Understanding the SPMO

This chapter defines at a high level the mission of a corporate IT Software Program Management Office (SPMO). It outlines the major roles and corresponding responsibilities for each member of the SPMO and project team. It explains the functions of the various positions people working in the SPMO occupy and, more importantly, it covers a wide variety of issues that are often overlooked when projects start.

1.1 SPMO Mission Statement

“To ensure the successful implementation of Enterprise programs and projects developed within an environment of continuous process improvement.”

To achieve success in this process, an SPMO will provide a standard set of tools and processes for program and project delivery. The SPMO will be tasked to provide planning, reporting, and administrative support for enterprise projects, and it will be responsible for facilitating project communications from the Core Team out to the organization.

1.2 Roles and Responsibilities

The following sections describe the roles of participants in projects that are run by the SPMO. These descriptions may also be used as a guideline for projects that are run by functional groups outside the SPMO.

NOTE: Roles may differ from the titles belonging to individuals who are functioning in an organization with specific responsibilities. For example, a Technical Lead in the development group may play the role of a Project Manager for a new initiative in that group. For our purposes, it is important to remember this book references roles and not titles.
1.2.1 Executive Stakeholder

This is the person to whom the Sponsor usually reports. He or she is responsible for reviewing the weekly status reports and schedules that are provided by the SPMO. The Executive Stakeholder is the owner of the entire program and represents it to the senior executive staff as needed. In many instances, the Executive Stakeholder and the Project Sponsor are one and the same person. He or she may also be asked to provide strategic direction and make decisions on highly critical issues and project prioritization. Most importantly, this person will approve the overall funding for the program (otherwise, it never gets off the ground).

1.2.2 Project Sponsor

This person is the functional owner of the project (typically the vice president of the business unit driving the project or a director of an area within that business unit). The Sponsor is also responsible for providing strategic direction to the project. The Sponsor is the person with financial accountability, and he or she agrees, via the Sponsor Formalization Letter, to apply resources to a project, including the formal appointment of a Project Manager. The Sponsor is the focal point for project decisions that are beyond the Project Manager’s scope, as well as acting as the project representative to upper management. Sponsors agree to review and approve all deliverables (as appropriate), in addition to approving all project phase transitions.

1.2.3 Program Manager

This function is responsible for soliciting standard reporting and Systems Engineering Process (SEP) methodology information from various Project Managers and Coordinators regarding subprojects of a major project (defined as a project that spans more than one business unit in an organization.) The Program Manager is responsible for sharing information with other business units and communicating relevant major project information to and from other business units to individual Project Managers. The Program Manager may sometimes be mistaken for the Project Sponsor because his or her role is much more involved at the day-to-day level. The Program Manager is much more of a decision maker, but project staff often do not distinguish between the manager and the role of the Sponsor. Project Managers often report directly to the Program Manager when they are assigned to the SPMO by the Project Sponsor in an Appointment Letter.
1.2.4 **Project Manager (PM)**

The Project Manager works within a functional group that usually belongs to the Sponsor. The Project Manager is the primary point of contact for a project. He or she is responsible for day-to-day management of project tasks, including schedule management, project definition, architecture and implementation plans, resource needs identification, vendor selection, and many other specific items required for a successful delivery. The Project Manager is also responsible for providing the Project Coordinator in the SPMO with all appropriate and completed SEP methodology documentation, reports, and any other additional project-specific information requested.

1.2.5 **Project Coordinator**

The Project Coordinator works directly with the Project Sponsor and provides various services offered by the SPMO (the service areas of the SPMO are further detailed in this chapter).

The Project Coordinator ensures that all project management processes are consistent with SEP methodology. He or she provides reports, status updates, and pertinent project information to the SPMO manager and the Sponsor for continuous tracking and cross-functional monitoring of a given project. The Project Coordinator collaborates with other Project Coordinators within the SPMO to facilitate communications about different projects in progress across the organization. The Project Coordinator is tasked to identify, track, and synchronize project interdependencies. This person resolves issues that arise when such interdependencies exist.

1.2.6 **Business Systems Analyst (BSA)**

The BSA is responsible for analysis of business and user requirements. He or she also monitors projects that affect business units. The BSA would typically oversee requirements for delivery of a specific business system (e.g., customer relationship management, sales automation tools, or financial package etc.). The BSA works closely with user representatives and the Project Manager to identify, classify, and mitigate project risks, perform cost-benefit analyses, and provide input regarding product and tool selection. This person serves as a liaison between the development team and the user. It is the BSA’s responsibility to ensure that user needs are properly communicated to and implemented by the developers. The BSA is generally an expert in the business processes and knows all of the details of busi-
ness process execution inside and out. This person is a resident expert in the area of the business you are working to support.

1.3 Project Resources

Project Resources are responsible for completing specific tasks on a project. They are usually managed by a team lead or by the Project Manager. They may be external or internal to the organization and may include architects, planners, end-user representatives, developers, engineers, analysts, database administrators (DBAs), system administrators, technicians, testers, trainers, coordinators, and so on.

1.4 SPMO Organizational Structure

The following diagram (Figure 1.1) depicts the line structure of a typical SPMO-driven project. The Executive Stakeholder has one or more Project Sponsors in his or her organization. Each Project Sponsor works in the SPMO shop with a Program Manager, who is assigned by the SPMO to drive the project to completion. The Project Sponsor is responsible for the appointment of a Project Manager in his or her organization. This Project Manager will have a project coordinator who works in the SPMO assigned
1.5 Software Program Management Service Areas

The SPMO is set up to run as a service organization. It provides project-related services to all business units across the company. These services include the following:

- Performance Reporting (including schedule and status reporting)
- Financial Management
- Vendor Management
- Issue Management
- Quality Management
- Change Management
- Risk Management

1.6 Performance Reporting

Project performance reporting involves documenting the project’s performance against the plan. This reporting addresses a variety of audiences (and levels of responsibility), both internal and external to the project. The objective of performance reporting is to provide consistent and regular reports that recognize progress made or lost in the project. Another objective is to provide the project team with early warnings of potential problems. This type of reporting will also provide senior management with information that can be used to keep the project operating smoothly and enable adequate communication among key parties.

