

Building a PMO



The PMO Guide

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June 2016/Updated July 2020

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Building a Project Management Office (PMO)

Introduction

Many professionals and organizations today (2016) continue to recognize the importance for a Project Management Office (PMO) at the enterprise level to achieve project management oversight, control, and support. For many, the PMO's role is to help both the project team and the relevant organization to understand and apply modern project management practices, while adapting and align business strategy with the organization's project management efforts.

This guide defines the "project management" principles, process and operational practices with establishing an effective PMO and is intended for organizations and personnel to adopt and employ. Applying consistent framework that promotes the understanding of sound **project management** practices is a critical step toward creating a cohesive approach to managing projects and reducing risk and meeting business goals.

Each stage of the PMO suggests a particular level of functional capability that the PMO will have achieved if functions are fully implemented. The five PMO levels are also indicative of an organization's maturity in project and risk management with the PMO's role and responsibilities advancing from project management oversight and control at the lower end of the competency continuum to strategic business alignment at the higher competency stages.

This guide includes the author's Integrated Strategic Maturity Model (ISMM), which aligns the PMO and Risk Management maturity levels. Download the [ISMM \(PDF\)](#)

Throughout this guide the author will repeat the basic fundamentals of a PMO to ingrain the purpose and objectives which are contingent on understanding the organizations cultural environment that too often contributes to the failure of a PMO within first 12 months of operation. The success of the PMO is to mentor upwardly to senior management the value of "project management" by demonstrating that a PMO's ability to significantly improve achieving positive ROI on asset (project) investments.

A few reasons why PMO's fail:

- Lack of a defined project management methodology
- Not tracking project's resources hours and utilization
- Project managers not managing all aspects of projects
- PMO is not empowered to make needed decisions
- Resource contention
- Undefined Portfolio & Program roles
- Lack of executive and top management support
- Ad-hoc projects prioritization and tasks assignments
- PMO limited to process controller and regulator
- Rigid or lack of project management methodology evolution

Building a Project Management Office (PMO)

The Author

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CHAPTER 1 - THE PMO CONCEPT



Building a Project Management Office (PMO)

Project Management Office (PMO) Snapshot

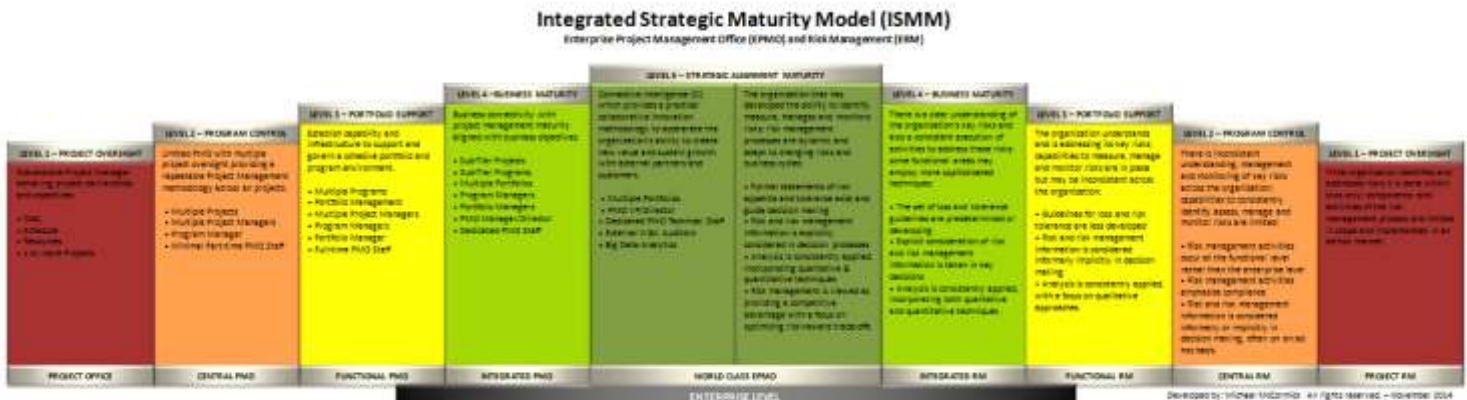
The first step to establishing a PMO is to determine your organization's needs. The Project Management Institute's (PMI's) project portfolio management framework breaks down the three levels of work (project, program and portfolio) into 12 process groups that contain 92 processes relating to the management of knowledge areas. Examples of PMI processes/components include a project charter, project plan, work breakdown schedule and cost estimate.

Begin by defining and implementing an end-to-end project management process. This requires implementing a flexible project management process and basic tools for project planning and reporting. PMO leaders should devote resources to developing competent project managers through formal training, coaching and mentoring. Not all projects require the same level of experience. Use a mix of internal and external hires, contractors and external service providers to allow for staffing flexibility.

Once best practice basics are in place, the PMO has demonstrated improvement in project delivery and the office has gained credibility, consider broadening the PMO's scope beyond project management to program management and portfolio management. This will help mitigate business risk.

Determining Your Organization's Maturity Level

Perhaps you have already established a PMO on some level. The road to project management maturity starts with recognizing the problem and its affect on business improve processes. Below is an example of aligning Project Management and Risk Management in my Integrated Strategic Maturity Model (ISMM).

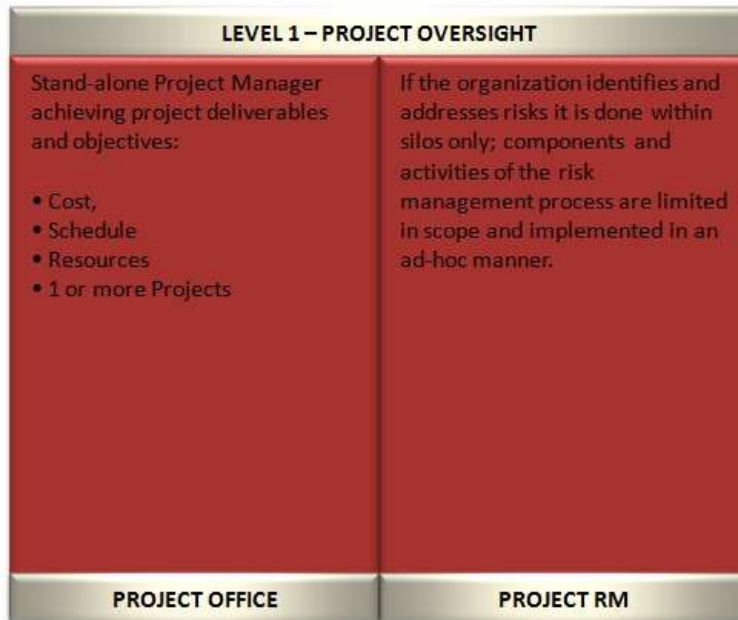


The ISMM summarizes the integration of five levels of the PMO. Each level represents the adoption of an increasingly comprehensive and effective subset of related solutions to facilitate identifying performance gaps, indicates reasonable performance targets, and suggests an achievable path for improvement. The fact that five maturity levels have been identified is not meant to suggest that all organizations ought to strive for top-level performance. Each organization needs to determine what level of performance is reasonable at the current time based on business needs, resources available for engineering change, and organizational ability to accept change. Experience shows that achieving high levels of performance typically takes several years and making progress is what counts.

Building a Project Management Office (PMO)

Level 1 Project Oversight

The Project Office is the reactive project management stage where methods are undocumented and delivery, budgets, schedules and risk management are uncontrolled.



At this basic level, PMOs need to establish methods for project scheduling, time tracking, resource assignments, project tracking, oversight & support and perhaps use an automated project dashboard to track project success.

- Project decisions are made project-by-project without adherence to formal project selection criteria.
- The portfolio concept may be recognized, but portfolio data are not centrally managed and/or not regularly refreshed.
- Roles and responsibilities have not been defined or are generic, and no value-creation framework has been established.

- Only rarely are business case analyses conducted for projects, and the quality is often poor.
- Project proposals reference business benefits generally, but estimates are nearly always qualitative rather than quantitative.
- There is little or no formal balancing between the supply and demand for project resources, and there is little if any coordination of resources across projects, which often results in resource conflicts.
- Over-commitment of resources is common.
- There may be a growing recognition that risks need to be managed, but there is little real management of risk.

Projects are viewed and managed in isolation of one another, subject only to the competition over shared resources. Projects are funded separately, reviewed separately, and hardly ever terminated for reasons other than excessive cost and duration overrun. Projects are managed reactively as problems or opportunities are identified by project managers. Although, **Level 1** organizations are not yet benefiting from PMO, they may recognize the inherent problems and be motivated to address those problems. If so, they have the minimum foundation in place to begin building PMO capability. Moving to **Level 2**, organizations should focus on establishing consistent, repeatable processes for project scheduling, resource assignment, time tracking, project tracking, and general project oversight and support. In order to facilitate project decision making, projects should be consistently defined to include all efforts necessary to secure the benefits that motivate the work, with project work broken into activities and tasks as necessary to facilitate planning. Costs should be tracked at the project level, and project proposals should be supported by clear statements of the need and presumed project benefits.

Building a Project Management Office (PMO)

Level 2 Program Control

The Central PMO occurs when companies begin adopting repeatable processes. The main project management processes have been defined, but not constantly used. Still, project teams find it difficult to repeat earlier successes and the project still risks exceeding budgets and schedules. At this established phase, PMOs should automate project budgeting, risk and issue tracking, requirements tracking, resource management.

LEVEL 2 – PROGRAM CONTROL	
<p>Limited PMO with multiple project oversight providing a repeatable Project Management methodology across all projects.</p> <ul style="list-style-type: none">• Multiple Projects• Multiple Project Managers• Program Manager• Minimal Part-time PMO Staff	<p>There is inconsistent understanding, management and monitoring of key risks across the organization; capabilities to consistently identify, assess, manage and monitor risks are limited:</p> <ul style="list-style-type: none">• Risk management activities occur at the functional level rather than the enterprise level• Risk management activities emphasize compliance• Risk and risk management information is considered informally or implicitly in decision making, often on an ad hoc basis
CENTRAL PMO	CENTRAL RM

Level 2 replaces project-by-project decision making with the goal of identifying the best collection of projects to be conducted within the resources available.

- Business cases are conducted for larger projects, although quality may be inconsistent.
- There is some degree of options analysis but inconsistent.
- Project selection criteria are defined but the link to value creation is sketchy.
- Planning is mostly activity scheduling with limited performance forecasting.
- There are attempts to quantify some non-financial benefits, but

estimates are generated without the aid of standard techniques.

- Project interrelationships are recognized from a technical perspective, with inter-related projects organized into and managed as programs.
- If PMO tools are being used, the tools are likely to provide useful project data rollup, but project prioritization is typically simplistic and may produce results potentially misleading to decision makers.
- PMO data has an established refresh cycle or is regularly accessed and updated.
- Knowledge sharing is local and mostly ad hoc.
- Risk analysis may be conducted early in projects but is not maintained as a continual process.
- Schedule and cost overruns are still common, and the risks of project failure remain large.

Level 2 organizations are beginning to implement elements of project portfolio management, but only a fraction of the real opportunity has been realized. If a formalized PMO unit exists, it is likely modest and not very sophisticated. At this stage, the focus should be on formalizing the framework for evaluating and prioritizing projects and on implementing tools and processes for improving project budgeting, cost accounting, risk and issues tracking, requirements tracking, and resource management.

Building a Project Management Office (PMO)

Level 3 Portfolio Support

The Functional PMO shows a commitment to proactive and standardized project management through defined project portfolio management (PPM) processes. The PMO and PPM employs documented standard project management and delivery processes, and consistently use these processes companywide for project delivery.

LEVEL 3 – PORTFOLIO SUPPORT	
<p>Establish capability and infrastructure to support and govern a cohesive portfolio and program environment.</p> <ul style="list-style-type: none">• Multiple Programs• Portfolio Management• Multiple Project Managers• Program Managers• Portfolio Manager• Full-time PMO Staff	<p>The organization understands and is addressing its key risks; capabilities to measure, manage and monitor risks are in place but may be inconsistent across the organization:</p> <ul style="list-style-type: none">• Guidelines for loss and risk tolerance are less developed• Risk and risk management information is considered informally implicitly in decision making• Analysis is consistently applied, with a focus on qualitative approaches
FUNCTIONAL PMO	FUNCTIONAL RM

Level 3, the most difficult step for most organizations requires; metrics, models, and tools for quantifying the value to be derived from projects. Although project interdependencies and portfolio risks may not be fully and rigorously addressed, analysis allows projects to be ranked based on Return-on-Investment (ROI), often producing a good approximation of the value-maximizing project portfolio.

