. This will ensure that a consistent set of metrics will be defined in all business cases that can be monitored throughout the history of its resulting project without impeding the overall format of the business case. Furthermore, some auditing schedule should be made to ensure all projects are rated on the same scale to reduce subjectivity (see Chapters 9).

1.4.1 PMO Rollout

Rolling out an IT PMO draws on the same expectation management techniques used when rolling out an IT program or project. To maximize the value of the IT PMO in the eyes of those who will benefit most from it, the rollout needs to be segmented. That is, a different marketing and functionality release plan needs to be developed to get maximum acceptance and support. This will, in turn, allow the PMO to continue to gather momentum until it is a necessary part of the corporate strategy. The PMO needs to be sold to the different levels of vertical management as well as to the different horizontal groups that will be needed to provide organizational support. (The acompanying CD-ROM provides several examples of presentations that can be used as templates for such IT PMO marketing activities.)

When segmenting the sales and rollout pitch vertically, we need to understand who to market to more vigorously. Some levels of management may be more receptive to such a concept than others. For example, a survey of 205 responding businesses felt that "senior management in technology (CTOs, VPs of R&D, and so forth) attach the most importance to portfolio management; they are followed by senior management overall and then by corporate executives" [23]. This would lead one to develop presentations, updates on progress, and early-win results for the executive committee more frequently than to the other two levels of management.

Because access to executive ears can be limited, the next layer of management will more than likely be where the main battleground will be. Middle to senior management is known for its turf battles. Constant tug of wars over budgets, resources, and executive alliances make any greenhorn organization ripe for pillage. So, let's first learn from those who have taken on the challenge of introducing an IT PMO to a company. Thirty-five leading firms in various industries were interviewed to determine the biggest problems the companies faced in project selection and portfolio management. The keys to failure focused on four areas [16]:

1. Strategic alignment;
2. Resource leveraging;
3. Prioritization;
4. Quality control.

The respondents felt that their PMO initiatives hadn't created and maintained a portfolio of projects that accurately reflected the goals of the corporate strategy or that efficiently leveraged existing resources. They went on to say that their project and initiative prioritization process was inadequate. This was referred to as prioritization "tunnels, not funnels" [16]. One business unit lead exclaimed that, "ten projects enter the process, ten go into development, ten go to launch, and one succeeds!" [16]. But, one of the biggest complaints was that there was a perception of poor-quality portfolios. While selecting and prioritizing portfolios is a major part of an IT PMO, it also needs to focus as much energy on reducing the costs associated with the out-of-control risks inherent in many IT projects. In other words, by helping improve the quality of each project and program, the IT PMO is, in effect, improving the quality of the portfolio as a whole.

Any IT PMO rollout needs to attack each of these four problem areas aggressively in the early stages. The final chapter of this book will show an approach that can be used to roll out the IT building blocks. This approach is designed to gain early and then constant wins throughout the lifetime of the IT PMO and, if successful, the remaining lifetime of the company it serves. Figure 1.13 shows the building blocks that rest

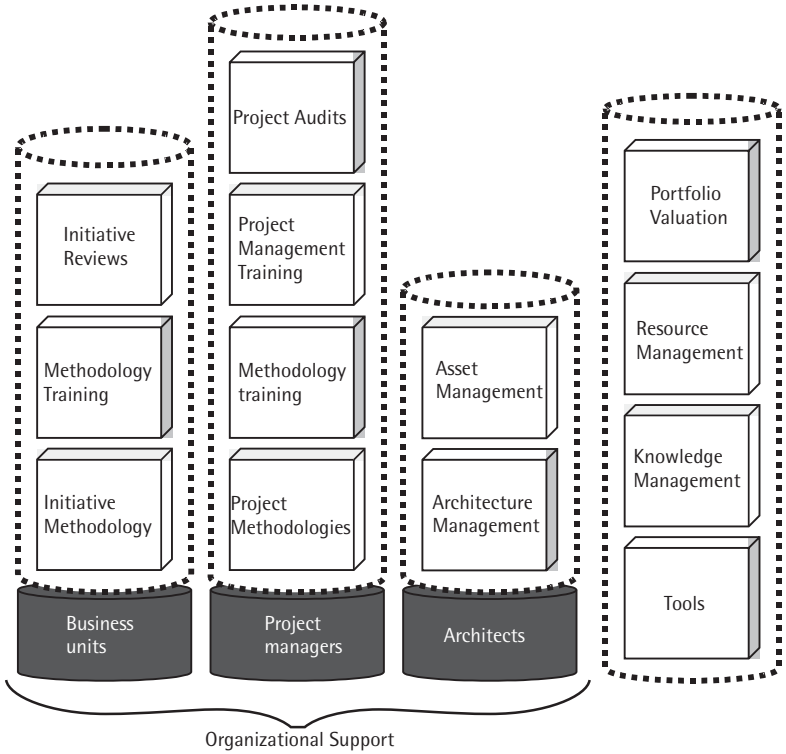

Figure 1.13 Acquiring organizational support for the IT PMO building blocks.

on a foundation of organizational support. Without such a foundation, the PMO spires will topple. Chapter 4 will show how to define a virtual PMO organization that will help start a successful rollout.