Benefits of performance reporting include providing a means to ensure that the project makes orderly progress toward key milestones by charting progress metrics. The reports tie performance reports and project financials together for a consolidated picture of the overall status of a project. These
reports are designed to capture all project information regarding scope, schedule, cost, and quality. These reports will recognize and target multiple audiences and tailor the information to each audience. The SPMO implements and executes performance reporting.

The five components of performance reporting are:
I. Establish program standards
II. Request and collect data
III. Consolidate information
IV. Reporting development and continuous improvement
V. Reporting Communications

Performance reporting is a means used to formally establish project standards. Project standards should define the reporting and communications process and team organization, the personnel roles, including participation in project management, and the project reporting frequency. Performance reporting effectively communicates the information produced in the course of project execution to the entire organization.

In order for a report to be meaningful, it must contain relevant, timely data. The SPMO uses various reports to collect and disseminate this data from multiple sources in an organization. The SPMO is likely to collect data from Project Progress Reports (which are weekly recurring reports) and from the Project Plan (usually maintained in a software product used for project management). The SPMO can determine and track overall project scope and cost using project status reporting. Any new or significant issues and problems can be gleaned from Project Status Reports and the Project Issues Database. The SPMO can track vendor costs and performance by reviewing vendor invoices and Status Reports.

Reports should consolidate information and summarize project data, targeting it to the appropriate audience in the organization. Reports that are sent to members of the Core Team often become attached as status updates to the Core Team members’ report to their business leaders. Performance reports should focus only on the project level, and they should be quite specific in nature. It should always be assumed that a report leaving the SPMO will be used publicly within the company. This assumption may seem overly cautious, but it is better to be safe than sorry. There have been instances where reports have circulated back to a company CEO before a business leader could meet and brief the CEO on the project. Imagine the
embarrassment the Sponsor must have felt in this particular circumstance! Projects have even been canceled in such circumstances.

Report development and Continuous Process Improvement (CPI) require that the Core Team members take some time in planning the reports, devising a method where they can continuously monitor project progress and periodically improve on the report structure, format, and content. At the same time, the Core Team should always ensure that any report meets the following criteria:

- Targets a specific audience
- Is accurate in all regards
- Is consistent with other project data
- Is understandable and not filled with jargon
- Is usable—it must serve a purpose to the recipient
- Is analyzable and timely in nature
- Enables prediction of project performance
- Identifies potential problems (and propose solutions if possible)
- Is approved by and useful to all project stakeholders
- Is published and distributed to all interested parties

An example format of the required elements of a project performance report includes the following:

- **Scope of deliverables**: Planned, actual, and projected
- **Cost**: Planned, actual, earned, and estimated at completion
- **Schedule**: Planned, actual, and estimated
- **Quality**: Planned, actual, and projected achievement
- **Risk**: Planned, actual, and projected reduction
- **Benefits**: Planned and achieved
- **Issues**: Defined, corrective actions taken, status, management actions required
Communications reporting involves effective communication to the organization. The objective is to ensure the delivery of the right message, sent by the appropriate party, to the necessary audience(s), through appropriate channels. Successful implementation of communications reporting positively affects the work environment and relationships with sponsoring organizations, employees, and other stakeholders.

1.6.1 Financial Management

Financial management involves control and management of the program’s budget and other finance, as well as providing financial reporting for the project. Objectives of sound financial management should ensure that all costs relating to the progress of the project are planned and tracked, including operating expenses, capital expenditures, and man-days. Financial management involves reporting on the status of projects related to, but not under, Core Team control, such as those activities that affect the overall project (e.g., infrastructure development). Financial management should allow a team to quantify, support, and maintain all financial aspects of the business case for the project. The SPMO generally performs or assists the Project Manager in performing the financial management functions needed for any given project.

NOTE: This section documents only the critical components of project-related financial management and reporting. It does not address financial reporting typically required for companies (i.e., general and subsidiary ledgers, balance sheet, income and expense statements).

Financial management establishes financial guidelines for projects underway in the SPMO. It enables the SPMO to compile budgets using Cost Estimate Worksheets. The SPMO can then periodically quantify and maintain the financial aspect of the business case and conduct periodic financial analysis. The SPMO can maintain financial control of the project and oversee the results. With sound financial management, the SPMO can assist in estimating realistic project budgets and establish and maintain a project chart of accounts, which logically categorizes the financial activities of a project. To properly perform project-related financial management, the SPMO must collect data from the various affected units of the organization, prime and subcontractors, and suppliers, to name but a few.

In order to create and maintain the costing and budgeting elements for a project, the SPMO must determine if the cost is in line with the business and project requirements and decide on an approach for handling project costs. This includes determining the most likely types and sources of project costs.
Performance Reporting

Costs. Types of costs include direct labor and materials (i.e., direct charges to project accounts) and indirect costs (i.e., allocations of costs to project accounts) incurred during the course of project execution. The SPMO must determine all sources of cost, including those of the sponsoring organizational unit, the prime contractor (if one is involved), subcontractors, and suppliers. The SPMO must also determine an estimating approach and decide which factors will force inclusion or exclusion of various cost elements into the overall project scope.