- The principles of PPM are widely understood and accepted.
- Portfolio management can demonstrate that its role in scrutinizing projects has resulted in some initiatives being stopped or reshaped to increase portfolio value.
- Executives are engaged, provide tradeoff weights for the value model, and

provide active and informed support.

- Effective estimation techniques are being used within planning and a range of project alternatives are routinely considered.
- Data quality assurance processes are in place and independent reviews are conducted.
- There is a common, consistent practice for project approval and monitoring.
- Project dependencies are identified, tracked, and managed.
- Decisions are made with the aid of a tool based on a defensible logic for computing project value that aligns with business strategy.
- Portfolio data are kept up-to-date and audit trails are maintained.
- Costs, expenditures and forecasts are monitored at the portfolio level in accordance with established guidelines and procedures.
- Interfaces with financial and other related functions within the organization have been defined.
- A process is in place for validating the realization of project benefits.
- There is a defined risk analysis and management process, with efforts appropriate to risk significance, although some sources of risk are not quantified in terms of probability and consequence.

In this growth phase when these new tasks are mastered, the PMO can focus on automating other functions such as financial management and business process modeling.

Building a Project Management Office (PMO)

Level 4 Business Maturity

The Integrated PMO demonstrates measured project management and alignment with business objectives. Quantitative key performance indicators have been specified for project success and are monitored frequently. The PMO has achieved predictable and controllable project delivery and is now free to become more “innovative.”

LEVEL 4 – BUSINESS MATURITY	
<p>Business connectivity with project management maturity aligned with business objectives.</p> <ul style="list-style-type: none">• Sub-Tier Projects• Sub-Tier Programs• Multiple Portfolios• Program Managers• Portfolio Managers• PMO Manager/Director• Dedicated PMO Staff	<p>There is a clear understanding of the organization’s key risks and also a consistent execution of activities to address these risks; some functional areas may employ more sophisticated techniques:</p> <ul style="list-style-type: none">• The set of loss and tolerance guidelines are predetermined or developing• Explicit consideration of risk and risk management information is taken in key decisions• Analysis is consistently applied, incorporating both qualitative and quantitative techniques
INTEGRATED PMO	INTEGRATED RM

Level 4 is characterized by mature processes, superior analytics, and quantitatively managed behavior. The PMO is using quantitative analysis and measurements to obtain efficient, predictable and controllable project and portfolio management.

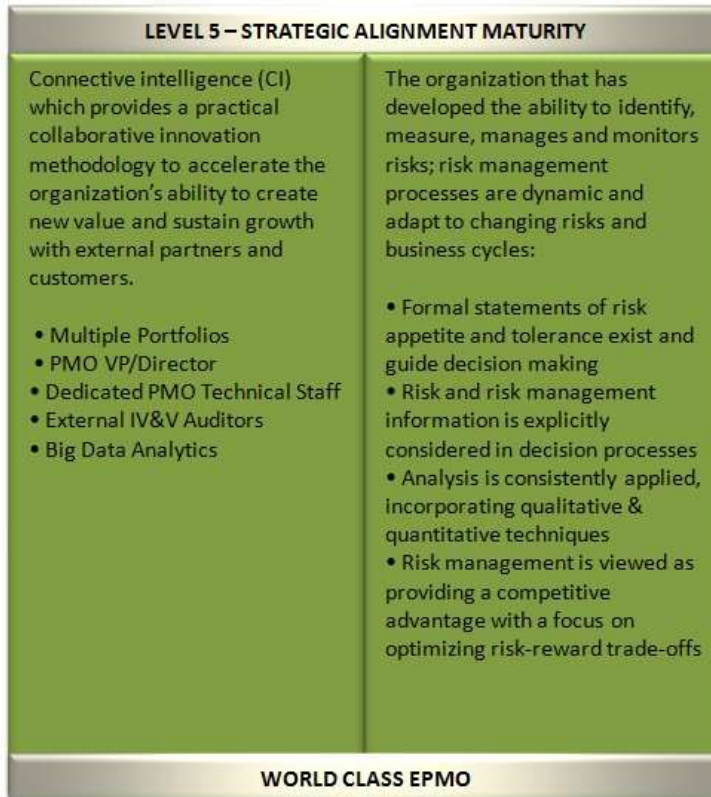
- Tools for optimizing the project portfolio correctly and fully account for project risks and interdependencies.
- The business processes of value creation have been modeled and measurement data is collected to validate and refine the model.
- The model is the basis for the logic for estimating project value, prioritizing projects, making project funding and resource allocation decisions, and optimizing the PMO’s portfolio(s).

- The organization's tolerance for risk is known quantitatively, and used to guide decisions that determine the balance of risk and benefit across the PMO.
- There is clear accountability and ownership of risks.
- External risks are monitored and evaluated as part of the investment management process and common risks across the whole PMO (which may not be visible to individual projects) are quantified and in support of portfolio optimization.
- Senior executives are committed, engaged, and proactively seek out innovative ways to increase value.
- There is likely to be an on-going training program to retain and enhance the skills and knowledge of individuals so that they can readily perform their designated roles.
- An extensive range of communications channels and techniques are used for collaboration and stakeholder management.
- High-level reports on key aspects of the PMO are regularly delivered to executives and the information is used to inform strategic decision making.
- There is trend reporting on progress, actual and projected cost, value, and level of risk.
- Assessments of stakeholder confidence are collected and used for process improvement.
- PMO data is current and extensively referenced for better decision making.

Building a Project Management Office (PMO)

Level 5 Strategic Alignment Maturity

World Class EPMO has connective intelligence (CI) which provides a practical collaborative innovation methodology to accelerate the organization's ability to create new value and sustain growth with external partners and customers.



Starting at Level 2, PMOs should start producing predictive analysis dashboards and reports, and manage business processes. The data provided will change with each maturity level, elevating the KPI's accordingly with business alignment.

Level 5 occurs when the organization has made project portfolio management a core competency, uses best-practice analytic tools, and has put processes in place for continuous learning and improvement.

- PMO processes are proven and project decisions are based on value maximization.
- Processes are continually refined to take into account increasing knowledge, changing business needs, and external factors.
- The PMO drives planning, development, and allocation of projects to

optimize the efficient use of resources in achieving the strategic objectives of the organization.

- High levels of competence are embedded in all PMO roles, and PMO skills are seen as important for career advancement.
- PMO gate reviews are used to assess and manage portfolio value and risk.
- PMO informs future capacity demands, capability requirements are recognized, and resource levels are strategically managed.
- Information is highly valued, and the organization's ability to mitigate external risks and grasp opportunities is enhanced by identifying innovative ways to acquire and better share knowledge.
- Benefits management processes are embedded across the organization.
- Stakeholder engagement is embedded in the organization's culture, and stakeholder management processes have been optimized.
- Risk management underpins decision-making throughout the organization.
- Quantitatively measurable goals for process improvement are established with performance tracking.
- The relationship between the PMO and strategic business planning is understood and managed.

Building a Project Management Office (PMO)

PMO Stages

PMOs evolve over time through five stages – even though the term “PMO” is used to refer to only three stages. Governance (Stage 4) and C-level executives (Stage 5) play an important role in ensuring that their PMOs master the basics of their current stage, employ best practices and demonstrate results before moving them to the next stage – from tactical to strategic and from department projects to enterprise initiatives.

The project management stage is where project manager training, coaching and mentoring have the most focus. This stage focuses on tactical processes such as budgets, scheduling, resources, deliverables, scope, risk and metrics.

High-level governance programs and communications programs are most frequently implemented at the program management stage to coordinate business and IT projects. It also involves comprehensive program planning, change and risk management, coordination of project delivery and measurement of results.

The portfolio management stage is where benefits realization management and knowledge management most frequently take place. At this stage, the PMO manages portfolio scope definition, overall investments, benefits and risks, portfolio performance monitoring and business environment change adaptation.

Program leaders play an important role in matching the PMO stage to business needs, and program evolution. Getting too far out in front of the business or lagging too far behind have similar disadvantages.

The PMO Selection

Not all companies require the most sophisticated levels of portfolio management. To determine what level of PMO your company needs, analyze which PMI process benefits your organization the most. For instance, if you're immediate issue is the needs to assess relative value of a project to others within the portfolio of projects consider implementing a portfolio management office.

PMO Best Practices

The best-performing project management offices reduce business risk, optimize processes and resources and contribute to business growth through an enterprise project management office (EPMO or ePMO).

Integrated Business Risk

The organization that has developed the ability to identify, measure, manages and monitors risks; risk management processes are dynamic and adapt to changing risks and business cycles:

- Formal statements of risk appetite and tolerance exist and guide decision making
- Risk and risk management information is explicitly considered in decision processes
- Analysis is consistently applied, incorporating qualitative & quantitative techniques

Building a Project Management Office (PMO)

- Risk management is viewed as providing a competitive advantage with a focus on optimizing risk-reward trade-offs

So when it comes to reducing business risk, top level PMO offices establish a flexible, end-to-end project management process that balances rigor with overhead. They support the process with simple-to-use tools to plan, manage, track and report all project activities. They make the tools available over the company's intranet (Web & Mobile Apps) along with examples and instructional support. These PMOs provide formal training, coaching and mentoring to both IT and the business to develop competent project managers. They are flexible in sourcing and providing project management resources. They provide project management assistance, such as consulting, problem solving, audits and expertise.

Strategic Resource Management

Highly effective PMOs optimize resources by expanding PMO oversight to include business and IT projects, and projects sourced externally. They institutionalize project management discipline into the culture to free up resources to focus on program management. They use program level visibility to identify and alleviate resource contention issues. They educate the business, IT and external stakeholders about their shared responsibilities for ensuring program success. They expand governance body membership to represent the expanded stakeholder set of programs. They establish communications programs to keep all stakeholders informed and committed to program success. They provide collaboration tools to facilitate the work of the business, IS and external project teams.

Collaborative Business Goals

The best-performing PMOs contribute to business growth by enlarging the breadth of PMO influence to extend from strategy formulation through benefits realization. They also position the PMO organizationally outside IT to give it independence and senior management sponsorship but maintain a dotted-line relationship. They design governance to focus senior management on strategic issues. High performing PMOs also integrate benefits realization into the entire lifecycle starting with planning, and report on it regularly. They implement portfolio management tools that provide high-level visibility and analysis that inform decision makers. They broaden PMO staff competencies to include strategic planning and investment analysis and they implement knowledge management tools to capture, categorize and distribute best practices and lessons learned.

Building a Project Management Office (PMO)

What is a PMO?