References

[1] Markowitz, Harry M., *Portfolio Selection*, London, England: Basil Blackwell, 1991.

[2] Moyer, R. Charles, James R. McGuigan, and William J. Kretlow, *Contemporary Financial Management*, 9th ed., Cincinnati, OH: Thomson South-Western, 2003.

[3] Berinato, Scott, "Do the Math," *CIO Magazine*, October 1, 2001, http://comment.cio.com/comments/6183.html (last accessed on January 15, 2004).

[4] Harder, Paul, "A Conversation with Dr. Harry Markowitz," *Gantthead.com*, 2002, http://www.eitforum.com/ForumItem.asp?itemID=1157 (last accessed on January 15, 2004).

[5] Pressman, Robert S., *Software Engineering: A Practitioner's Approach,* 3rd ed., New York: McGraw-Hill, 1992.

[6] Sommer, Renee, "Portfolio Management for Projects: A New Paradigm," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 55–60.

[7] Chandler, Tamra, "Strategic Analysis Helps Identify IT Issues," *Puget Sound Business Journal*, February 15, 2002, http://www.bizjournals.com/seattle/stories/2002/02/18/focus11.html.

[8] Englund, Randall, and Robert Graham, *Creating an Environment for Successful Projects*, San Francisco, CA: Jossey-Bass, 1997.

[9] Goldratt, Eliyahu, *Critical Chain*, Great Barrington, MA: The North River Press, 1997.

[10] Meta Group, "Centralizing Management of Project Portfolios," *Meta Group*, January 29, 2002, http://www.umt.com/site/Documents/IT_World_-_Leading_Organisation_Centralize_Management_of_Project_Portfolios_-_29Jan02.pdf (last accessed on January 15, 2004).

[11] O'Connell, Fergus, *Successful High-Tech Project-Based Organizations*, Norwood, MA: Artech House Publishers, 1999.

[12] Kaplan, Jeffrey D., "White Paper: Strategically Managing Your IT Portfolio," *PRTM's Insight*, April 1, 2001, http://www.prtm.com (last accessed on January 15, 2004).

[13] Mantel, Samual, and Jack Meredith, "Project Selection," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 135–168.

[14] Ghasemzadeh, Fereidoun, and Norman Archer, "Project Portfolio Selection Techniques: A Review and a Suggested Integrated Approach," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 207–238.

[15] Hubbard, Douglas, "Hurdling Risk," *CIO Magazine*, June 15, 1998, http://www.cio.com/archive/enterprise/061598_checks.html (last accessed on January 15, 2004).

[16] Kleinschmidt, Elko, Scott Edgett, and Robert Cooper, "Portfolio Management in New Product Development: Lessons from the Leaders, Phase I," in *Project Portfolio Management*, Lowell D. Dye and James S.

Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 97–116.

[17] Ghasemzadeh, Fereidoun, and Norman Archer, "An Integrated Framework for Project Portfolio Selection," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 117–134.

[18] Edgett, Scott, Elko Kleinschmidt, and Robert Cooper, "Portfolio Management in New Product Development: Lessons from the Leaders, Phase II," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 97–116.

[19] Dye, Lowell, and James Pennypacker, "An Introduction to Project Portfolio Management," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. xi–xvi.

[20] Levine, Harvey, "Project Portfolio Management: A Song Without Words," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 39–44.

[21] Low, Lafe, and Sarah D. Scalet, "Come Together," *CIO Magazine*, December 15, 2000, http://www.cio.com/archive/010101/together.html (last accessed on January 15, 2004).

[22] Cleland, David, "The Strategic Context of Projects," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 3–22.

[23] Edgett, Scott, Elko Kleinschmidt, and Robert Cooper, "Best Practices for Managing R&D Portfolios," in *Project Portfolio Management*, Lowell D. Dye and James S. Pennypacker, (eds.), West Chester, PA: Center for Business Practices, 1999, pp. 309–328.

[24] Locher, Christian, Jens I. Mehlau, and Oliver Wild,"Towards Risk Adjusted Controlling of Strategic IS Projects in Banks in the Light of Basel II," *Proceedings of the 37th Hawaii International Conference on System Sciences 2004*, January 2004.