Project initiation requires the SPMO to work closely with the Project Manager and Core Team members to define detailed estimates and obtain budget authorization. The SPMO will set up a cost-control mechanism to initiate the project and begin tracking actual expenditures. Once the project has been initiated, the SPMO will establish a project baseline and begin to solicit estimates from the project management team on project-related payroll and other expenses (usually by headcount or hours tracked). Project Sponsors are tasked to ensure proper assignment of budget by having the finance representative on the Core Team work with the finance organization to set up a cost center and allocate funds for the project to the new project cost center.

The SPMO is chartered to monitor and control project costs. To accomplish this task, the SPMO must receive all invoices requested for payment, implement an invoice approval process, collect all invoices in a repository, and track the invoices against projected budgets. The SPMO is responsible for tracking payment authorizations and verifying that payments have been made in a timely manner. Finally, the SPMO will report the results of all projects’ financial status.

In order for the SPMO to report financial results properly, it must prepare financial reports on a monthly recurring basis. It must gather data from project accounting reports and input actuals into the reports. A summary of the financials by project is sent to the various Project Managers for review. The Project Managers are expected to determine variances and provide explanations for significant deviations from the plan. It may require the SPMO to reforecast financials based on new data obtained from the Project Manager. Finally, the SPMO will consolidate the data into a “roll-up report” to senior management.

1.6.2 Vendor Management

Vendor management involves assisting Project Managers with the selection and management of resources obtained from outside the organization. This
may include consultants, suppliers, or contractors. It can also include products and services that are part of the business capability (such as software or physical assets) or tangibles used to create a business capability (such as office space or temporary workers). The goal of vendor management is to achieve the project’s objectives by assisting in the selection of vendors and establishing a business relationship with them in order to purchase appropriate technologies, products, and services. Vendor management should establish contracts and manage any changes to the contract, assist in the management of vendor personnel, and efficiently use internal resources and skills by identifying opportunities to supplement internal capabilities with qualified vendors.

The benefits of effective vendor management are cost savings obtained by working closely to obtain quality products and services, development of relationships and partnering alliances with vendors, and development of standards for vendor quality, metrics, reporting, pricing, and billing. These standards ensure that all vendors in compliance, and, as software program management matures, all units in the company will expect such standards to be enforced. Vendor management staff in the SPMO should work with the legal department to create standard wording (boilerplates) for common contract clauses. They should identify and establish priorities for vendor selection criteria.

It is very important for the vendor management team to fully understand the business arrangements between the sponsoring organization and the vendor (and any business partners). There may be larger issues at stake outside the scope of a single project. The SPMO vendor management staff must gain efficiency in internal resources and skills by identifying opportunities to supplement internal capabilities with qualified vendors. This can only be done when standards to measure performance are in place.

The SPMO facilitates vendor management with the Project Manager, the Core Team, and all other stakeholders. Generally, it is best if only the SPMO representatives deal directly with vendors because SPMO staff nearly always have special training to help them deal with vendors in situations that create ethical problems, conflicts, or otherwise can lead to legal complications. There are five key components of vendor management:

I. Planning
II. Selection Assistance
III. Establishment of Contract Terms and Conditions
1.6.3 Vendor Planning

In vendor planning, the SPMO needs to identify all products and services required for the project. Sometimes this takes quite a long time and requires many meetings with business units and various members of the Core Team. This is especially true for very large projects (>$20 million or more in scope). Next, the SPMO must identify the available budget and involve all groups affected by the use of each product or service. The vendor team is responsible for each product or service area (e.g., facilities, network, package) that must be identified. This must be communicated to the interested parties through the Core Team and through various reporting vehicles used by the SPMO.

During the selection process, the vendor team will work with the Project Manager to identify vendor candidates by developing a Request for Information (RFI) document that is to be sent to the candidate vendors. The vendors selected at this point are usually the best known or best referenced you can find. The vendor team will also define the selection criteria to be used to determine which candidates are chosen for the project. An important consideration is to ensure that before the RFI is sent out to vendors, all input to the process is included. It is not fair to the vendors to have multiple revisions of an RFI out to various competitors and to have each vendor responding to differing or altered requirements. Any changes subsequent to initial release should be change-managed and communicated through a formal RFI update process. If vendors feel you are wasting their time with frivolous changes, your credibility is likely to take a hit and responses will generally be hard to obtain in the future. It is also important for the vendor selection team to understand when they send RFIs out to vendors that their request is generally only one of many those vendors often receive.

1.6.4 Vendor Selection

The selection process for a vendor generally requires that the SPMO prepare and issue a Request for Proposal (RFP). The SPMO must also identify a vendor team member as the single point of contact to clarify issues. The final selection will be based on how well the vendor has met defined selection criteria, cost, and so on. One criteria that selection teams often overlook is how the vendor product strategy will play out with your specific enterprise needs 12 to 18 months down the road. It is important to know if you are buying a
product that will likely be discontinued in three months, for example. The process of evaluating vendor proposals can be time-consuming and tedious, but it should not be taken lightly. As soon as possible, the SPMO should notify and remove candidates do not satisfy the criteria stated in the RFP. The final selection should be made by the consensus of the Core Team. Once the Core Team has made a selection, it should formally notify the legal department about the upcoming contract review.

1.6.5 Establishing Contract Terms and Conditions

At a minimum, the contract should define the commitment between the company and the vendor. The SPMO should work with the selected vendor and the organization’s legal department to reach an agreement regarding the precise content and wording of the contract. The contract should stipulate a price and define how billing will be accomplished (include frequency of billing and to whom the bills should be sent). After the legal department has completed work on the contract, the SPMO should schedule a contract review meeting with the selected vendor to evaluate any new vendor alternatives and assess their impacts on the organization. Any changes to the contract must be taken back to the legal department and another review should be scheduled when legal has finished making the new changes. During the course of this sometimes protracted process, it is common for the Project Manager to concurrently seek and obtain funding approval from the Executive Sponsor.