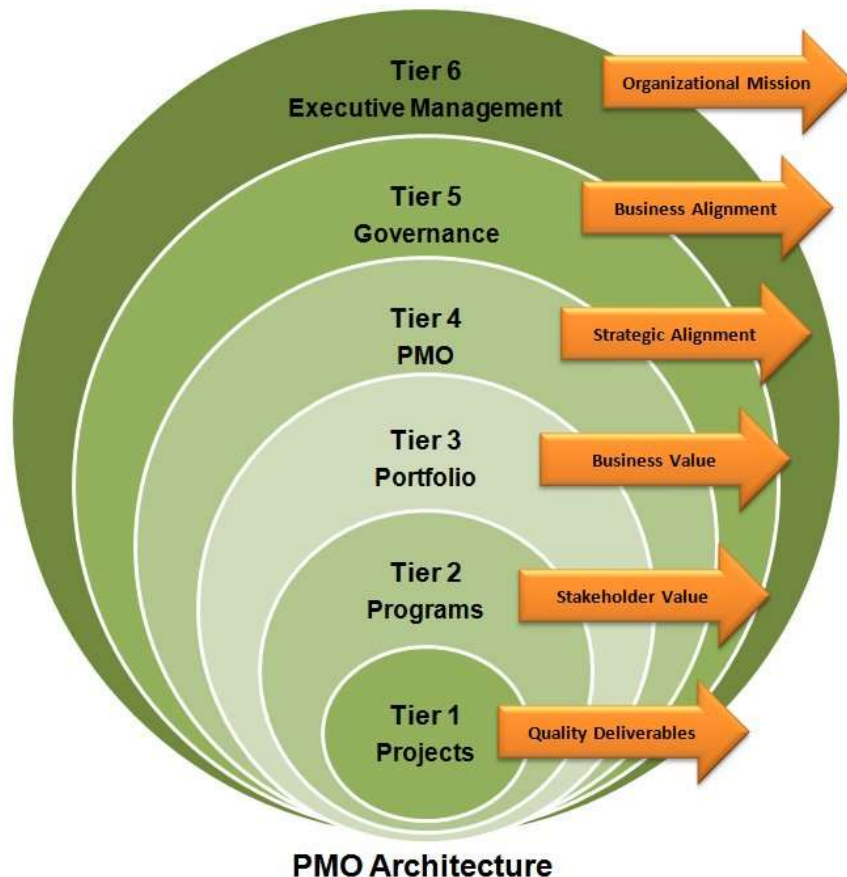
With the advancement and wide-spread acceptance of project management internationally in the past 10 years, the PMO has become highly recognized and a popular acronym. Many organizations today have one form or another of a PMO. However, this term is still quite misunderstood, and these three letters could mean different things to different people.

There is no agreement in the industry on one common definition of what PMO should mean. Most often, different organizations use the term to mean various things, including but not limited to:

- **Project Management Office:** the most commonly used term.
- **Program Management Office:** the second most common term.
- **Portfolio Management Office:** this is not very common.

Though globally the PMO's role may be different, the author does not agree in creating functional versions of the PMO. This guide is specific to project management and regardless if it is a program or portfolio these two functional areas are part of the PMO's architecture and play very specific roles of the PMO. This author's view point is that there are 6 Tiers in an organization's PMO's architecture as defined below:

PMO Architecture



Building a Project Management Office (PMO)

Tier 1 – Projects

A project is a finite endeavor (having specific start and completion dates) undertaken to create a unique product or service which brings about beneficial change or added value. This finite characteristic of projects stands in sharp contrast to processes, or operations, which are permanent or semi-permanent functional work to repetitively produce the same product or service. In practice, the management of these two systems is often found to be quite different, and as such requires the development of distinct technical skills and the adoption of separate management philosophy, which is the subject of this article. For more information regarding Project Management, download my whitepaper: [Project Management Life Cycle Framework](#)

Tier 2 – Programs

Program Management is the management discipline of controlling the cost, schedule and performance of a project or group of projects to achieve a stated goal. According to the [Project Management Institute \(PMI\)](#), “A Program is a group of related projects managed in a coordinated manner to obtain benefits and control not available from managing them individually.” Program Management is focused on:

- Meeting Organizational Goals
- Meeting Financial Goals
- Risk Management
- Schedule Management
- Team Development
- Quality Assurance
- Communication
- Project(s) Integration

Program Management addresses the management of project management, setting up processes, monitoring and measuring project results, and coordinating related projects. For more information regarding the Program role, download my whitepaper: [Confused – Project or Program?](#)

Tier 3 – Portfolio

Project portfolio management (PPM) is a methodology used to prioritize projects based on cost, benefits and use of resources to achieve business goals. PPM is a strategic prioritization methodology employed to analyze and manage current or proposed projects within an organization. The PPM's objective is to determine the best grouping and sequencing of projects to achieve organizations' business goals, in order to see them through the project's life cycle.

Projects are typically analyzed based on the nature of the project, expected benefits and costs, resource requirements and their relationship to other priorities within an organization's wider portfolio

Building a Project Management Office (PMO)

of projects. Often, organizations will implement PPM software tools to aid in the decision-making process. PPM tools are used to enable visibility, standardization, measurement and process improvement. A strong governance structure is considered a crucial component of a project and portfolio management strategy as well.

Tier 4 – Project Management Office

A **Project Management Office**, abbreviated to **PMO**, is a group or department within a business, agency or enterprise that defines and maintains standards for project management within the organization. The PMO strives to standardize and introduce economies of repetition in the execution of projects. The PMO is the source of documentation, guidance and metrics on the practice of project management and execution. In some organizations this is known as the **Program Management Office** (sometimes abbreviated to **PgMO** to differentiate); the subtle difference is that program management relates to governing the management of several related projects. Traditional PMOs base project management principles on industry-standard methodologies such as PRINCE2 or guidelines such in PMBOK. (Wikipedia)

PMOs may take other functions beyond standards and methodology, and participate in Strategic project management either as facilitator or actively as owner of the Portfolio Management process. Tasks may include monitoring and reporting on active projects and portfolios (following up project until completion), and reporting progress to top management for strategic decisions on what projects to continue or cancel.

The degree of control and influence that PMOs have on projects depend on the type of PMO structure within the enterprise; it can be:

- Supportive, with a consultative role
- Monitoring, reporting on performance metrics
- Controlling, by requiring compliance for example
- Directive, by taking control and managing the projects

A PMO can be one of three types from an organizational exposure perspective:

- Enterprise PMO,
- Organizational (departmental) PMO, or
- Special-purpose PMO.

There are different viewpoints and classifications of the PMO types, such as PMI's identification of the following five PMO frameworks:

Building a Project Management Office (PMO)

PMI's PMO Framework

Organizational Unit PMO/Business Unit PMO/Divisional PMO/Departmental PMO

Provides project-related services to support a business unit or division within an organization including, but not limited to, portfolio management, governance, operational project support and human resources utilization.

Project-Specific PMO/Project Office/Program Office

Provides project-related services as a temporary entity established to support a specific project or program and may include supporting data management, coordination of governance and reporting, and administrative activities to support the project or program team.

Project Support/Services/Controls Office or PMO

Provides enabling processes to continuously support management of projects, programs or portfolio work throughout the organization. Uses the governance, processes, practices, and tools established by the organization and provides administrative support for delivery of the project, program or portfolio work within its domain.

Enterprise/Organization-wide/Strategic/Corporate/Portfolio/Global PMO

The highest-level PMO in organizations having one, this PMO is often responsible for alignment of project and program work to corporate strategy, establishing and ensuring appropriate enterprise governance, and performing portfolio management functions to ensure strategy alignment and benefits realization.

Center of Excellence/Center of Competency

Supports project work by equipping the organization with methodologies, standards and tools to enable project managers to better deliver projects. Increases the capability of the organization through good practices and a central point of contact for project managers.

The Project Management Institute (PMI) Program Management Office Community of Practice (CoP), describes the PMO as a strategic driver for organizational excellence, which seeks to enhance the practices of execution management, organizational governance, and strategic change leadership.

PMO Services

The PMO has the inherent responsibilities to perform specific services. These services facilitate the key high-level functions of guidance, assistance, and oversight. The services include:

- Project management policies and processes (methodology)
- Best practice standards—identification, development, and coordination • Oversight—project performance accountability
- Central tool management
- Central PM artifact repository management and archival
- Portfolio project management/inter-project coordination
- Workforce assessment—practitioners and team evaluation
- Training and education—curriculum identification, design and development, and delivery
- Project support—guidance, coaching, mentoring, and just-in-time assistance
- Resource (Project Manager) coordination

Building a Project Management Office (PMO)

PMO Mission

The mission of the PMO is to provide program and project management leadership, expertise, experience, and training to teams for initiating, planning, and guiding implementations and completions. The primary responsibilities are to manage and control the constraints by ensuring plans are implemented on schedule, within budget, and within scope. Maintaining alignment to the strategic goals and mission of the organization's are critical to successful program and project management, whether projects are managed for the benefit of a department or for organizational critical functions that benefit the entire enterprise and surrounding organization. Incorporating program and project management administration with best practice methods and standards that are either based on the organization's Strategic Plan or single in purpose and scope ensure consistency is applied effectively and is scalable to be administered across various sized projects.

PMO Vision

Promote best practice standards and methodologies into a program and project management discipline that advances the core vision and mission of the organization's Strategic Plan through comprehensive and iterative development comprising education, training, and a set of guiding principles.

PMO Goal

The PMO's outcome goals are that all projects achieve success. Its performance goals are to successfully guide and support all projects to success. Its organizational goals are to provide to all project and project practitioners support in the form of appropriate best practice leadership and just-in-time services.

PMO Objective

The PMO's objectives are to develop a world-class best practice capability and capacity to assist programs and provide well-planned projects that successfully deliver expected outcomes within budget, on time, and aligned with program and portfolio goals and objectives.

Building a Project Management Office (PMO)

PMO Structure Objective

Mature the PMO to baseline best practice capability and capacity to support all projects. The overall objective is to build and provide the following PMO services for all projects through a series of objectives:

- Objective 1: Project oversight
- Objective 2: Central tool management
- Objective 3: Central PM artifact repository management
- Objective 4: Portfolio project management
- Objective 5: Human and team resource assessment and coordination
- Objective 6: Training and education—planning, design, and development
- Objective 7: Training and education—delivery and delivery coordination
- Objective 8: Project support—guidance and just-in-time assistance
- Objective 9: Resource sharing coordination

PMO Success Factors

Critical success factors (CSF) increase the probability of success when management focuses attention in these areas. This program's CSFs are:

- All major projects (investments that have Development Modernization Enhancement (DME) components) are registered, meaning they have signed project charters (or authorizing documentation) and are authorized.
 - Performance Measure: A percentage of major projects (investments that have DME components) have registered projects, meaning they have signed project charters (or authorizing documentation) and are authorized.
- Most major projects (investments that have DME components) have validated project plans, adhering to the organization's policy.
 - Performance Measure: Percentage of major projects (investments that have DME components) has registered projects, meaning they have signed project charters (or authorizing documentation) and are authorized.
- All major projects (investments that have DME components) continuously report project performance via the organization's dashboard.
 - Performance Measure: A percentage of major projects (investments that have DME components) have continuous project performance reporting via the organization's dashboard, adhering to the reporting requirements.
- Most major projects (investments that have DME components) perform successfully within +/- 20% of cost and schedule.
 - Performance Measure: Percentage of major projects (investments that have DME components) performs successfully within +/- 20% of cost and schedule.

Building a Project Management Office (PMO)

Tier 5 – Governance

What is the governance structure for the PMO? Each PMO must have a leader (VP level is recommended) as well as a steering committee consisting of the executive sponsor and the functional/LOB leadership (line of business). This is the minimum requirement for success. Without these key leaders, the mission of the PMO will be in question and may become under fire from different parts of the organization. Disciplined participation in governance meetings to set priorities, insure x-functional alignment and make change is critical for all members of the PMO Governance model.



PMO Governance Model

A wealth of information is available concerning how PMO's can prioritize or make change to the portfolio projects. The mechanics of these activities require more attention to insure that the PMO successfully fulfills its charter.

Building a Project Management Office (PMO)

Each organization involved with a program has a vested interest in success. The steering committee or governance board supports the PMO and should represent the functions involved in the portfolio of projects. This is essential for three reasons:

1. Approval of portfolio prioritization or material program changes.
2. Alignment of Line of Business (LOB) Functions with their role in program requirements of the portfolio.
3. Input and discussion for each LOB Function in the progress of projects and overall portfolio management.

Organization dynamics and the leadership's willingness to provide transparent feedback and accept criticism openly is critical to successful governance of the portfolio.

The PMO Leader should be accountable for managing:

- PMO mandatory attendance of the steering committee members, program managers and invited experts.
- Regularly scheduled meetings- at least once monthly, through the calendar year.
- Active interaction between the steering committee members, the PMO leader and program/project management.
- A standard agenda:
 - Presentation data sent 48 hours in advance of meeting from PMO leader to PM's/steering committee.
 - Summary portfolio view- overall status, risks, issues.
 - Summary review all programs- current status (Red/Yellow/Green), milestone progress, issues & risks.
 - 80% of meeting time to focus on decisions required by the steering committee:
 - Material changes to in-process program time/scope/resources.
 - Addition or removal of programs.
- Steering committee members and PM's prepared to make decisions:
 - PMO Leader - Gather PM project data, summarize and publish steering committee reports, actions, accountability, follow-up activity, invite outside personnel as required by material issues.
 - PMs - Provide concise status updates, out-of-line conditions, options, recommendation, and impacts.
 - Steering Committee members - Review material issues options and recommendations provide LOB Functional input, alternative actions, make decisions.
 - Executive Sponsor - Arbitrate cross LOB Functional disputes, make informed decisions.

