

Foundations of Project Management

PMG 101

Project portfolio management system

Chapter 6



Learning Objectives

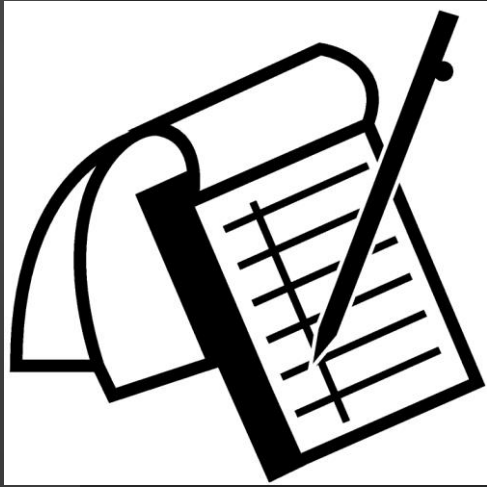
The Strategic Management Process: An Overview.

The Need for an Effective Project Portfolio Management System.

Benefits of Portfolio Management System.

Design of a project portfolio system.

Key terms.



Organization strategy and project selection



Strategy is implemented through projects. Every project should have a clear link to the organization's strategy.

Strategy is fundamentally deciding how the organization will compete. Organizations use projects to convert strategy into new products, services, and processes needed for success.

For example, Intel's major strategy is one of differentiation. Its projects target innovation and time to market. Currently, Intel is directing its strategy toward specialty chips for products other than computers, such as autos, security, cell phones, air controls. Another goal is to reduce project cycle times. Intel, NEC, General Electric, and AT&T have reduced their cycle times by 20–50 percent. Projects and project management play the key role in supporting strategic goals. It is vital for project managers to think and act strategically.

The Strategic Management Process: An Overview



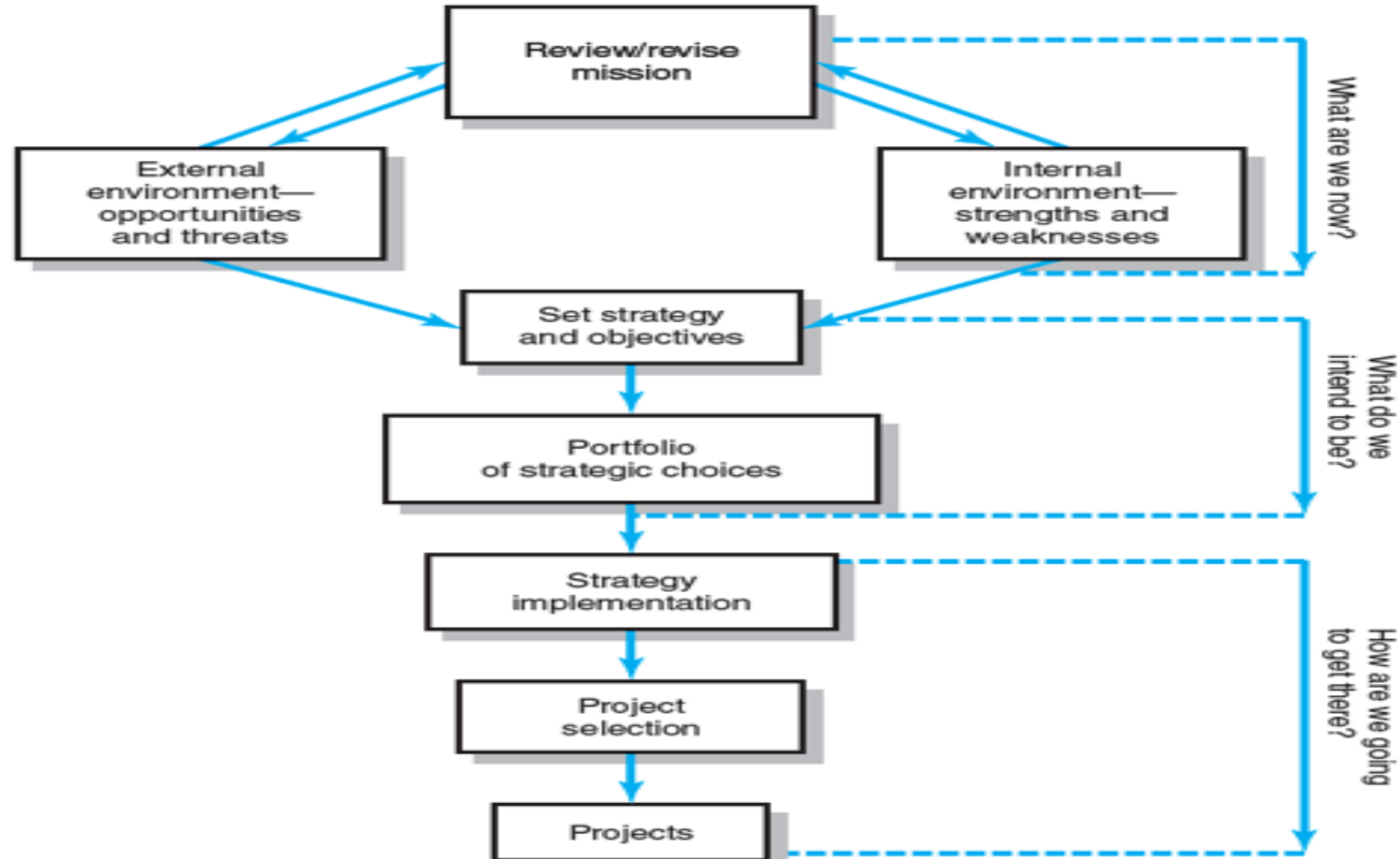
Strategic management is the process of assessing “what we are” and deciding and implementing “what we intend to be and how we are going to get there.” Strategy describes how an organization intends to compete with the resources available in the existing and perceived future environment.