1.6.6 Monitoring the Vendor

Once contracts are signed and everyone has agreed to what will be done by whom, it is the SPMO’s responsibility to monitor the vendor to ensure that everything proceeds as planned. The SPMO should be ready to identify variances, report and track issues, process changes, resolve contract disputes, and ensure that timely and proper billing occurs with the vendor. When bills are received from the vendor, the SPMO should prepare and clear such billings with the Project Manager. If there are changes to the original contract—and there almost always are—the SPMO coordinates those contract changes in accordance with the project change-control process. SPMOs ensure that project teams assess the vendor performance and validate whether or not the vendor has satisfied the contractual requirements of the project. Any instances of noncompliance should be documented and raised as an issue with the Project Manager. If the Project Manager cannot get the
issue addressed with the vendor, the SPMO will facilitate handing the matter over to the corporate legal department for resolution.

1.6.7 Contract Closure

The SPMO is tasked to ensure that the vendor has met all contract obligations and the project has met its commitments to the company. The SPMO must verify that project users perform an acceptance review to validate whether the product or service delivered has met all expectations and commitments. Finally, the SPMO should verify that the Project Manager has notified the purchasing department after a successful completion of the acceptance review in order to release final payments to the vendor.

1.7 Issue Management

Issue management facilitates identification, analysis, escalation, reporting, and resolution of the project’s issues. Any decisions to be made regarding the development of the business capability or the management of the project are classified as an issue. Issue management will enable the project Core Team to create strategies that effectively address potential barriers to project success. Issue management should be carried out at all levels within the project. The issue management process should ensure that issues are resolved at the appropriate level and are communicated as appropriate. Sometimes, organizations set up a Change Control Board (CCB) to process and prioritize issues as they arise.

Issues are resolved with action items, which can span a single project or multiple projects. Issues can escalate, and they should be proactively raised during the course of project execution. Having a formal issue management process achieves several important objectives, such as providing informed, proactive, and timely management of issues; allowing a team to analyze project concerns and issues, including those that span multiple areas; and ensuring that all stakeholders are informed of and participate in issue resolution. The benefits of formal issue management are also easily identified. It facilitates appropriate escalations for project issues that remain unresolved. Issue management can enable timely issue resolution through prioritization of service, schedule, costs, performance, or quality. Formalized issue management can improve quality; enable root-cause analysis; provide future project teams with key lessons learned, project history, and project metrics; and allow for future risk analysis through documentation of the issue and its resolution.
1.7.1 Issue Escalation

Sometimes a project team must escalate issues that impede the progress of a project and are beyond the authority of the Project Manager to resolve. These issues generally cannot be resolved by anyone within the Core Team. The escalation path is from the Core Team to the Project Manager to the Program Manager to the Project Sponsor. These issues may even need to be further escalated to the Executive Stakeholder or the company CEO, depending on the nature and severity of the issue. They are resolvable with action items and affect project scope, cost, schedule, projected business performance, or business capability. Multiple projects or releases can also be affected by an issue. Such issues do not have a clearly defined owner. The project team should focus on issues that are mission critical and those that are past due.

1.7.2 Issue Reporting

The Project Manager is responsible for regularly assessing the overall issue status (e.g., new issues per period, critical issues). He or she should monitor issue resolution progress and identify potential bottlenecks and/or increases in the number of open issues. These discoveries should be integrated into the issue status section found in the weekly project reports. Some examples of issue metrics include tracking the number of new issues and the number of issues resolved since the last reporting period, the timeliness of issue resolution by issue importance, mission-critical issues and their due dates, and the total number of open and closed issues.

1.8 Quality Management

Quality management involves ensuring that the expectations and quality requirements of the project are understood and actively managed. Effective quality management contains six components:

I. Expectation management
II. Quality verification
III. Process management
IV. Metrics
V. Continuous improvement
VI. Rewards and recognition
The objectives of quality management are to ensure the delivery of a quality product that successfully realizes the intended benefits\cite{4}. The product must meet all of the expectations of the project stakeholders, and it should uniformly apply the approved principles, measures, standards, and methods of software program management. The quality program should create an environment fostering continuous improvement and actively manage and continue to leverage the knowledge capital of the organization.

### 1.8.1 Benefits of Quality Management

The benefits of quality management are obtained from implementing a philosophy of “build in quality” versus “inspect for quality.” This really means one cannot rely on back-end inspections to achieve quality. The Project Manager is responsible for setting project expectations that ensure the project will deliver quality work. The expectation of “get it right the first time” should be shared among all members of the Core Team. To achieve all of these benefits and meet all user expectations, the quality management team should establish Continuous Process Improvement (CPI) as a team mantra. The team should be ready and willing to enable customer-driven measurement. Quality is achieved when your customers state that a quality product has been delivered. A truly effective quality program must empower people across the organization. Everyone is responsible for the quality of the project (e.g., there are no “other” people responsible for quality in this project). The quality program should maximize solutions by involving project members, the people closest to the problems, and it should provide ample opportunities for improvement within the project development environment.

Quality management is defined using two basic premises: (1) develop an explicit understanding of what quality means to the Sponsor and stakeholders, and (2) ensure that those requirements are deliberately and consciously built into the project at the start, rather than simply looked for at the end of the project. If you are dealing with vendors, make sure you come to a common understanding of quality measurements before starting work with them. In order for your expectations to be met, the vendor must know what is expected and what to deliver in terms of quality components.