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- 3rd Party Activity- this may include external vendors acting in the company's behalf, channel partners, or internal organizations not normally included as part of the PMO. Normally, these groups should be managed through the various functions outlined for the PMO. In addition, they can request to attend to provide input or requests for specific actions. These activities will need to be closely reviewed by the PMO leader to determine if the request is within the charter and programs of the PMO and refer the request to the functional/business leadership appropriate.

Tier 6 – Executive Management

The most effective PMO's are sponsored at the C-Level or VP level, with active participation and input to each initiative in the portfolio. As a best practice, the executive sponsor's corporate objectives are tied directly to the execution of the portfolio initiatives. The PMO acts as the governance control and insures consistency of action.

The executive sponsor insures the correct LOB/line management stakeholders are represented in the Steering Committee to manage functional area administration of the programs.

Successful PMO's have the PMO leader reporting directly to C-Level or LOB executive sponsor. This reporting structure enables the PMO leader to be in the normal management chain of communication and decision making. This operating structure is very effective and eliminates "surprise" changes or communication disconnects with the PMO. The PMO leader has an equal opportunity to provide the executive team with programmatic or portfolio input and options in all situations

CHAPTER 2 – THE PMO PURPOSE



Building a Project Management Office (PMO)

Why Establish a PMO?

Regardless of the size of your organization, every project requires a thought-out process to achieve success and establishing a PMO is essential and a global best practice.

Successful PMO's are known for their ability to improve project success rate, shorten project cycle time, reduce project cost and keep senior management informed. Whether you need assistance with PMO startup, extension of PMO services, establishment of a Project Management Methodology, PM training for the organization or assessment of PM Maturity, retain the services of a qualified consulting firm that can provide you with the knowledge and experience required to get the job done. Below are just some of the ways these types of services can assist you in bringing your organization to the next level.

Developing the PMO Roadmap

The PMO development roadmap should consist of three primary phases:

- Plan,
- Implement and
- Manage.

Each phase is broken in down into a number of sequential steps. This guide will walk you through each step and elaborate as necessary on the various concepts and recommendations presented.

Plan Phase

The plan phase is organized around asking and answering *five key questions (refer to Plan Phase Chart)*. The answers to these questions form the core information that flows into the PMO charter. The initial plan phase should not be exited until the PMO charter is complete and buy-in from key stakeholders and customers identified in the planning process has been confirmed.



Plan Phase Chart

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Plan Phase Chart

Questions	Key Plan Components	Key Questions Answered
Why?	1. Statement of purpose/goals	<ul style="list-style-type: none"> What is the PMO's fundamental purpose and goals?
What?	2. Scope & target maturity Core services offerings Service metrics	<ul style="list-style-type: none"> What is the scope of the PMO based on organization needs and target organizational maturity? What core services will the PMO provide and how will success/value be measured?
How?	3. Business processes	<ul style="list-style-type: none"> How will services be managed and delivered?
Who?	4. Governance Customers/Stakeholders PMO team structure	<ul style="list-style-type: none"> Who does the PMO report to? Who are the PMO's customers and stakeholders? Who comprises the PMO team (key roles, org chart)?
When?	5. Timeline/milestones	<ul style="list-style-type: none"> When will the PMO be in business and when will the core services come online?
Summary	6. Charter	<ul style="list-style-type: none"> A detailed document answering most/all of the above.

PMO Purpose and Goals

A simple statement of purpose and goals should serve as a guide for the PMO team and as a core communications platform to stakeholders. Potential goals include:

- Better alignment of project activity and business strategy and investments.
- Consistent adherence to a project management process and methodology.
- Improved collaboration and knowledge and best-practice sharing.
- Resource pool readiness (training) and competency to meet evolving business needs.
 - World-class resource utilization and capacity management.
 - Executive visibility to project, program and portfolio-level status, issues, risks, costs, etc.

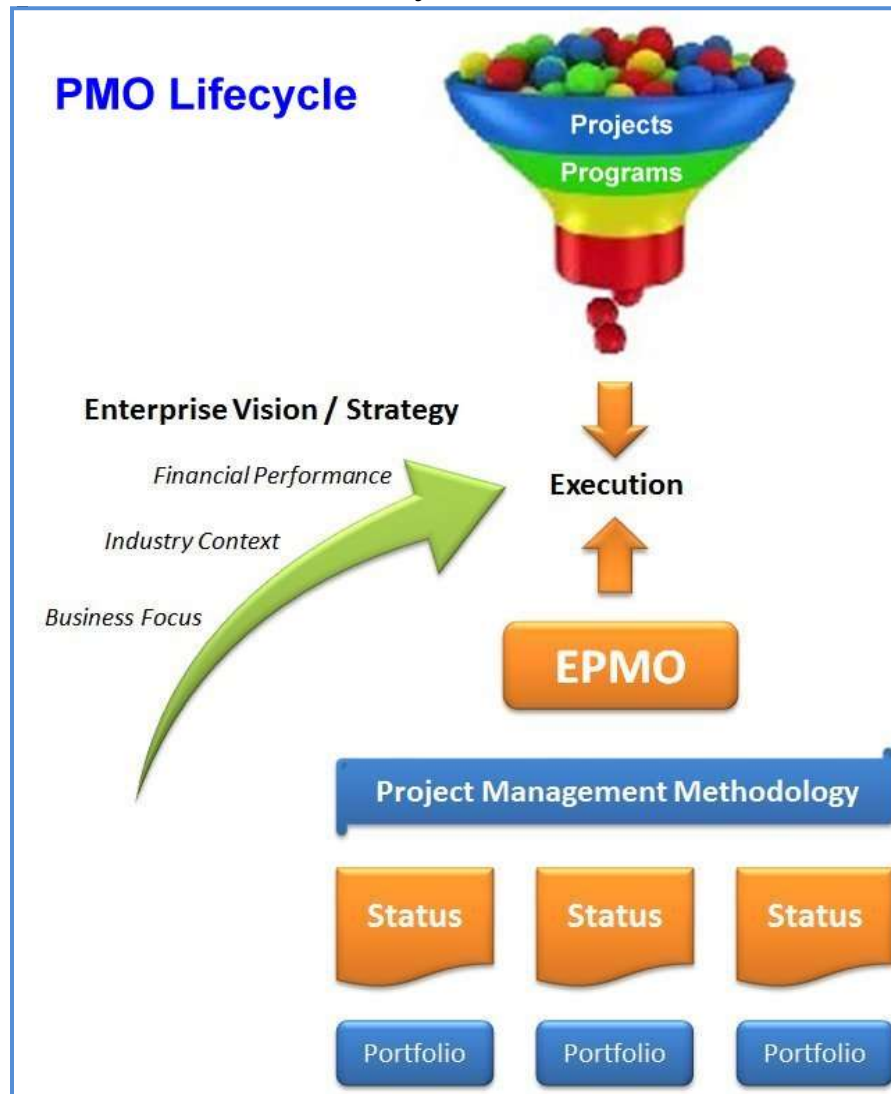
Building a Project Management Office (PMO)

Define Scope and Maturity Levels

The PMO goals (defined above) need to be put in context with respect to scope and target maturity. The **scope** dimension can be defined by three levels: Project, Program and Portfolio. Refer to **PMO Lifecycle illustration**.

- **Project:** Focus is on PM training, mentoring, coaching; project-level budgets, scheduling, resources, deliverables, scope, risks and metrics.
- **Program:** Coordination of business and projects, program planning, change/risk management, coordination of project delivery and results measurement.
- **Portfolio:** These PMOs focus heavily on benefits realization management; knowledge management, portfolio scope definition, overall investments and resource utilization, benefit and risk assessment, and performance monitoring.

PMO Lifecycle Illustration



Building a Project Management Office (PMO)

Maturity Levels

Understanding your current level of Project Portfolio Management maturity is critical to setting achievable organizational maturity goals. The Capability Maturity Model Integration (CMMI) provides a widely used and standardized framework for describing the levels for Information Technology (IT) organization maturity functions:

- **Level 1: Reactive** – Methods are undocumented and delivery, budgets and schedules are uncontrolled.
Next level when: Methodology is defined for project tracking and scheduling, time tracking, resource assignments, project oversight and support.
- **Level 2: Repeatable** – Processes are not consistently used and projects regularly exceed budget and schedule.
Next level when: Automated processes are in place for project budgeting, risk, issue and requirements tracking and resource management.
- **Level 3: Pro-Active** – There is a commitment to documented, standardized PM and delivery processes company-wide.
Next level when: Automation of additional functions is in place such as financial management and business process modeling.
- **Level 4: Measured** – KPIs are specified and monitored regularly and project and program delivery is predictable and controlled.
Next level when: There is evidence that an innovative process improvement culture has taken hold.
- **Level 5: Continuously Improved** – Processes are regularly extended to external entities and collaboration practices are state-of-the art.

A simple matrix defined by the scope and maturity dimensions can be used to depict where an organization may be today and where it hopes to be over a defined period of time through the tools and influence of the new PMO. If an organization currently describes itself as “project-focused” with respect to scope and “reactive” (Level 1) with respect to organizational maturity. The goal is to expand the scope of PPM practices to include program and portfolio management oversight while working towards “repeatable” (Level 2) maturity for project, program and portfolio management practices across the organization.

The PMO is also referred to enterprise Project Management Office (EPMO or ePMO) is an organizational approach designed to help organizations achieve business objectives by managing the complex integration of concurrent, inter-related projects at an enterprise level. It entails the prioritization, coordination, planning and execution of efforts in direct support of critical business objectives across the entire organization.

EPMO capabilities elevate the project management processes by providing true value in line with the overall corporate strategy. Current global trends show that PMO's are more effective and have

Building a Project Management Office (PMO)

greater impact when they are operating at a strategic, enterprise level, as opposed to a department level. Operating at the enterprise-level delivers benefits in the following ways:

- Focus on delivery of the organization's top initiatives to achieve critical business goals and objectives.
- Facilitate portfolio management and increase successful project execution through standardized project management practices.
- Support project and program delivery, resulting in increased efficiency and effectiveness with fewer resources.
- Measure project success to ensure desired results were achieved.

Identify Core Services Goals

Now that the core PMO mission/purpose and scope have been defined, the next step is to identify the key services that the PMO will offer in support of its business goals. The **PMO Services table** below describes various potential PMO services offerings ranging from business strategy alignment services to basic project activity visibility and coordination. Some organizations may focus on a few of these areas, while others take on all of these areas over time.

PMO Services Table

PMO Services				
Portfolio Management	Consulting & PMO Services	Training	Operations	Archives
Project Portfolio Information	Project Recovery	Methodology	Project Accounting	Information Repository Protocol
Executive & Governance Boards	Project IV&V & Risk Management	Tools & Venues	Resource Planning & Forecasting	Data Management & Security
Asset, Strategic Objectives & Resource Portfolio	Project Management Processes, Tools & Methodologies	Project Management Fundamentals	Resource Tracking & Reporting	Project Document Library/Knowledge Management
Prioritization Techniques	Coaching & Training	Communication Techniques	Asset Tracking	Lessons Learned
Strategic Project Alignment	Help Desk	Advance Project Management	Resource Support & Administration	Closed Contracts
Strategic Resource Management	Web Portal/Information Management	PPM & Scheduling Tools	Contract & Change Management	Audits
Reporting, Metrics & Analytics	Resource Recruiting	Certifications	Resource Performance Tracking & Metrics	
Int./Ext. Customer Interface	Int. Customer Interface	Int./Ext. Customer Interface	Int. Customer Interface	Int./Ext. Customer Interface

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The selected service offerings should be mapped to (and rationalized with) the defined PMO scope and organization maturity level. The graphic below provides an example of selected service offerings that have been identified to address scope aspirations and organizational maturity goals.

Define PMO Metrics

Metrics for managing the performance of each service offering need to be defined. The table below provides examples that are frequently used for various service offerings.