Four Activities of the Strategic Management Process

The typical sequence of activities of the strategic management process is outlined here; a description of each activity then follows:

- 1- Review and define the organizational mission.
- 2- Set long-range goals and objectives.
- 3- Analyze and formulate strategies to reach objectives.
- 4- Implement strategies through projects.

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**Strategic
Management
Process**

3- Analyze and formulate strategies to reach objectives:



Formulating strategy answers the question of *what* needs to be done to reach objectives. Strategy formulation includes determining and evaluating alternatives that support the organization's objectives and selecting the best alternative.

The first step is a realistic evaluation of the past and current position of the enterprise. This step typically includes an analysis of “who are the customers” and “what are their needs as they (the *customers*) see them.”

The next step is an assessment of the internal and external environments. What are the internal strengths and weaknesses of the enterprise?

3- Analyze and formulate strategies to reach objectives:



This assessment of the external and internal environments is known as the SWOT analysis (strengths, weaknesses, opportunities, and threats).

From this analysis, critical issues and a portfolio of strategic alternatives are identified. These alternatives are compared with the current portfolio and available resources; strategies are then selected that should support the basic mission and objectives of the organization.



4. Implement Strategies through Projects

Implementation answers the question of *how* strategies will be realized, given available resources.

Implementation must include attention to several key areas:

First, completing tasks requires allocation of resources. Resources typically represent funds, people, management talents, technological skills, and equipment.

Second, implementation requires a formal and informal organization that complements and supports strategy and projects. Authority, responsibility, and performance all depend on organization structure and culture.

Third, planning and control systems must be in place to be certain project activities necessary to ensure strategies are effectively performed.

Fourth, motivating project contributors will be a major factor for achieving project success.

Finally, an area receiving more attention in recent years is prioritizing projects.

A Portfolio Management System

The aim of portfolio management is to ensure that projects are aligned with strategic goals and prioritized appropriately. Portfolio management asks, “What is strategic to our organization?”

Portfolio management provides information that allows people to make better business decisions. Since projects clamoring for funding and people usually outnumber available resources, it is important to follow a logical and defined process for selecting the projects to implement.