### 1.8.2 Components of Quality Management

Having a solid understanding of the following key components of quality management can help to ensure these quality goals are always met:
Managing Expectations. Managing expectations focuses on two key components: understanding stakeholder expectations and managing stakeholder expectations. In order to understand stakeholder expectations, you must understand who the project’s key stakeholders are and be able to identify the best way to gather specific, relevant information about their expectations, including data collection, categorization, and prioritization of their expectations. It is a common mistake to assume that all stakeholders have the same expectations of a project.

A good-quality program will ensure that expectations remain realistic throughout the duration of the project effort. A good-quality program will periodically analyze progress on expectations and share expectations with the project team and stakeholders. It is important to address expectations that are not met and continuously monitor stakeholder perceptions regarding the project. The Project Manager must work with the quality team to keep expectations up to date and relevant. The Project Manager should strive to implement improvements that address expectations falling short of the desired level. Finally, the Project Manager must communicate expectation status and evaluate team progress on meeting those expectations.

Quality Verification. The most effective means of ensuring quality in a program is to verify it periodically as the project progresses from start to finish. This is done by identifying critical targets for quality verification and defining the criteria and processes for each of those targets. This will help you ensure that the desired quality levels are achieved. Some targets you should consider for your assessment are the deliverables, the processes, and the people.
For deliverables, you should include verification, validation, and testing. This would include the use of quality testing techniques such as stage containment and entry and exit criteria. Stage containment refers to a process of defining boundaries around which testing will occur. Entry and exit criteria are used to stipulate when testing begins and ends. When you are identifying such processes, consider evaluating your project compliance with such quality verification processes. You may also desire to benchmark against other known standards, such as the Project Realization Process (PRP), Capability Maturity Model (CMM), or ISO 900X audits. When assessing people, it is important to measure team satisfaction periodically. If all of the folks on your team are melancholy about their daily work, there is something wrong, you can be sure! You need to dig into this problem and work to resolve this matter quickly. Never underestimate the power of good team morale on a project. You should strive to address gaps in satisfaction by assigning responsibility, designating completion dates, and communicating the remediation plan to everyone.

**Internal Quality Audit (IQAs).** IQAs are performed to ensure that your business activities meet stated requirements and demonstrate the effectiveness of your quality systems. IQAs are basically plans with procedures for conducting internal assessments of your system. In conducting an audit, you should ensure that the audit is scheduled according to the importance of the activity and use objective independent auditors to carry out the assessment. They should document everything and follow up to ensure that any needed corrections are made. Communicate the results of the audit across the organization as needed, and document any and all corrective actions taken. Finally, verify the effectiveness of the corrections made and communicate that to the organization as well.

**Process Management.** The first step in process management is to clearly define and obtain agreement from all affected parties on what constitutes process boundaries. To accomplish this goal you must identify users and providers of the process, ensure the process is described at the appropriate level of detail, and identify how metrics and goals are tracked and collected for the process. You must provide for continuous evaluation and improvement of the process. You can use the following techniques to do this:

- Perform desk checks—look for gaps and redundant steps that add no value.
- Assess compliance with the process.
- Perform root-cause analysis on performance gaps.
Discuss changes or improvements following the execution of a process.

**Defining Metrics.** For metrics to be of any value, they need to be measured against some criteria. It is the Core Team’s responsibility to define the criteria for determining the appropriate metrics used in a project. The team should define the required measurement and reporting processes and identify the resources tasked to gather, analyze, and report metrics. They should next define a process for piloting the selected metrics, identify implementation requirements, and identify the requirements and the methods used to communicate these metrics and the corresponding results to the larger audience of the company. This process is sometimes referred to as determining performance measurements, which is our next topic.

### 1.8.3 Determine Performance Measurements

The requirements should be developed on the assumption that the system will provide a more efficient and/or more effective work process that supports the organization’s mission. Performance measures for the work process should be developed to measure its progress toward accomplishing the mission. This is also a requirement of the Government Performance and Results Act of 1993 (GPRA)[5]. Ideally, some indicators that measure the impact of the project on the mission performance measures should be developed to measure the performance of a proposed system.

Performance measures must be developed for each proposed system, and a method for collecting that information must be established. Most of the performance measures should be indicators of how well the system is meeting the requirements defined for the system. Project team personnel who develop performance measures will likely require training. Performance measurement is sometimes defined as a group endeavor that seeks to improve the performance and accountability of an organization, process, program, product, or service. Some key steps to include in a performance measurement process are as follows:

- Agree on basic principles for mission, goals, and objectives.
- Brainstorm many ideas for measures.
- Select the best measures.
- Take action (i.e., develop a plan and monitor progress).
- Evaluate and calibrate the measures.
Performance measures that are sometimes used by private-sector firms to account for the value and impact of information technology are as follows:

- Process/product/service improvement
- Cycle-time reduction
- Customer satisfaction
- Cost-effectiveness

Some Information Management performance measures include the following:

- Percent change in life cycle costs
- Percent change in work process cycle time
- Percent change in acquisition time to deliver a product or service
- Percent change in product/service quality (e.g., fewer error rates in transactions)
- Percent change in customer satisfaction
- Percent change in information systems projects on schedule/within budget
- Percent change in systems that comply with architectures and standards
- Percentage of systems project management staff who meet acquisition and information management education and training requirements

Finally, over time, some valuable lessons have been learned through painful experience. These lessons include the following:

- Involve key stakeholders from the beginning.
- Place primary focus first on the most costly or troubled programs.
- Develop measures in the context of management plans and budgets.
- Choose measures that are results oriented and quantifiable and demonstrate value.
- Select a vital few projects to undertake at any time.
- Do not promise more than you can deliver.
- Educate and train stakeholders in performance measurements.
Report Quality Metrics. Provide reports that are easy to interpret and use. In order to understand and improve the quality of the development process, you should attempt to incorporate quality metrics for scheduled versus completed deliverables, the number of issues tracked per work group, and the average quality review turnaround time and duration. Compare the estimate at completion with the original baseline, and record the number of errors incurred during the test phase. All of these metrics provide benchmarks for future projects.