Potential Services	Metrics/Success Criteria
Business Strategy/Alignment	<ul style="list-style-type: none"> • # of projects aligned with key business strategies. • Project health by strategy (# or %). • Return on Investment (ROI)
Methodology and Process Consistency	<ul style="list-style-type: none"> • % projects following approved methodologies (compliance). • # or % of milestones or phases completed as planned. • % projects completed on time.
Collaboration and Knowledge Management	<ul style="list-style-type: none"> • # of best practice documents submitted to knowledge base. • # or % of issues resolved leveraging lessons learned.
Professional Development	<ul style="list-style-type: none"> • # of “certified” PMs or PMs trained in company process. • Training courses delivered. • % decrease in expenditures on contractor/outside help.
Resource Management	<ul style="list-style-type: none"> • % improvement in resource utilization. • % improvement in employee satisfaction.
Issue & Risk Management	<ul style="list-style-type: none"> • # of issues reported; % reported issues resolved. • # of high-impact issues • Portfolio risk cost impact +/- • Project Health (score). • % of aged risk & issues.

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Define Business Processes

The next step is to figure out how the services will be managed and delivered. The graphic below provides an example of some high level descriptions of delivery mechanisms which are typically deployed to operationalize various PMO service offerings.

Potential Services	Scope & Focus	Metrics/Success Criteria
Business Strategy/Alignment	<ul style="list-style-type: none"> Alignments to corporate strategies. 	<ul style="list-style-type: none"> PPM system delivers strategy alignment functionality using listings, reports, and dashboards.
Methodology and Process Consistency	<ul style="list-style-type: none"> Focus is on standards and methodologies for project execution, risk identification, issue resolution. 	<ul style="list-style-type: none"> Methodology expertise and knowledge transfer delivered via training services. Consistent delivery enforced by PPM system.
Collaboration and Knowledge Management	<ul style="list-style-type: none"> Best practice projects, tools and templates. PPM community. 	<ul style="list-style-type: none"> Globally accessible web-based knowledge base leveraging PPM system document repository.
Professional Development	<ul style="list-style-type: none"> Methodology training and certification. 	<ul style="list-style-type: none"> Delivered via blended learning software platform (ILT + eLearning)
Resource Management	<ul style="list-style-type: none"> Resource management will initially focus on resource assignment visibility and basic resource utilization. 	<ul style="list-style-type: none"> Core function of PPM software solution

Note: *ILT – Instructor Led Training*

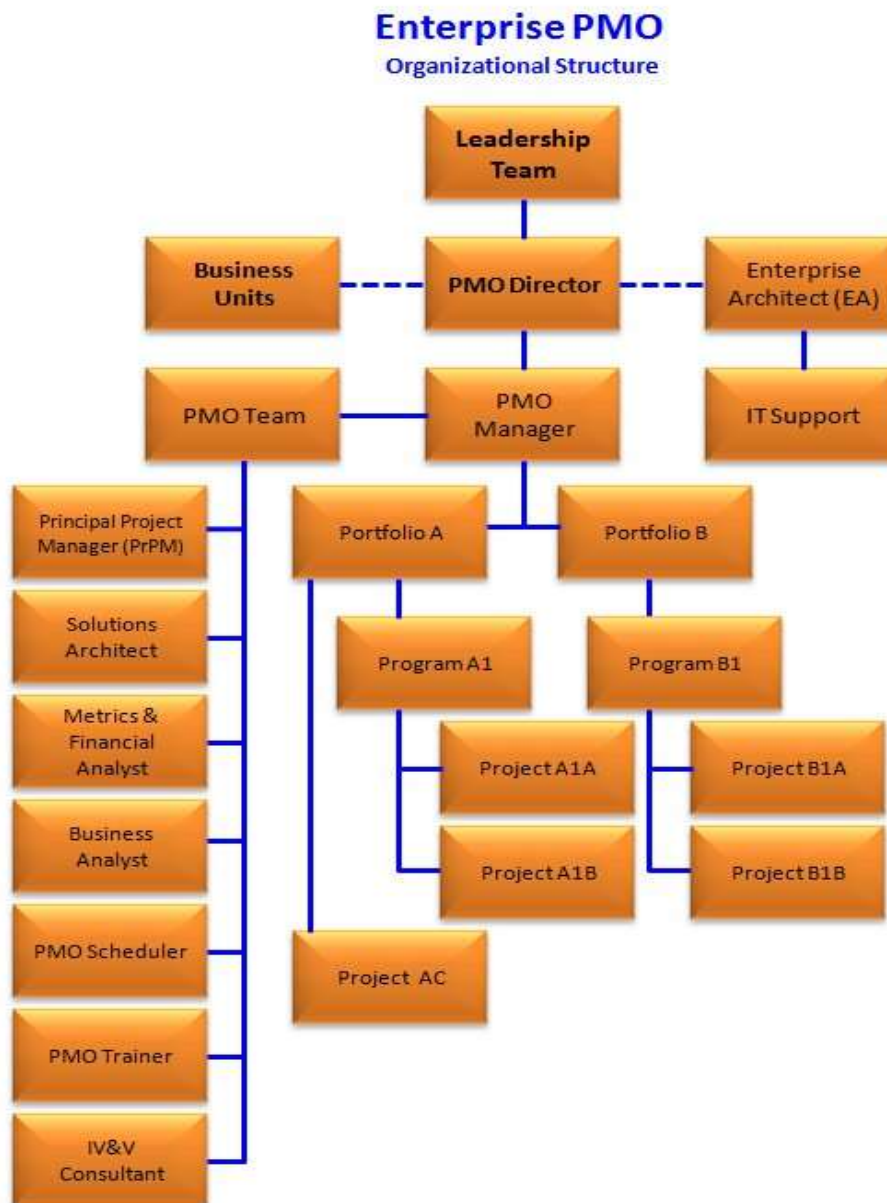
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Define PMO Team Structure

In this step, the PMO plan must address the various “who” questions. Who is going to deliver the service offerings that have been identified? Who is the customer for these services and who is the PMO accountable to for the delivery of these services? The PMO Organizational Structure chart below depicts a mature structured PMO.

Specifically, the plan should:

- Identify direct reporting relationships and dotted-line sponsors/champions
- Define organizational structure and roles and responsibilities.
- Solicit and track stakeholder agreement.



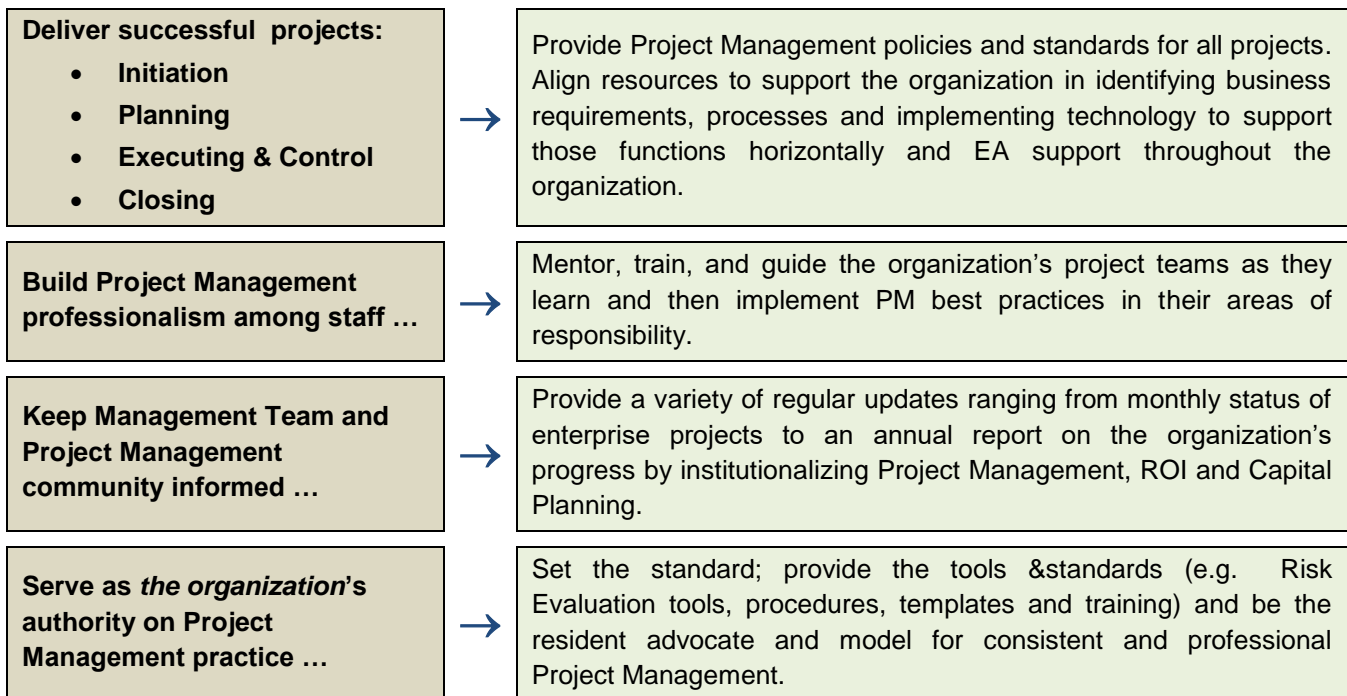
Building a Project Management Office (PMO)

PMO Implementation

The PMO can be one of the most important investments that your organization will ever make. A properly defined and managed PMO can ensure proper project definition, instill a dynamic project management practice, energize project teams and generally take steps to make project success the norm. To get there you need strong management support, buy-in from stakeholders, and acceptance of a more formal approach to management of projects.

- Define your PMO Mission and Goals
- Design the PMO to fit the objectives of your stakeholders
- Write a PMO Charter that serves as a mandate for the PMO
- Define and implement new PMO services
- Choose new Project Management tools
- Complete PMO Setup
- Train project managers and teams
- Get your PMO off to a Strong Start

Here's a PMO Goal Example:



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PMO Optimization

PMO startup is only the first step. Once your PMO is in operation you will probably find that there is additional work to do. If your PMO is highly successful you may be called upon to provide additional function or extend its reach to other parts of the organization if not already included. If your PMO is having difficulties you may need a mid-course correction.

- Assess where you are with respect to current goals
- Create a road map for PMO optimization
- Reach well defined objectives, such as:
 - Gain stakeholder buy-in to new processes
 - Implement formal Project Management methodology
 - Refine the Project Portfolio Management process
 - Establish meaningful project oversight
 - Choose and implement new PM tools
 - Provide advanced project management training
 - Deliver accurate and timely project status to management

Managing Organizational Change

Your PMO may be the vanguard for the introduction of powerful change in your organization. Are your stakeholders ready for this? Are you? All too often PMO staff will discover that they have been placed in the "Change Agent" role, for which they and their stakeholders are totally unprepared. Stakeholder resistance to change is one of the leading causes of PMO failure. It doesn't have to be this way!

The PMO should provide targeted Change Management training to PMO staff and the management team, demonstrate how to get buy-in from stakeholders, and coach the PMO on how to make the changes happen.

The objectives are:

- Management has set achievable goals.
- Managers understand the importance of their role in bringing about change.
- PMO staff has the skills they need to work with stakeholders.
- Stakeholders understand what is happening and what is expected of them.
- Change is introduced at many levels such as business process, role definition, standard operating procedures and performance reviews.

Building a Project Management Office (PMO)

Organizational Change Management

Shifting a culture requires a delicate, systematic, and well-planned approach to avoid failure and affect positive change and soliciting the outside services to assist this transition is highly recommended. Consulting services can help guide your organization through the necessary transition, ensuring you are ready for change, are prepared to lead the change, and are able to validate that change has occurred. Additionally, this allows the PMO team to focus on the process (Good Cop) and allowing the Consulting services to provide the necessary interference (Bad Cop) and compliance assurance with the organization's strategic change mission.

Change Readiness Assessment

A Change Readiness Assessment documents your organizational climate in terms of its culture, its history with change/transformation initiatives, and its resistance to change. Consulting services will use a series of diagnostic tools to determine your organization's readiness for a successful transformation effort. Information on attitudes and behaviors gathered during stakeholder interviews and surveys allows us to collectively identify areas of concern and barriers you are likely to encounter during your change efforts.