The Need for an Effective Project Portfolio Management System

Implementation of projects without a strong priority system linked to strategy creates problems. Three of the most obvious problems are discussed below. A project portfolio system can go a long way to reduce, or even eliminate, the impact of these problems.

Problem 1: The Implementation Gap

In organizations with short product life cycles, it is interesting to note that frequently participation in strategic planning and implementation includes participants from all levels within the organization. However, in perhaps 80 percent of the remaining product and service organizations, top management pretty much formulates strategy and leaves strategy implementation to functional managers.

Within these broad constraints, more detailed strategies and objectives are developed by the functional managers. The fact that these objectives and strategies are made independently at different levels by functional groups within the organization hierarchy causes manifold problems.

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Some symptoms of organizations struggling with strategy disconnect and unclear priorities are presented here:

- Conflicts frequently occur among functional managers and cause lack of trust.
- Frequent meetings are called to establish or renegotiate priorities.
- People frequently shift from one project to another, depending on current priority. Employees are confused about which projects are important.
- People are working on multiple projects and feel inefficient.
- Resources are not adequate.

Because clear linkages do not exist, the organizational environment becomes dysfunctional, confused, and ripe for ineffective implementation of organization strategy and, thus, of projects. The **implementation gap** refers to the lack of understanding and consensus of organization strategy among top and middle-level managers.

**Problem 2: Organization Politics**

Politics exist in every organization and can have a significant influence on which projects receive funding and high priority. This is especially true when the criteria and process for selecting projects are ill-defined and not aligned with the mission of the firm. Project selection may be based not so much on facts and sound reasoning, but rather on the persuasiveness and power of people advocating projects.

The term “**sacred cow**” is often used to denote a project that a powerful, high- ranking official is advocating.

Politics can play a role not only in project selection but also in the aspirations behind projects. Individuals can enhance their power within an organization by managing extraordinary and critical projects. Power and status naturally accrue to successful innovators and risk takers rather than to steady producers. Many ambitious managers pursue high-profile projects as a means for moving quickly up the corporate ladder. Many would argue that politics and project management should not mix. A more proactive response is that projects and politics invariably mix and that effective project managers recognize that any significant project has political ramifications.

**Problem 3: Resource Conflicts and Multitasking**

Most project organizations exist in a multi project environment. All project managers seek to have the best people for their projects. The problems of sharing resources and scheduling resources across projects grow exponentially as the number of projects rises.

Resource sharing also leads to multitasking. Multitasking involves starting and stopping work on one task to go and work on another project, and then returning to the work on the original task. People working on several tasks concurrently are far less efficient. Multitasking also adds to delays and costs.

Benefits of Project Portfolio Management

Builds discipline into project selection process.

Links project selection to strategic metrics.

Prioritizes project proposals across a common set of criteria, rather than on politics or emotion.

Allocates resources to projects that align with strategic direction.

Balances risk across all projects.

Justifies killing projects that do not support organization strategy.

Improves communication and supports agreement on project goals.

Design of a project portfolio system should include: Classification of projects, selection criteria depending upon classification, sources of projects' proposals, evaluating proposals, and managing the portfolio of projects.

1. Classification of the Project

Many organizations find they have three different kinds of projects in their portfolio: ***compliance and emergency*** (must do), ***operational***, and ***strategic projects***. (See Figure 2.)