[25] Kersten, Bert and Chris Verhoef, "IT Portfolio Management: A Banker's Perspective on IT," *Cutter IT Journal*, April 2003, http://www.math.vu.nl/~hkersten/pdf/citj0403BK.pdf (last accessed on January 15, 2004).

[26] Crosett, Lex, "Beyond Sarbanes-Oxley Compliance: Improving Operations and Mitigating Risk Through Active Risk Management Practices," *DM Review*, February 6, 2004, http://www.dmreview.com/editorial/newsletter_

article.cfm?nl=dmdirect&articleId=8090 (last accessed on January 15, 2004).

[27] U.S. Congress, "The Sarbanes-Oxley Act of 2002," *107th Congress, 2nd Session,* H.R. 3763, 2002.

[28] Callaghan, Dennis, "Sarbanes-Oxley: Road to Compliance," *eWeek*, February 16, 2004, http://www.eweek.com/article2/0,1759,1527933,00.asp (last accessed on January 15, 2004).

Appendix 1A: IT PPM in Action—Government Regulations

Due to a series of corporate scandals in the late 1990s and early 2000s, new regulations started sprouting up to force corporations (the Sarbanes-Oxley Act), government agencies (the Clinger-Cohen Act), and banks (the Basel II Accord) to be held accountable for lack of risk control. While the Clinger-Cohen Act specifically recommends the usage of IT PPM techniques, Basel II and the Sarbanes-Oxley Act create urgency for IT PPM because of their references to operational risk management. Operational risks have traditionally been managed internally but are now seen as critical sources of information for external entities such as investors, insurers, and governments. Until now, these entities could only rely on the information provided by financial statements and credit ratings agencies to make decisions related to the organization.

To support the requirements of these new regulations, organizations are building IT systems that allow management to have increased visibility into their operational processes. An IT PMO would help ensure that new IT-based business initiatives take new government regulations into account when developing their business cases. Also, IT PPM tools reduce operational risk by providing continuous and clear views of the project portfolio to senior management. Let's now look at the details of these three regulations.

1A.1 Basel II

In 1974, the Basel Committee on Banking Supervision was founded by the G-10 states. In the late 1990s, the Basel II accord was proposed to help central banks better grade the financial strengths of commercial banks. Until Basel II, governmental central banks relied solely on the credit rating (credit risks) and the health of the banking market (market risks) to judge how risky it was to insure or to lend money to particular banks. Basel II provided guidelines for banks to also provide their operational risk levels when determining their minimum equity requirements (e.g., the ratio of cash held to loans outstanding). "The more advanced the risk management system a bank adopts, the lower the cost of capital and the equity requirements central banks will

impose" [24]. Such risk management will need to account for potential losses due to IT systems, staff processes, and external events.

> CD-ROM: Two documents are included that provide more detail on this accord, as well as the proposed timeline for introduction by the European Union. The Basel Review—Melbourne article in the CD-ROM reviews the Basel II accord from a fairly academic perspective. The Basel Roadmap shows the timeline that is being followed for the implementation of Basel II.

1A.2 Clinger-Cohen Act

In 1996, the U.S. Congress passed the Clinger-Cohen Act, which compels government agencies to implement IT PPM policies. Such IT PPM standards would be used as a basis to scrutinize proposed initiatives and audit IT-based projects. Historically, after the government imposes new control processes, it tends to require the same processes of its civilian contractors [e.g., ISO 9000, total quality management (TQM)] [25]. Therefore, companies that rely on government contracts are taking a close look at developing IT PPM techniques to maintain an advantage during contract biddings.

> CD-ROM: A grouping of U.S. Department of Defense documents that address approaches to managing IT-based projects is included. The Clinger-Cohen Act is included in this group.

1A.3 Sarbanes-Oxley Act

While the Sarbanes-Oxley Act of 2002 introduced new financial accountability requirements for U.S. corporations, other countries (e.g., Canada) are looking into similar legislation [26]. Section 404 of the Sarbanes-Oxley Act is gaining much attention because it goes beyond just establishing review committees and limiting outside auditors. This section requires companies to expand their financial statements to include a report that "establishes, maintains and assesses the effectiveness of an internal control structure and a set of procedures for financial reporting" [27]. This requirement is similar to the operational risk mitigation controls found in the Basel II Accord. While the Basel II

Accord can impose higher equity requirements for failure to comply, the Sarbanes-Oxley Act can impose criminal penalties. Companies are already incurring costs to comply with this new government regulation. The Hackett Group of Atlanta predicts costs of annual compliance at most companies will be in the range of $5 million to $7 million [28]. IT solutions that automate the new need for process awareness can reduce such costs. However, if enterprise integration isn't considered (e.g., through enterprise IT and business architecture review committees) when introducing such solutions, a company can be taking two steps back for every one step forward. The accompanying CD-ROM includes the complete Sarbanes-Oxley Act.