In addition to these metrics, it is often beneficial to conduct postmortem meetings. These are formal reviews at project completion that are used to identify any CPI opportunities. Solicit team-member feedback. This process is important to obtain and track feedback on all aspects of the project environment. To do this effectively, you should create Quality Action Teams (QATs). These teams are empowered to act as a virtual project team and are tasked to identify possible solutions to any CPI opportunity. Establish a CPI recognition program that provides incentives and rewards to encourage wider participation in CPI activities. Engage experts to provide accurate and objective assessments. This will help ensure quality services and delivery. Conduct stakeholder, team member, and user satisfaction surveys. These surveys will help the SPMO quantify the overall project satisfaction in combination with the postmortem documentation.

1.8.4 Continuous Process Improvement (CPI)

In order to implement CPI effectively, the SPMO must define an organizationwide CPI policy to ensure that improvement efforts are integrated into daily activities. One technique often used to increase project member involvement in CPI activities is to use corporatewide broadcast communications. This can be done with newsletters, project update sheets, e-mail, and so on. This type of communication helps build the level of participation by keeping a broader corporate audience informed. It also reminds the team that a larger audience than those in the conference room where they have been working has been following up on the progress of its efforts. It helps keep team members focused on the objectives and, in many instances, provides a form of positive recognition by association. If the project bombs for some reason, the reverse effect would likely hold true. Who would want his or her name associated with failure? It is another form of motivation that can be relied on to provide results. Many times in my career, I have heard people make the statement that a project would not fail on their account. People take pride in their work and want to do better. CPI simply enables this to occur.
1.8.5 Software Process Improvement Organizations

In a NASA Software Engineering Laboratory report[6], software process improvement researchers reported that software organizations historically exhibited significant shortcomings in their ability to capitalize on the experiences gained from completed projects. These researchers found that most of the insight gained through previous efforts had been passively obtained instead of having been aggressively pursued through specific planning and use of organizational infrastructures. Software developers and managers, although well-meaning and interested, generally do not have the time or resources to focus on building corporate knowledge or organizational process improvements. They have projects to run and software to deliver. Thus, collective learning and experience must become a corporate concern and be treated as a company asset.

Reuse of experience and collective learning should be supported by an organizational infrastructure dedicated to developing, updating, and supplying upon request synthesized experiences and competencies. This infrastructure should emphasize achieving continual sustained improvement. Software process improvement organizations are devoted to using lessons, data, and general experience from software projects to ensure that ongoing and future efforts use the experiences gained from previous activities to continually improve the associated organization’s software products and processes. Most software process improvement organizations consist of the following elements:

- **Developers**—who design, implement, and maintain software. They also provide project documentation and data gathered during development and operations.

- **Process analysts**—who transform the data and information provided by the developers into reusable forms (e.g., standards, models, training) and supply them back to the developers. They provide specific support to the projects on the use of the analyzed and synthesized information, tailoring it to a format that is usable by and useful to a current software effort.

- **Support staff**—who provide services to the developers by supporting data collection and retrieval and to the analysts by managing the repository of information.
Although each element is separate and distinct from the others, these three components are intimately related to each other. Each component has its own goals, process, and plans, but when combined, all three components have the mission of providing software that is continually improving in quality and cost effectiveness. Figure 1.2 outlines the differences in focus among the three components constituting the software process improvement organization. It also provides you with a high-level picture of the software process improvement organization. It highlights the activities and information flows among its three components—namely developers, analysts, and support staff.

The developers produce and maintain software, but are not directly responsible for capturing the reusable experience. They provide the analysts with project and environment characteristics, development data, resource usage information, quality records, and process information. The developers also provide feedback on the actual performance of the models produced by the analysts and used by the project. Therefore, with respect to software process improvement, the developers have global responsibility for using, in the most effective way, the packaged experiences to deliver high-quality software.

The analysts, by processing the information received from the developers, produce models of products and processes and return direct feedback to each project. They also produce and provide baselines, tools, lessons learned, and data, which are given parameters in some form in order to be adapted to the characteristics of a project.

<table>
<thead>
<tr>
<th>Area</th>
<th>Developers</th>
<th>Analysts</th>
<th>Support Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus and Scope</td>
<td>Specific project</td>
<td>Multiple projects (specific domain)</td>
<td>Multiple projects (specific domain)</td>
</tr>
<tr>
<td>Goals</td>
<td>Produce, maintain software</td>
<td>Analyze and package experience</td>
<td>Archive, maintain, and distribute development and maintenance experience</td>
</tr>
<tr>
<td></td>
<td>Satisfy user requirements</td>
<td>Support developers</td>
<td></td>
</tr>
<tr>
<td>Approach</td>
<td>Use the most effective software engineering techniques</td>
<td>Assess the impact of specific technologies</td>
<td>Maintain a repository of experiences, models, standards, etc.</td>
</tr>
<tr>
<td></td>
<td>Package experience into models, standards, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure of Success</td>
<td>Delivery of quality software products on time and within budget</td>
<td>Reuse of empirical software experience by developers</td>
<td>Efficient collection, storage, and retrieval of information (data, models, reports, etc.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improved products</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1.2  Focus of Software Process Improvement Organizational Components.
The support staff sustain and facilitate the interaction between developers and analysts by saving and maintaining the information, making it efficiently retrievable, and controlling and monitoring access to it. They use tools that assist in collecting, validating, and redistributing data and reusable experience.