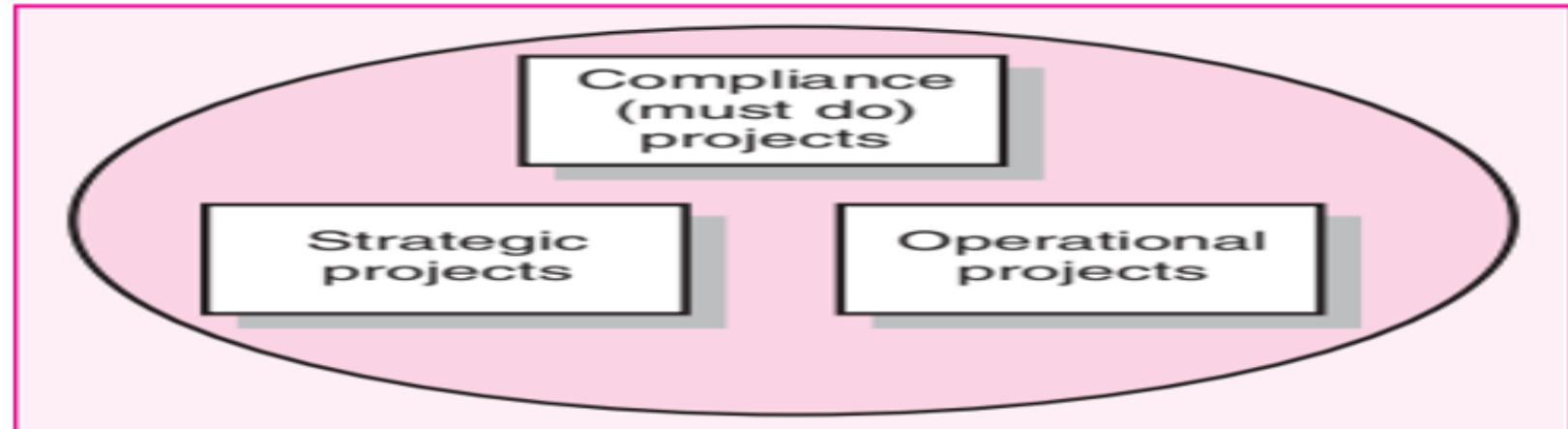
Compliance projects are typically those needed to meet regulatory conditions required to operate in a region; hence, they are called “must do” projects. **Emergency projects**, such as rebuilding a soybean factory destroyed by fire, meet the must do criterion. **Compliance and emergency projects** usually have penalties if they are not implemented.

1. Classification of the Project

Operational projects are those that are needed to support current operations. These projects are designed to improve efficiency of delivery systems, reduce product costs, and improve performance.

Finally, **strategic projects** are those that directly support the organization's long-run mission. They frequently are directed toward increasing revenue or market share. Examples of strategic projects are new products, research, and development.

FIGURE 2
Portfolio of
Projects
by Type



2. Selection Criteria

Although there are many criteria for selecting projects, selection criteria are typically identified as *financial* and *nonfinancial*. A short description of each is given next, followed by a discussion of their use in practice.

2.1. Financial Criteria

Financial Models: for most managers financial criteria are the preferred method to evaluate projects. These models are appropriate when there is a high level of confidence associated with estimates of future cash flows. Two models and examples are demonstrated here: **payback model** and **net present value (NPV) model**.

Example:

Project A has an initial investment of \$700,000 and projected cash inflows of \$225,000 for 5 years.

Project B has an initial investment of \$400,000 and projected cash inflows of \$110,000 for 5 years.

2.1.1.The payback model



It measures the time it will take to recover the project investment. Shorter paybacks are more desirable. Payback is the simplest and most widely used model. Payback emphasizes cash flows, a key factor in business. Some managers use the payback model to eliminate unusually risky projects (those with lengthy payback periods). The major limitations of payback are that it ignores the time value of money, assumes cash inflows for the investment period (and not beyond), and does not consider profitability.

Payback period (yrs)=Estimated Project Cost/Annual Savings

Rate of return= Annual savings/ Estimated Project Cost

Payback period (yrs) for project A= $700,000/225,000= 3.1$ years.

Payback period (yrs) for project B= $400,000/110,000= 3.6$ years.

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Rate of return of project A= $225,000/700,000= 32.1\%$

Rate of return of project B= $110,000/400,000= 27.5\%$

The payback for Project A is 3.1 years and for Project B is 3.6 years. Using the payback method both projects are acceptable since both return the initial investment in less than five years and have returns on the investment of 32.1 and 27.5 percent.