Change Management Action Plan

A Change Management Action Plan defines the transition path from the old way of doing business to the new. For each area of concern identified in the Change Readiness Assessment, PM Solutions works collaboratively with your organization's change agents to develop specific action steps to help mitigate the impact of the change management issues. These actions are designed to help overcome resistance, reduce the impact of past history, and convey a shared vision for acceptance into the business culture. Documented communication strategies are essential to ensure that stakeholders are receiving critical pieces of information at the right intervals.

Change Monitoring & Reinforcement

Change Monitoring & Reinforcement activities are essential to validate the change has been accepted and put into practice. To monitor change progress, the Consulting services can help with performing periodic reviews of the change initiatives identified in the Change Management Action Plan to confirm the transition is moving along as planned. If these reviews indicate something is going awry, it serves as a trigger to immediately initiate actions required to address the issues so change efforts do not falter. The Consulting service provides the necessary change reinforcement services support cultural acceptance and include mentoring, coaching, workshops, and training.

Portfolio Management

Project Portfolio Management (PPM) is that set of processes that ties project execution to achievement of business strategy. It determines how you choose and fund your projects and is a primary determinant of how much Business Value you receive for each project dollar. Efforts made to improve the implementation of PPM can result in the following:

- The right projects are funded at the right time.
- Projects have the resources and support they need to be successful.

Building a Project Management Office (PMO)

- The entire portfolio remains aligned with your organization's Strategic Goals.
- Executive Management has the information necessary to make effective decisions.
- The project portfolio is a Business Value machine that creates the ROI you need.

However, PPM is complex and any effort to improve it should be done in a systematic and careful manner. PPM optimization includes both the introduction of new business processes and governance structures and Organizational Adoption of the changes.

What to Do

- Establish goals for PPM in your organization
- Define elements of the PPM Optimization Program
- Define the portfolio
- Define a new PPM process that builds on existing procedures
- Train Executive staff in their role in PPM and its improvement
- Train PMO staff in the definition and implementation of new process
- Work with PMO staff, executive team and other stakeholders to obtain Organizational Adoption of the new PPM process
- Introduce new project identification, evaluation, selection and prioritization workflow and tools
- Assist with revised Project Budgeting
- Introduce improved project oversight procedures
- Assist in configuration of a Project Portfolio Management (PPM) software tool
- Perform a Portfolio Management Maturity Assessment

Why PMO's Fail

The high percentage of failing projects attributes to the failure with communications (bad scope or requirements) and inadequate understanding of project management methodology. Other questions keeping leaders awake at night are:

- How much risk is too much?
- What projects can we really afford to implement with accurate estimates?
- What is the price of missing critical project dates?
- Can you identify and resolve potential issues in your projects?
- What is the real status of our projects?
- Are we wasting our limited resources on duplicate projects?
- Who will provide the information and resolution of issues affecting more than one project or projects across a division or department?

Building a Project Management Office (PMO)

The PMO Culture

Many project management offices (PMOs) are not successful in addressing the strategic priorities of their organization because they are departmentally based and not enterprise-wide. This reduces their span of influence and limits corporate support. Current PMO trends demonstrate that PMO's are more effective and can better impact the bottom line, when they are operating at the corporate enterprise-wide strategic level, rather than at the departmental level.

These trends indicate that all levels within an organization typically do not embrace the direction of the PMO. However, headed departmentally based PMOs indicates that all levels of their departments embraced the direction of the PMO. This suggest that departmentally based Project Management offices are successful in their own silos but not accepted outside their span of influence, and therefore, are unable to influence the organization as a whole.

An examination of the traditional Project Management Office model compared to the more current corporate-wide (Enterprise) approach helps in building this case for moving the PMO to this more strategic, enterprise-wide position.

The Traditional Project Management Office (PMO)

Most Project Management Offices are located only within a department in their organizations. Generally these project management offices are relegated to the IT or Engineering department. They struggle to maintain a strategic orientation because they are not set-up to affect the entire organization. This is because many project management offices started off from a grass roots approach. They were started by an individual or small group of individuals who saw the need to bring more control over the management of a portfolio of projects, which, although based on good intentions, lacked senior management's direction and control.

Typically, the initial effort on the part of the PMO usually included presentations to increase departmental awareness and provision of training for the management team to help ensure their understanding. This helped the PMO to move from a grass-roots approach into a more formal structure. Generally, these Project Management Offices gained success through their department.

Their success increased when they were able to get executive sponsorship for their efforts but this was not always the case. In fact, during the past 5 years PMO's have demonstrated that executive sponsorship was a critical requirement for PMO success and lack of it was a key reason for failure of the PMO.

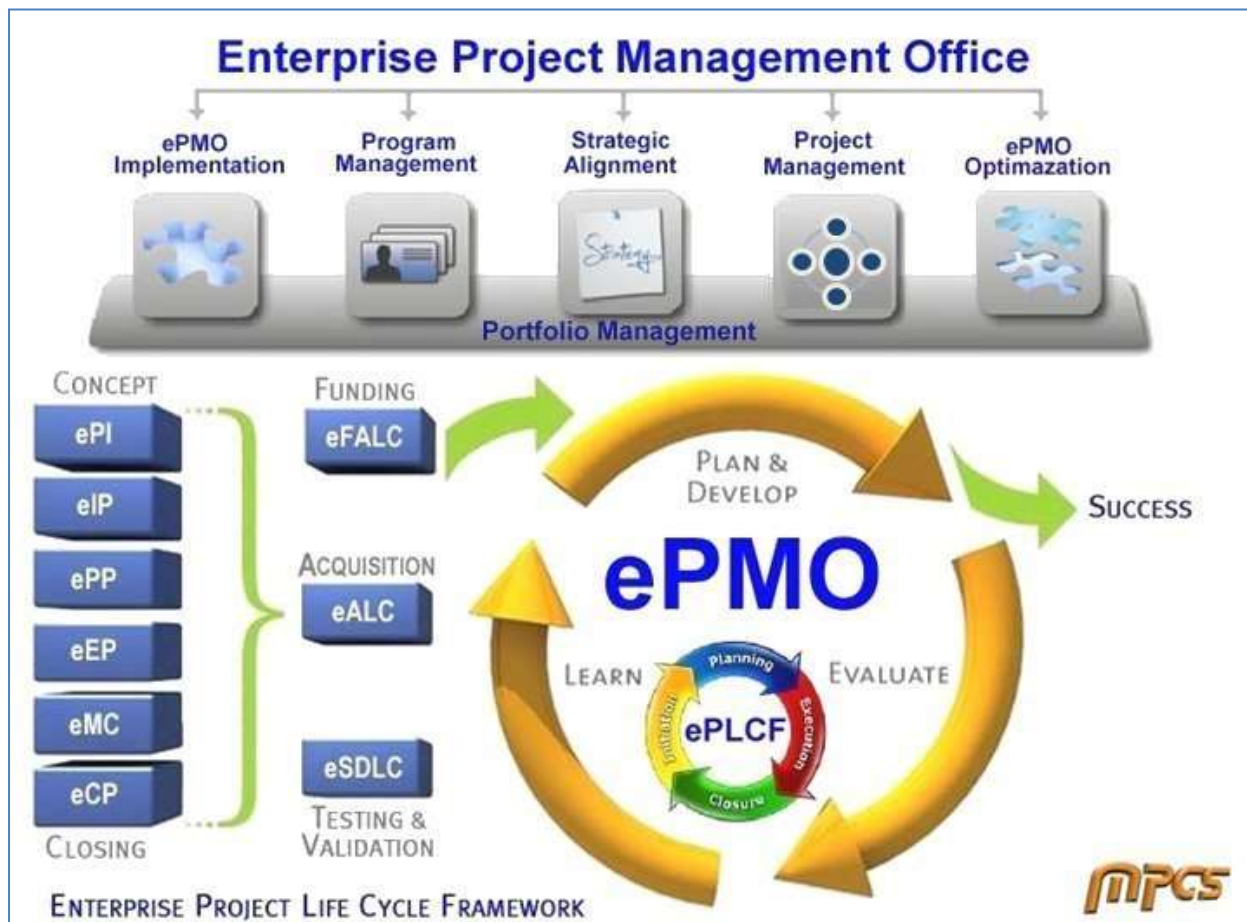
Building a Project Management Office (PMO)

The Enterprise Project Management Office (ePMO)

The next evolution of the Project Management Office is for it to move into the corporate side of the business. This allows the PMO to gain a strategic position within the organization and works to ensure that projects proceed on the basis of their strategic alignment to the objectives of the organization. A PMO that is organizationally based versus departmentally based is more likely to get executive support. After all, project management should not be a departmental strategy; it should be an organizational strategy.

The senior management team can demonstrate a strong commitment to this ePMO by requiring all project teams to adopt the process, tools and templates of the ePMO. The ePMO should ensure projects are aligned with corporate strategy and direction. Senior executives are most concerned with how an ePMO will positively impact the organization as a whole, each individual department, and their customers.

In some organizations, the ePMO will oversee the management of all strategically aligned projects. In larger organizations, the ePMO will have departmentally-based PMOs reporting directly to them. This provides them with an opportunity to align all corporate-based and departmentally based projects against the strategic plan and to manage project prioritization and resourcing issues. Below is an example of what the ePMO structure looks like:



Building a Project Management Office (PMO)

Measuring the Impact of the ePMO

The ePMO is more likely to receive continuous support from the management team if they can provide both quantifiable and qualitative data on projects that they are responsible for overseeing on a weekly or monthly basis. This data can include a comparison of the number of projects as well as the changes that have occurred since the implementation of the ePMO. It includes the number of projects that:

- Were completed within their time constraints since the implementation of the ePMO as compared to the number of projects completed within their time constraints prior to the implementation of an ePMO.
- Were completed within their budget constraints since the implementation of the ePMO as compared to the number of projects completed within their budget constraints prior to the implementation of an ePMO.
- Meet or exceeded the customer requirements specifically identified at the beginning of the project.
- Aligned with corporate strategy (Alignment should be 100%).
- Have successfully been managed (on-time, on-budget, met customer expectations) after training of project managers and team members as compared to projects managed by individuals not formally trained.
- Followed the prescribed ePMO project management process and were completed successfully as compared to projects that did not follow the prescribed ePMO project management process.
- Applied a risk management process with fewer crisis situations, as compared to those projects that did not apply risk management.
- Realized a reduction in cycle time from order to delivery or from product design to product launch.
- Simplified by making transparent a complex project for the customer, supplier and third parties.
- Utilized staff with appropriate skill sets for the project.

ePMO Structuring Guidelines

A reporting structure in which the ePMO reports directly to one or more members of the senior management team increases the likelihood for timely approvals and decisions regarding projects and generates greater visibility and acceptance for the ePMO by the rest of the organization.

Furthermore, correctly structuring the ePMO requires consideration for the authority of its leader. The head of the ePMO must have the same management level as the managers of the functional departments from which they will need to draw staff for the project team. This will help the ePMO to focus on the interests of the organization as a whole rather than on the interests of any particular functional group. It will also ensure that the ePMO is able to resolve any conflicts that may arise between projects competing for common resources.

Building a Project Management Office (PMO)

A current approach to the structuring of the ePMO is to have anyone who manages a project reporting to a functional manager rather than to the ePMO. Current ePMO's indicates that this matrix management structure tends to reduce the hierarchy of the ePMO and it ensures it is able to stay focused on coaching and mentoring all project managers rather than the more time consuming role of managing all project managers.

The ePMO should engage the senior management team to visibly support it and its project management approach. They can do this by coaching senior management through the approval process to ensure timely approvals are given for Project Description Statements, Milestone Reports, Project Change Requests and other key project documentation as required in the Project Life Cycle Framework (PLCF). As well, the ePMO should review each of these documents with the Project Manager to ensure that the documentation is clear and accurate before presenting to the member of senior management who acts in the role of sponsor for the project. This will reduce the need to coach the senior management on every detail of each document before they agree to its approval.