Remember, the ultimate goal of a software process improvement organization is to understand and repeat successes and to avoid failures. Therefore, the software process improvement organization's processes and operations must be based on solid and objective development experience. A measurement-based approach is needed for project management, evaluation, and decision making. Software measures are applied to process, product, and resources. Measurement is one of the basic tools available to the software process improvement organization for performing its tasks and to management for controlling and improving the efficiency of the whole infrastructure.

**Establishing Rewards and Recognition.** Establish a governing body for the rewards-and-recognition process within the project environment. The responsibilities of this team include identifying the types of behaviors to reward and providing initiatives that support the project’s goals. Define all eligible participants by determining which groups or individuals are affected by the project deliverables. Establish award criteria, reward availability, frequency of award presentations, and responsibility for providing and bestowing the awards. Develop a communications plan for initial and ongoing initiatives that people will participate in and outline the process for how an individual or team participates in the rewards program.

### 1.9 Change Management

Change management is the process of managing proposed changes to project scope as defined during the requirements phase. This process will ensure consistent handling and escalation of all change requests. The primary objective of change management is to provide a defined process for managing changes to requirements and to set guidelines for approving and escalating change requests. This process will provide corporate executives and project members with timely information regarding changes to requirements. An obvious benefit of a successful implementation of change management will be a positive effect on the work environment and relationships with sponsoring organizations, employees, and other stakeholders by minimizing scope creep and requirements churn.
When establishing a change management program, ensuring consistent handling and escalation of change requests is critical. You should obtain Project Sponsor support for the change management process. The Sponsor must be assured that his or her project is following a well-defined process and is not going outside the boundaries of this process to include new scope (and cost). All requirements should be baselined before a change management process is implemented.

1.10 Change Management Plans

Change management has been defined as an integrated communications, training, workforce planning, and evaluation approach to assisting managers, supervisors, and employees with transitioning effectively into a new way of accomplishing work. These key elements are further detailed in the following paragraphs.

Communications. In order to be effective, the team must be able to assess the effectiveness of current and proposed business practices, to convey the capabilities of the chosen software solution, to engage groups affected by automation or business practice change (stakeholders) in a meaningful exchange of information, to provide accurate information regarding design and implementation timing and progress, and to foster acceptance of new methods of work. These abilities are enhanced by stakeholder involvement through good two-way communications. Because the importance of the communications effort is high, in addition to this change management plan, a communications plan detailing the specific efforts that will be made to engage stakeholders should be developed.

Training. The success of any implementation depends on having well-trained end users who are comfortable with their knowledge and skill in using both the SEP approach and the deliverable being managed. Good training fosters acceptance of new work processes, efficiency of processing, and accuracy in data collection. Training includes, but is not limited to, classroom training, on-the-job training, the production and use of user guides, and the update of specific company guidance.

Workforce Planning. Changes in business practices and the introduction of new computer systems and software, which may require new job skills, may affect the nature of work in the new project effort. The Change Management Team (CMT) usually consists of a group of three or four people whose responsibility it is to identify changes to workload and workforce planning issues. Working with management, the CMT will facilitate a review of the impact that implementation may have on employee skills and
assigned duties in order to develop a plan to address any proposed workforce changes.

**Evaluation.** In order to assess success, the CMT should use several evaluation methods. On a continuing basis, the efforts of the CMT will be evaluated and measured for success based on established performance measures and critical success factors. These performance measures and critical success factors will correlate with those established for the other parts of the project. A critical success factor might include workforce acceptance of best practices and use of the system. Conventional methods for evaluation and measurement to be used will generally include strategically planned surveys, questionnaires, interviews with appropriate personnel, and other activities for feedback from those affected by the new or changed system.

For any change management process to work, one must recognize that the greatest risk to the successful implementation of an enterprisewide system is the failure to take into consideration major aspects of change management. Poor communications, training, and workforce planning lead to a lack of acceptance of business changes and poor performance at the end-user level. In some cases, failure to provide for adequate change management planning results in the loss of millions of dollars in failed or delayed implementation. Ensure the project management team understands the need for a substantial change management effort and has devoted the necessary fiscal and human resources to it.

### 1.11 Business Requirements Oversight Committee (BROC)

The BROC is established in order to meet, review, approve, and coordinate major projects that affect all enterprise business units and to establish project implementation schedules coordinated with other related enterprise project activities. The SPMO serves as facilitator of these meetings. The meetings are staffed by business leaders designated and empowered from the various segments of the company. The BROC has final review, approval, and disapproval authority for all proposed projects. Any proposed projects generally must meet all of the following criteria:

1. The project must be correlated to a business need that requires such an application's integration or installation effort in order to perform this function.
2. The project must positively impact corporate systems and users. Products or tools used for external customers or for revenue generation are not usually within BROC scope.

3. The project must exceed a preset dollar limit, which will vary by enterprise. In most cases for mid- to large-sized companies, this amount is $50,000. The project must also provide services to a specific, defined business process or function.

4. Internal corporate application systems are also placed under the same level of scrutiny and must submit to the BROC prioritization process for any of the following when costs exceed the preset limits:
   - Application version upgrade (major new release/upgrade)
   - New application to replace existing legacy system
   - Major new functionality in existing system(s)
   - Customization of standard application code

Although the BROC reserves the right to review other system changes, it does not normally review or prioritize bug fixes, patches, or minor enhancements/configuration changes to systems already in production. Generally, normal internal support processes are followed for these types of changes. The primary functions of the BROC are to gather and review new project requests.

All new application project requests that fall within the scope of the aforementioned criteria should be submitted to the BROC for review and approval. The project proposal submitted should follow the basic guidelines of the SEP methodology and, at a minimum, must include the following:

- High-level business requirements
- Proposed scope
- Proposed schedule
- Business unit budget for project
- Justification

The BROC is also expected to review, prioritize, and approve projects. As projects are submitted for approval, they are reviewed for cross-func-
tional integration between business units, along with determination of application architecture for enterprise systems.