2.1.2. The net present value (NPV) model

It uses management's minimum desired rate-of-return (discount rate, for example, 20 percent) to compute the present value of all net cash inflows. If the result is positive (the project meets the minimum desired rate of return), it is eligible for further consideration. If the result is negative, the project is rejected. Thus, higher positive NPV's are desirable.

$$\text{Project NPV} = I_0 + \sum_{t=1}^n \frac{F_t}{(1+k)^t} \quad \text{where}$$

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$$\sum_{t=1}^n \frac{F_t}{(1+k)^t} = \frac{F_1}{(1+k)^1} + \frac{F_2}{(1+k)^2} + \frac{F_3}{(1+k)^3} + \dots + \frac{F_t}{(1+k)^t}$$

I_0 = Initial investment (since it is an outflow, the number will be negative)

F_t = Net cash inflow for period t

k = Required rate of return

$$\begin{aligned} \text{Net present value for project A} &= -700,000 + \frac{225,000}{(1+.15)^1} + \frac{225,000}{(1+.15)^2} + \frac{225,000}{(1+.15)^3} + \frac{225,000}{(1+.15)^4} + \frac{225,000}{(1+.15)^5} \\ &= \$ 54,235 \end{aligned}$$

$$\begin{aligned} \text{Net present value for project B} &= -400,000 + \frac{110,000}{(1+.15)^1} + \frac{110,000}{(1+.15)^2} + \frac{110,000}{(1+.15)^3} + \frac{110,000}{(1+.15)^4} + \frac{110,000}{(1+.15)^5} \end{aligned}$$

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The NPV model accepts project A, which has a *positive* NPV of \$54,235. Project B is rejected since the NPV is *negative* \$31,263. Compare the NPV results with the payback results. The NPV model is more realistic because it considers the time value of money, cash flows, and profitability.

When using the NPV model, the discount rate (return on investment hurdle rate) can differ for different projects. For example, the expected ROI on strategic projects is frequently set higher than operational projects. Similarly, ROI's can differ for riskier versus safer projects. The criteria for setting the ROI hurdle rate should be clear and applied consistently.

Unfortunately, pure financial models fail to include many projects where financial return is impossible to measure and/or other factors are vital to the accept or reject decision.

Scientific Calculator



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	A	B	C	D	E	F	G	H	I	J	K	L	M
1				Exhibit 2.3A									
2													
3				Example Comparing Two Projects Using the Payback Method									
4													
5				Project A		Project B				Formulas			
6													
7													
8		Investment		\$700,000		\$400,000				Project A: Payback = (D8/D9)			
9		Annual savings		\$225,000		\$110,000				Project B: Payback = (F8/F9)			
10													
11		Payback period*		3.1 years		3.6 years							
12													
13		Rate of return **		32.1%		27.5%				Project A: Rate of return = (D9/D8)			
14										Project B: Rate of return = (F9/F8)			
15	Project A: Accept. Less than 5 years and exceeds 15% desired rate.												
16													
17	Project B: Accept. Less than 5 years and exceeds 15% desired rate.												
18													
19	* Note: Payback does not use the time value of money.												
20	** Note: Rate of return is reciprocal of Payback.												
21													
22													

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
3													
4													
5	Project A		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total		Formulas		
6	Required	15%											
7	Outflows		-\$700,000						-\$700,000				
8	Inflows			\$225,000	\$225,000	\$225,000	\$225,000	\$225,000	\$1,125,000				
9	Net inflows			\$225,000	\$225,000	\$225,000	\$225,000	\$225,000	\$425,000	Project A: =C7+NPV(B6,D9:H9)			
10	NPV	\$54,235											
11													
12													
13	Project B												
14	Required	15%											
15	Outflows		-\$400,000						-\$400,000				
16	Inflows			\$110,000	\$110,000	\$110,000	\$110,000	\$110,000	\$550,000				
17	Net inflows			\$110,000	\$110,000	\$110,000	\$110,000	\$110,000	\$150,000	Project B: =C15+NPV(B14,D17:H17)			
18	NPV	-\$31,263											
19													
20													
21													
22	NPV comparison: Accept Project A—NPV is positive.												
23	Reject Project B—NPV is negative.												