It is important for the ePMO to provide early warning signs to management about difficulties that projects may be facing. While senior management does not have the time to examine individual, detailed reports on each project, nevertheless, they do want to be kept up to date on the progress of all projects. Therefore, it is preferable for the ePMO to maintain a regular practice of communicating and reporting to the senior management team through an integrated report that combines all projects into one report. This report should indicate; projects are on-track, projects off-track, and projects experiencing serious problems (risk). This provides early warning signs to management of difficulties that may be occurring with any project. Today's key reporting tool is the "dashboard" which provides a quick visual status of the projects within the Project Portfolio Management framework (PPM).

"Lessons Learned" from projects and customer feedback are other forms of communication with the senior management team that will generate added support from them as continuous improvement is applied.

Building a Project Management Office (PMO)

Summary

A PMO that is structured to manage projects across departments, locations and regions is best implemented on an enterprise-wide basis. This is because it will hold the responsibility for ensuring consistency in the management of all elements of each of these projects and will also be able to assess and prioritize each project for alignment with the corporate strategy. The goal of an ePMO is to help their organization effectively manage projects in today's complex, global marketplace. The successful management of these projects has a direct impact on the organization, its customers and its resources.

Through sponsorship by any of the top executives of the organization, the EPMO gains:

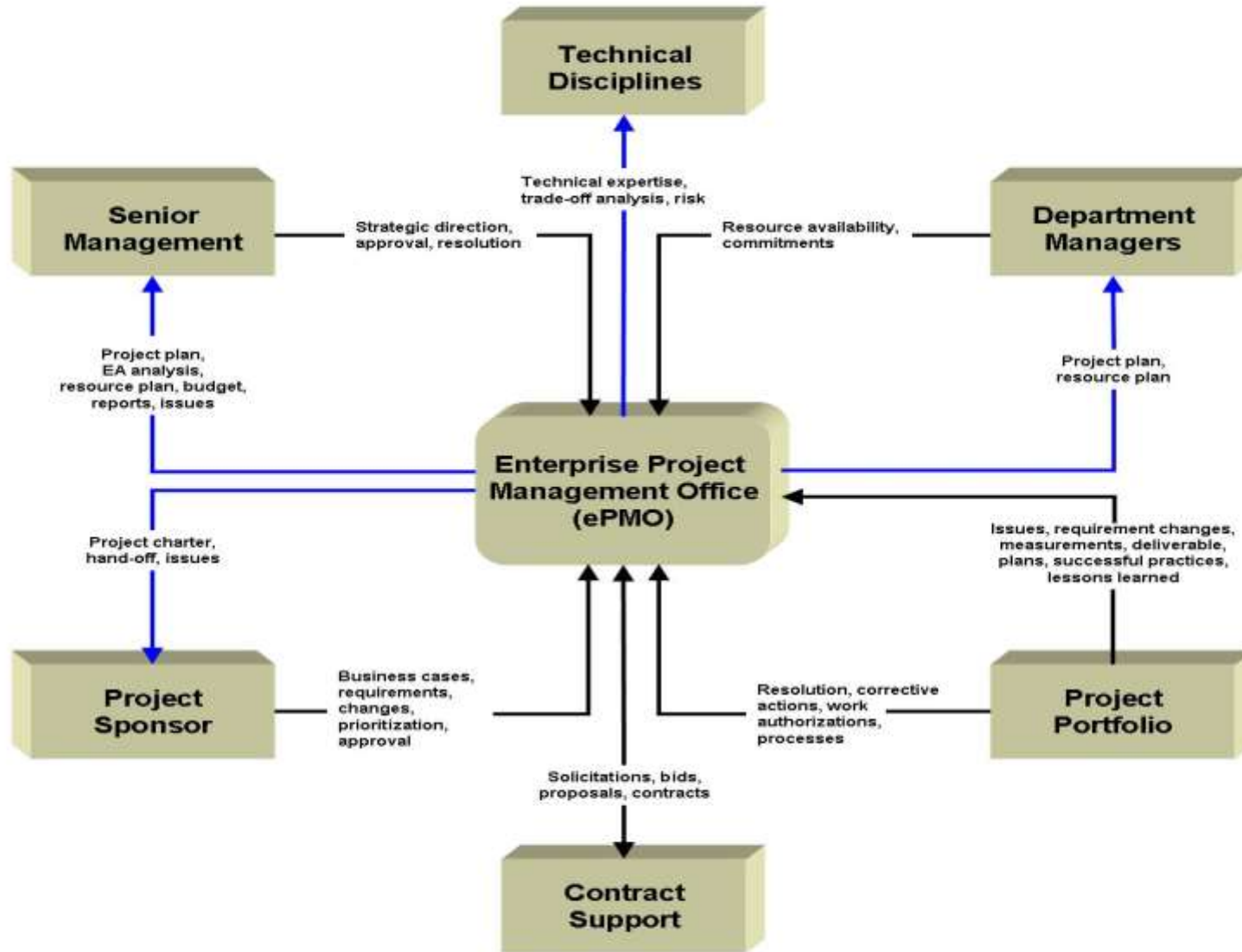
- The **Role** to manage and direct the Project Management policies and best practices.
- The **Authority** to implement organizational-wide enterprise system requirements.
- The **Responsibility** to meet the Executives and User expectations.
- The **Accountability** for aligning technology to meet the organization's business processes and reporting requirements.

The ePMO has three sources of staff:

- Direct appointment of existing or new organizational staff into the ePMO.
- Temporary assignments from other departments (report to ePMO via dotted line).
- Contracted staff (as needed to provide expertise or staffing not available within the organization).

The **ePMO Flow Chart** example on the following page reflects the various interfaces within an organization.

Building a Project Management Office (PMO)



ePMO Flow Chart

CHAPTER 3 - PMO BEST PRACTICES



Success through Best Practice



Building a Project Management Office (PMO)

ePMO Best Practices

Organizations moving towards the implementation of an enterprise Project Management Office (ePMO) must consider many factors before taking the first steps. This note addresses:

- The definition and purpose of an internal ePMO.
- The multi-faceted and various roles of an ePMO.
- Several key circumstances indicating the need for an internal ePMO.
- Recommendations for the successful execution of an ePMO.

Use this guide to ensure that all bases are covered before delving into the broad time, resources, and intellectual commitments required with implementing a successful ePMO.

Strategy Point

Enterprises are increasingly turning to project-based work to facilitate success and to allow for more efficient prioritization. By breaking projects into manageable pieces, employees can be assigned by skill-set and allocated to several different projects at once instead of to one large, lengthy project at a time. This trend has forced many enterprises to look into efficient ways of managing these interconnected projects and subprojects. An ePMO is a centralized forum for keeping these projects within schedule and budget, and also aligned to business goals through the creation and enforcement of policies and procedures. The ePMO is in charge of creating standardized processes and maintains control of all project process for the entire organization.

Key Considerations

The ePMO directs and guides the enterprise through the development and enforcement of a project management methodology. The use of tools and relevant templates is also common practice, with all resources available to the enterprise through the established ePMO. The ePMO usually does all of the resourcing for projects, including project manager assignments. The ePMO also manages all ongoing projects and enforces adherence to company PM procedure.

Generally, an ePMO consists of an individual or a team that provides assistance, guidance, and support for project process integration. All enterprise project managers live within the enterprise PMO.

An ePMO is an integral part of the enterprise Project Management (PM) system: with a proper PM methodology and process in place and enforced, projects have a higher chance for success. The role of the PMO depends on the industry and the organization and there are many options when it comes to selecting an applicable PMO for the enterprise. Selection should be made based on a balanced recipe of the dynamics and the culture of the enterprise in order to promote success. **See Table 1** for details about several possible PMO roles: it is advisable to consider adopting a collection of these to suit the specific needs of the enterprise.

Building a Project Management Office (PMO)

Table 1: Typical PMO Roles

ROLE	DESCRIPTION
Process Establishment	Develops standardized processes to be followed and provides useful tools and appropriate training for these tools. This prevents each project manager from reinventing the wheel. Projects start up more quickly with less time wasted planning and documenting steps.
PM Service Provider for Projects	<p>Provides skilled project managers that will perform:</p> <ul style="list-style-type: none"> • Project Planning. The ePMO evaluates resource allocation and plans project scheduling, timelines, and completion dates. • Project Monitoring. The ePMO manages the project charters, key deliverables, milestones, and status reports. It tracks project status and predicts the ability to meet key deadlines. Additionally, the ePMO provides centralized tracking of project budget performance and detects and assists with project scope change control. • Team Facilitation. The ePMO ensures proper team communication to mitigate misunderstandings and confusion. <p>This ePMO function in larger organizations is often allocated to a project management center of excellence when large numbers of project managers must be resourced to projects.</p>
Quality Assurance for Project Management	<p>This can include:</p> <ul style="list-style-type: none"> • Assessment of project plans and charters for completeness and quality. • Establishment of project health checks during the course of projects. • Audit for compliance of process, methodology, techniques and tools in order to understand what is and is not working.
Coaching	Facilitates training and coaching of project members to build core project competencies. Provides support for the use of the project management software.
Project Review	Analyzes and reports on in-project and outcome metrics at the project, program, or portfolio level.
Continuous Improvement	<p>This includes:</p> <ul style="list-style-type: none"> • Building upon best practices and keeping processes up-to-date. • Reviewing completed projects to identify areas for improvement going forward.
Project Portfolio Communication	Aggregates and summarizes information across all projects to provide a high-level snapshot of project status to management and other key stakeholders.

Building a Project Management Office (PMO)

<p>Knowledge Bank</p>	<p>Data & Document Control:</p> <ul style="list-style-type: none"> • Continuous maintenance of a knowledge bank of project management information based on industry-wide and company best practices. • Helps teams perform best practices and methodologies. • Tracks and records lessons learned from projects in order to leverage them in the future. • Includes an open collection of company policies, procedures, templates, guidelines, and past project documentation.
<p>Project Advisor</p>	<p>Assignment of one or more project managers for hands-on assistance with project teams. Duties include:</p> <ul style="list-style-type: none"> • Helping with preparing status reports and work plans according to company standards. • Training and consulting teams on ePMO best practices. • Resource allocation.
<p>Centralized Governing Body</p>	<p>Acts as a formal governing body that:</p> <ul style="list-style-type: none"> • Oversees resources allocated for projects. • Determines a project's measures and benefits as they relate to the business. • Has centralized control over projects. • Enforces projects to comply with policies.

Development Plan Recommendations

When creating a strategic ePMO development plan, key stakeholders must:

1. **Establishing the need for an ePMO.** There are no clear cut prerequisites for determining the need for an ePMO, but there are some guidelines that are good indications that an ePMO should be considered in the enterprise. For instance, a ePMO is generally a good consideration when an enterprise:

- Has established a solid project management discipline.
- Have projects of medium to high complexity.
- Have simultaneous projects with time sensitivity.
- Have cross-departmental projects and teams.
- Has a significant or growing portfolio of project-based work.
- Have several ongoing projects at once.
- Has experienced a series of project failures or missed deadlines.
- Suffers high impact as a result of project failure and missed deadlines.
- Can benefit from centralized resource allocation.

Building a Project Management Office (PMO)

- Has a growing project backlog as a result of delays and failures.
 - Prioritizes projects based on politics or perceived urgency instead of strategic planning.
 - Requires assistance with becoming Sarbanes-Oxley compliant.
 - Has established end-user buy-in to ensure that team members do not object to or have resistance against placing controls on project work.
2. **Develop an ePMO strategic plan, charter, and goals.** Gather all of the stakeholders and formulate the details together. One key factor for the enterprise is to define and agree upon the purpose, scope, goals, and objectives of the ePMO in writing. Some common issues to discuss include:
 - The extent of ePMO authority.
 - What the ePMO must accomplish and within what time frame.
 - Which model the ePMO will follow.
 - Whether the ePMO methodology will be built from scratch or adapted based on industry-tested and/or known best practices.
 3. **Define measures and benefits.** All members of the ePMO and key stakeholders must identify the scope of the desired business benefits and respective business value. Agreement, collection, and documentation are also necessary concerning which processes will be measured and how. For example, key ePMO metrics should be outlined, such as time, cost, resources, and scope, quality, and action items. All conclusions should be included in the ePMO strategic plan.
 4. **Obtain buy-in.** In order to achieve success, the whole organization needs to be on board, and the ePMO must have the support of the executive team. This is usually the most significant step, because regardless of whether the ePMO is designed and strategized perfectly, without buy-in, the initiative will not achieve desired results.
 5. **Impose structure.** If properly implemented, the ePMO can provide a definitive set of rules for governing new projects and teams. It is critical that the ePMO have a solid governance structure. The following must be determined:
 - ePMO organization and stakeholders.
 - ePMO interaction with company operations and development efforts.
 - Who will oversee the ePMO?
 6. **Mandate process.** For ePMO implementation to be successful, it is essential for processes to be well enforced. This is often the most difficult part of implementing an ePMO. In order for process mandating to occur, stakeholders must pre-determine the following:
 - Effective means of communication of project best practices, impacts, and issue resolution.