All approved projects are to be given a priority for implementation. The BROC is responsible for determining project dependencies and risk. It is also required to review and approve internal IT-initiated projects as stated in Item 4 of the project criteria listed above.

1.12 BROC Roles and Responsibilities

The BROC Sponsor is usually the head of a business division or organization. He or she makes a commitment to name a representative, who is empowered to speak on his or her behalf at all BROC meetings. This designee is empowered to sign documents and approve requests, plans, or other project-related documents. This is necessary to prevent endless meetings where attendees are required to run back and forth to their managers to seek permission to go to the next step. It prevents delay tactics from being used by organizations within the enterprise that are jockeying for project priority. In other words, it ensures that all seats at the table are represented equally and empowered to act in the best interests of the business.

1.12.1 BROC Sponsor Role

The BROC Sponsor is responsible for the following tasks:

- Appointing a BROC representative for his or her business unit
- Ensuring the BROC is supported by the business unit
- Approving projects requiring funding in excess of the signature authority of the BROC members
- Resolving prioritization conflicts that cannot be determined by BROC members

1.12.2 BROC Member Role

The BROC members are responsible for the following tasks:

- Presenting new project requests to the BROC for their business unit
- Prioritizing the projects driven by their business unit
1.12 BROC Roles and Responsibilities

- Preparing and presenting project proposals for BROC review, prioritization, and approval.
- Objectively reviewing all Project Request Forms and establishing project prioritization equally for all business units

All BROC members should have director-level purchasing approval authority. Each BROC member must be fully empowered to represent his or her functional area. This involves gathering business requirements, understanding the business unit needs and priorities, and making needed decisions at the meetings.

1.12.3 SPMO Role in the BROC

The SPMO is responsible for the following tasks:

- Facilitating BROC meetings
- Providing BSM and Project Manager assistance to BROC members preparing project proposals
- Assigning an advisory Project Manager to provide SEP guidance and oversight to business unit Project Managers on all projects with an anticipated IT budget that falls below the corporate-established spending limit
- Assigning a senior Project Manager to plan and manage large cross-functional integrated projects with an anticipated budget at or over the corporate-established spending limit
- Assigning a BSM to project teams to facilitate development and documentation of business requirements, acceptance criteria, and solution recommendations

Before we get into the specifics of each phase, it is important to understand that somewhere around the early 1990s, people began to question the significance of the Software Development Life Cycle (SDLC), and much discussion evolved in private and government sectors regarding the advantages of using SDLC approaches to mitigate cost and reduce risk. This thought revolution led to the implementation of the Information Technology Management Reform Act of 1996 (ITMRA), which is sometimes known as the Cohen Bill[7].
Formally known as the Information Technology Management Reform Act of 1996, this law became effective on August 8, 1996. It places strong focus on the life cycle management processes used in IT and on the processes supporting a given technology, rather than simply on the processes and procedures used to acquire IT technologies. Although it applies mostly to federal development and government-contracted efforts, the act emphasizes the management of IT as a “capital investment” and establishes new requirements related to the management of IT resources, including the following:

- Developing and using performance metrics that measure how well the IT resources used or acquired by an agency support their respective programs
- Determining whether the functions supported by the IT resources should be performed by the private sector
- Reviewing planned IT initiatives to ensure that
  - High-risk projects receive closer scrutiny and more points of review and evaluation
  - Out-of-date, ineffective, or inefficient procedures and work processes are not automated
  - They proceed, on a timely basis, toward agreed-upon milestones within the system life cycle, meet user requirements, and deliver intended benefits

The ITMRA also emphasizes requirements previously established in the Paperwork Reduction Act of 1995 (PRA) and implemented by the Office of Management and Budget (OMB) in revisions to OMB A-130. These requirements include the following:

- **IT Planning:** establishing and maintaining a strategic IT management plan that is linked to an agency strategic plan (required by the Government Performance and Results Act [GPRA], Public Law 103-62), this ensures that IT resources support the achievement of mission goals
- **Cost-Benefit Analysis:** preparing an analysis for IT initiatives to demonstrate how the IT resource will meet mission requirements, support ongoing management oversight processes, maximize return on investment, and minimize financial and operational risk
Security Plan: preparing a plan for the IT initiative to meet security requirements and controls for all information collected, processed, transmitted, stored, or disseminated by the proposed IT resources

This law is significant for individuals in the private sector in that much effort in government migrates into the private sector over time. As processes are developed within government, they frequently find their way into mainstream thinking through cross-pollination of ideas, publications, and individuals transferring from government to private-sector positions. Historically, much of the evolution of the software industry has followed government impetus in areas where funded research has taken place. A good example of this is seen in some of the work coming out of the Software Engineering Institute (SEI) at Carnegie-Mellon University. Through government funding, many novel and innovative ideas transition into the private sector.

So far, we have covered the fundamental aspects of an SPMO operation, albeit at a very high level. As we progress through each of the eight phases of the SEP process, we will go into much greater detail about what actually gets done by the Core Team at each stage in the process. At this point, let’s go to the next chapter, where we begin our discussion of the SEP Phase 1 roadmap and review the initial responsibilities of the Core Team during the kickoff meeting.

1.14 Chapter 1 Review

1. What are the key roles in an enterprise SPMO?
2. Describe the major service areas of an SPMO.
3. What are several benefits of project performance reporting?
4. List the five key components of project performance reporting.
5. Cite five to seven elements a project performance report should include.
6. Why is financial management important in an SPMO environment?
7. What are several benefits of effective vendor management?
8. List the key components of vendor management.
9. What is the purpose of a CCB?
10. What are the main components of quality management?
11. Define change management as it pertains to an SPMO.