2.2. Nonfinancial Criteria

Financial return, while important, does not always reflect strategic importance. Now the prevailing thinking is that long-term survival is dependent upon developing and maintaining core competencies. Companies have to be disciplined in saying no to potentially profitable projects that are outside the realm of their core mission. This requires other criteria be considered beyond direct financial return.

For example, **a firm may support projects that do not have high profit margins for other strategic reasons including:**

- To capture larger market share.
- To make it difficult for competitors to enter the market.
- To develop an enabler product, which by its introduction will increase sales in more profitable products.

- To develop core technology that will be used in next-generation products.
- To reduce dependency on unreliable suppliers.
- To prevent government intervention and regulation.
- Organizations may support projects to restore corporate image or enhance brand recognition.
- Many organizations are committed to corporate citizenship and support community development projects.

Since no single criterion can reflect strategic significance, portfolio management requires multi-criteria screening models. These models often weight individual criteria so those projects that contribute to the most important strategic objectives are given higher consideration.

2.2.1. Two Multi-Criteria Selection Models

Since no single criterion can reflect strategic significance, portfolio management requires multi-criteria screening models. Two models, the checklist and multi-weighted scoring models, are described next.

2.2.1.1. Checklist Models:

This approach basically uses a list of questions to review potential projects and to determine their acceptance or rejection. Several of the typical questions found in practice are listed in Exhibit 2. One large, multi project organization has 250 different questions!

EXHIBIT 2. Sample selection questions used in practice practice

Topic	Question
Strategy/alignment	What specific organization strategy does this project align with?
Driver	What business problem does the project solve?
Success metrics	How will we measure success?
Sponsorship	Who is the project sponsor?
Risk	What is the impact of not doing this project?
Risk	What is the project risk to our organization?
Risk	Where does the proposed project fit in our risk profile?
Benefits, value, ROI	What is the value of the project to this organization?
Benefits, value, ROI	When will the project show results?
Objectives	What are the project objectives?
Organization culture	Is our organization culture right for this type of project?
Resources	Will internal resources be available for this project?
Approach	Will we build or buy?
Schedule	How long will this project take?
Schedule	Is the time line realistic?
Training/resources	Will staff training be required?
Finance/portfolio	What is the estimated cost of the project?
Portfolio	Is this a new initiative or part of an existing initiative?
Portfolio	How does this project interact with current projects?
Technology	Is the technology available or new?



Major shortcomings of checklist approach are that it fails to answer the relative importance or value of a potential project to the organization and fails to allow for comparison with other potential projects. Each potential project will have a different set of positive and negative answers. How do you compare? Ranking and prioritizing projects by their importance is difficult, if not impossible.

This approach also leaves the door open to the potential opportunity for power plays, politics, and other forms of manipulation. To overcome these serious shortcomings experts recommend the use of a multi-weighted scoring model to select projects, which is examined next.

2.2.1.2. Multi-Weighted Scoring Models



A weighted scoring model typically uses several weighted selection criteria to evaluate project proposals. Weighted scoring models will generally include qualitative and/or quantitative criteria. Each selection criterion is assigned a weight. Scores are assigned to each criterion for the project, based on its importance to the project being evaluated. The weights and scores are multiplied to get a total weighted score for the project. Using these multiple screening criteria, projects can then be compared using the weighted score. Projects with higher weighted scores are considered better.

Management weights each criterion (a value of 0 to a high of, say, 3) by its relative importance to the organization's objectives and strategic plan. Project proposals are then submitted to a project priority team or project office.

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Project screening matrix

Criteria Weight	Stay within core competencies	Strategic fit	Urgency	25% of sales from new products	Reduce defects to less than 1%	Improve customer loyalty	ROI of 18% plus	Weighted total
	2.0	3.0	2.0	2.5	1.0	1.0	3.0	
Project 1	1	8	2	6	0	6	5	66
Project 2	3	3	2	0	0	5	1	27
Project 3	9	5	2	0	2	2	5	56
Project 4	3	0	10	0	0	6	0	32
Project 5	1	10	5	10	0	8	9	102
Project 6	6	5	0	2	0	2	7	55
⋮								
Project n	5	5	7	0	10	10	8	83

Important to note that:

While selection models like the one above may yield numerical solutions to project selection decisions, models should not make the final *decisions*.

The people using the models should. No model, no matter how sophisticated, can capture the total reality it is meant to represent. Models are tools for guiding the evaluation process so that the decision-makers will consider relevant issues and reach a meeting of the minds as to which projects should be supported and not supported. This is a much more subjective process than calculations suggest.

3. Sources and Solicitation of Project Proposals



Projects should come from anyone who believes his or her project will add value to the organization. However, many organizations restrict proposals from specific levels or groups within the organization. This could be an opportunity lost.

Good ideas are not limited to certain types or classes of organization stakeholders. Encourage and keep solicitations open to all internal and external sources.

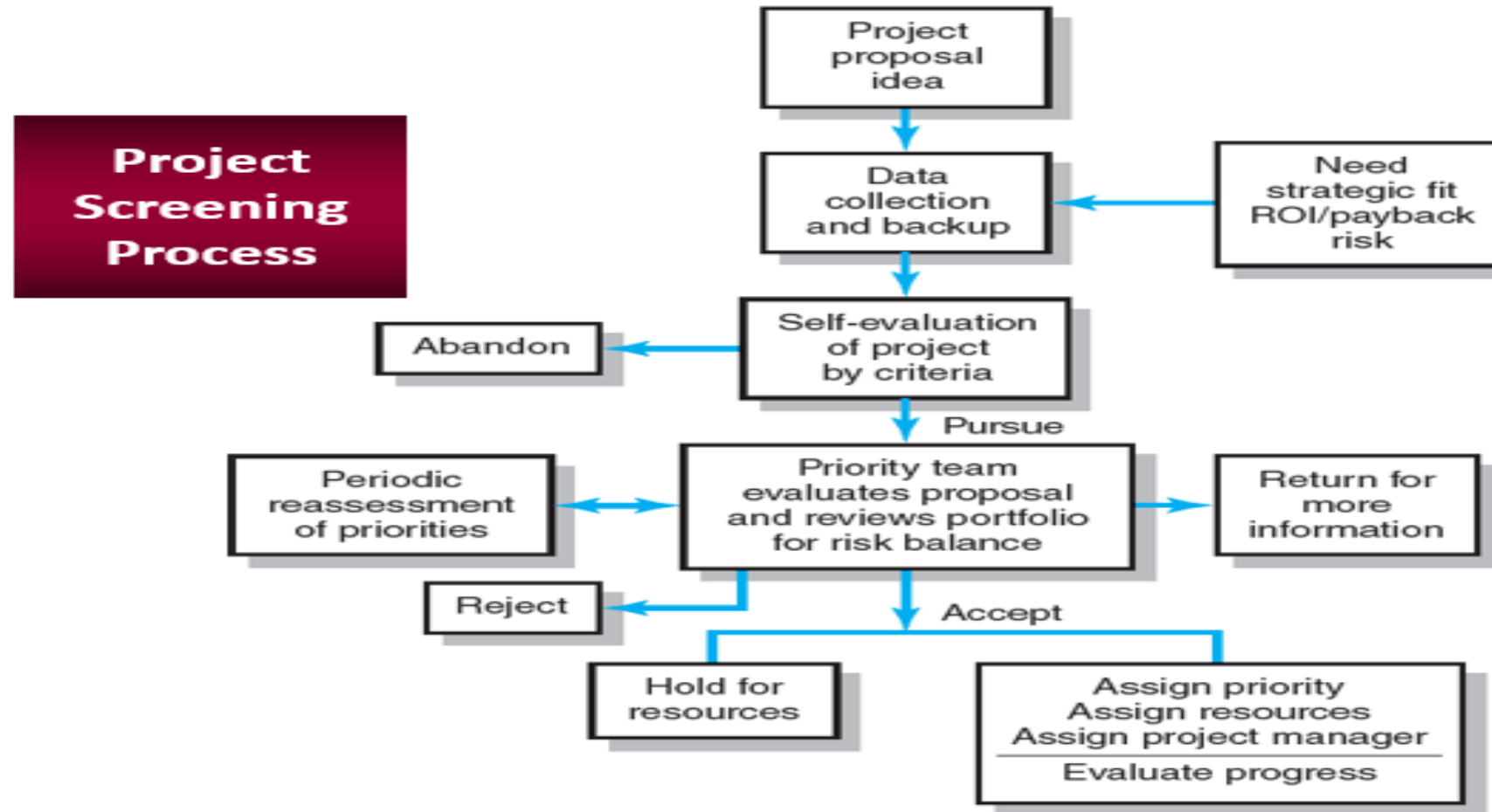
Figure 3. provides an example of a proposal form for an automatic vehicular tracking (Automatic Vehicle Location) public transportation project.

تتبع المركبات الأوتوماتيكي (تحديد موقع المركبة آلياً) مشروع النقل العام.

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Project Proposal Form	
Date: <u>Jan 22, 2xxx</u>	Proposal # <u>11</u> Sponsor <u>J. Moran</u>
Project classification? Strategic _____ Infrastructure <u>X</u> Compliance _____	
What business problem does the project solve? Increase customer satisfaction through kiosk and Web site for bus, streetcar, and fast rail Enhance driver and traveler safety Hyperlink to: AVL.tri-met.org	
How does this project align with our organization strategy? Increase customer ridership through better passenger travel planning & scheduling decisions Faster response to accidents	
What are the major deliverables of the project? GPS vehicle tracking system, Internet access, schedule screen	
What is the impact of not doing this project? Not meeting ridership goals	
What are the three major risks for this project? Cost overruns Integration of fast rail, bus, and streetcar systems Hacking system	
How will we measure success? Increased ridership Customer satisfaction Meeting budget and schedule	
Yes ☒ No ☐ Will this project require internal resources? Yes ☒ No ☐ Available?	
What is the estimated cost of the project? <u>\$10 million</u>	
How long will this project take? <u>22</u> Weeks	
Oversight action: Accept ☒ Return ☐	
Signature <u>XXXXXXX</u>	Date: <u>Oct. 7, 2xxx</u>

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4. Managing the Portfolio System



Managing the portfolio takes the selection system one step higher in that the merits of a particular project are assessed within the context of existing projects. At the same time, it involves monitoring and adjusting selection criteria to reflect the strategic focus of the organization. This requires constant effort.

The priority system can be managed by a small group of key employees in a small organization. Or, in larger organizations, the priority system can be managed by the project office or the enterprise management group.

The priority team, or project office, is responsible for publishing the priority of every project and ensuring the process is open and free of power politics.



Balancing the Portfolio for Risks and Types of Projects

A major responsibility of the priority team is to balance projects by type, risk, and resource demand. This requires a total organization perspective. Hence, a proposed project that ranks high on most criteria may not be selected because the organization portfolio already includes too many projects with the same characteristics— e.g., project risk level, use of key resources, high cost, nonrevenue producing, long durations. Balancing the portfolio of projects is as important as project selection.

Organizations need to evaluate each new project in terms of what it adds to the project mix. Short-term needs need to be balanced with long-term potential. Resource usage needs to be optimized across all projects, not just the most important project.

Key Terms



- Strategic management process
- Implementation gap
- Organizational politics
- Payback model
- Net present value model
- Checklist Models
- Multi-Weighted Scoring Models
- Priority team
- Project portfolio management
- Sacred cow
- compliance and emergency projects
- Operational projects
- Strategic projects



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Thank You