Building a Project Management Office (PMO)

- Methods for identifying risks and mitigation strategies, as well as overall risk management.
 - Reporting structure, delivery, and organization.
 - Processes and/or software requirements for status and reporting.
7. **Manage change.** In order to obtain support, it is important to effectively manage change. To do so:
- Plan future changes broadly.
 - Describe the change process to all the people involved and why the changes are occurring.
 - Design the enterprise to effectively implement change by:
 - Establishing forums and communicating methods to enable immediate review and decision-making.
 - Empower people to make decisions through the delegation of responsibilities and power as much as possible. At the very least, encourage people to make recommendations based on upcoming decisions.
 - Provide support and include employees in the change process whenever possible.
 - Be prepared to be tough when employees are resistant to change.
 - Implement a Change Management policy.

Bottom Line

It is necessary for organizations to efficiently track and manage company-wide IT projects: ad-hoc project management (PM) is the way of the past. Determine enterprise need and then take the essential steps to implementing a successful centralized enterprise Project Management Office (ePMO) to reap the benefits of being on time, within budget, and well-organized.

Enterprise Project Management Office Goals:

- Create and maintain a consistent world class project management methodology and process for all project management engagements across the company.
- Train, certify if possible, coach, and mentor project managers in not only project management, but also project delivery to ensure skill mastery and consistency in planning and execution.
- Manage corporate and project priorities matching business goals with appropriate technology solutions and provide increased resource utilization across the organization matching skills to project needs.
- Provide centralized control, coordination, and reporting of scope, change, cost, risk, and quality across all projects.
- Increase collaboration across projects.
- Reduce project costs because common tasks and redundant projects could be eliminated or managed at the central level.
- Reduce corporate project risk.

CHAPTER 4 – BUILDING THE PMO



Building a Project Management Office (PMO)

Enterprise PMO Advantages

Designing and implementing solutions and services in today's environment or even managing change in today's environment is more complex than ever before. With multiple hardware and software vendors, as well as a diverse range of partnerships and alliances, today's infrastructure landscape is as complex as it has ever been.

Trying to manage projects for multiple divisions or groups adds more complexity to the management team. Unresolved issues, lack of consistent training, or miscommunications can delay projects for weeks and months and can turn into lost revenue, a lost competitive advantage, and an unhappy client.

A dedicated enterprise Project Management Office provides the oversight (***refer to ePMO Staffing Chart next page***) to deliver all projects on time and on budget by managing, controlling and reporting on all project schedules, scope, and resources while watching the cost, change, and quality. The ePMO provides expertise tailored to our business requirements while taking responsibility for all projects included in our portfolio. An enterprise Project Management Office provides the extra focus and resources that complex projects demand.

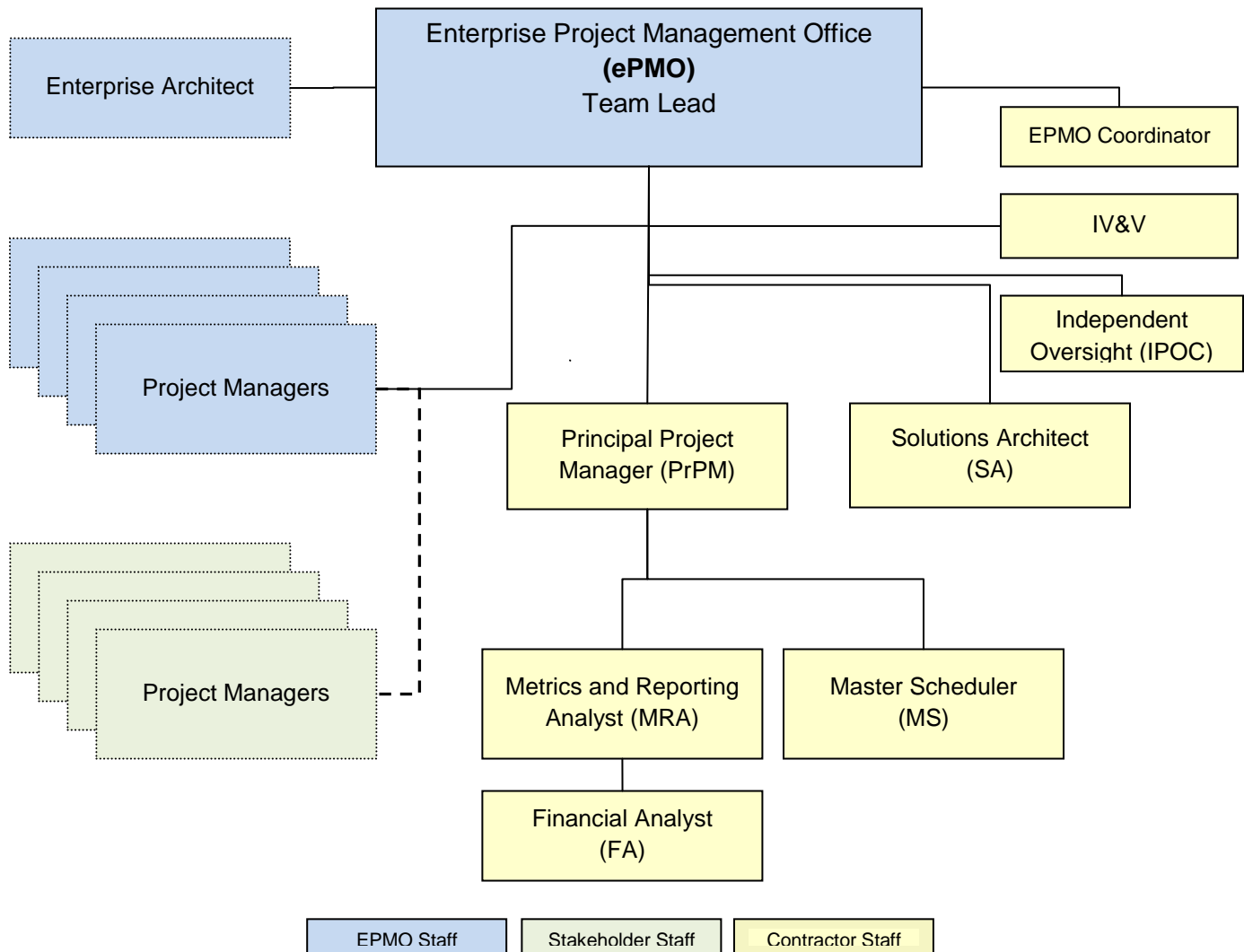
The focus of the ePMO is to provide a conduit for communication, coordination, and training for all projects in the corporate portfolio and be the center of excellence that supports project managers in the implementation of the functions required to achieve successful projects.

The ePMO is staffed by project professionals with the goal of providing support to project teams to consolidate project resource plans, financials reporting, project schedules, change, risk and quality information to deliver projects on time and on budget.

Note: *The ePMO Staffing Chart sited on the next page is an example from an actual Federal agency that the author developed and implemented in 2010, which was based on the organization's project management maturity level and available qualified Federal employees to support the ePMO mission.*

Building a Project Management Office (PMO)

ePMO IT Staffing Chart



The ePMO Role

The ePMO offers project management tools, support, mentoring, project portfolio management, and quality assurance. The ePMO provides economies of scale not found in a single project team and offers a single point of contact for all information on the projects in the corporate portfolio. The ePMO keeps critical projects on time and within the budget by providing accountability and support at every stage, from planning to acceptance. The ePMO identifies and resolves issues before they add time to already short time to market pressures. The ePMO provides expertise tailored to business requirements along with the extra focus and resources that complex projects demand maintaining project momentum by contributing in these areas:

- **Consolidated Administrative Support** – ePMO personnel can make the lives of project team members easier by assuming administrative chores for project scheduling, report production and distribution, project management software operation, and maintaining the

Building a Project Management Office (PMO)

physical or virtual project "War Room" along with project documents or ensuring document consistency. The ePMO receives, consolidates, and distributes information for all projects in the corporate portfolio.

- **Providing Project Management Consulting, Mentoring, and Training** – The personnel will oversee the operations of each individual project and project manager; offering mentoring, support, and training as needed. Advanced training can be coordinated or provided by the ePMO and each project will undergo periodic Quality Assessment Reviews during project milestones and at closeout. The ePMO can coordinate with a project management-training provider to certify Project Managers.
- **Resource Allocation** – With limited resources, it is critical to have the right people at the right place doing the right jobs. The ePMO is in a position to assign the project managers and project team members to match project needs with specialized skills, availability, and geographic needs as well as balance the workload of project managers and project team members. By doing so, the ePMO ensures resources are being used efficiently throughout all projects.
- **Project Coordination** – Using corporate objectives as a guideline, the ePMO will coordinate across departments and divisions to communicate project charters and ensure duplicate projects are not initiated.
- **Vendor Management** – Many details need special attention when purchasing hardware, software, and services from any vendor. The ePMO provides objective accountability to identify and resolve issues that can delay the specification and delivery of the right equipment to the right place at the right time. The ePMO has the authority to hire and fire contractors, assign the contractors to particular projects, and manage contractor issues centrally.

Formation of an Enterprise Project Office

In a number of cases, the ePMO is both a physical location and project personnel. To start an ePMO, the company officer responsible for project delivery, will have to select an individual or individuals capable of:

- Creating and maintaining a consistent project management process, methodology, and templates.
- Training, mentoring, and coaching project managers.
- Managing, coordinating, and communicating on all levels of project delivery with multiple projects at the same time.
- Tracking and reporting project portfolio information to the corporation.

Refer to enterprise PMO Implementation Plan next page or [Download](#) the PowerPoint document.

Building a Project Management Office (PMO)

Enterprise PMO Implementation Plan



PHASE ONE

STEP	TASK	DETAIL	RESULTS
1	Project Planning & Initiation		Project Plan & Schedule
2	Assess Current Environment	Resource (Staff, Skill set, Funding, Project Tools) Org. Readiness (Culture, Org. Support) Governance & Escalation Mode	Strengths, Weaknesses, Opportunities, Threats, Analysis
3	Establish Vision & Mission	PMO Mandates PMO Policy & Direction Critical Success Factors PMO Models	Consensus, PMO Vision & Mission
4	Establish Goals & Objectives		Consensus, PMO Vision & Mission
5	Develop Business Case	High Level PMO Requirements	Business Case Document



PHASE TWO

STEP	TASK	DETAIL	RESULTS
1	Define Org. Structure Staffing Req.	Roles & Responsibilities Identify PMO Lifecycle Framework Identify PMO Process Domains	Org. Structure
2	Facilitate Supporting IT Governance & Escalation Structure	Integrate PMO with Current Governance Processes Facilitate Buy-In Consensus	Update IT Governance & Escalation Structure
3	Define Project Management Methodology Framework	Define PMO Lifecycle	Project Management Methodology Framework
4	Establish Goals & Objectives		PMO Processes & Supporting Documentation
5	Establish Review Process & Performance Metrics	Balance Scorecard, 360 Feedback, etc.	PMO Review Metrics
6	Develop Training Requirements	PM Training & Certification Coaching Skills Development Sourcing & Relationship Management Skills	Training Requirements



PHASE THREE

STEP	TASK	DETAIL	RESULTS
1	Develop Deployment Plan	Schedule Resources Costs	PMO Operations
2	Deploy PMO	Acquire / Develop PM Methodology Add PMO Staff Pilot PMO	Program Assessments Semi-Annual PMO Review


Building a Project Management Office (PMO)

Formation of an Enterprise Project Office (ePMO)

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- Managing, coordinating, and communicating on all levels of project delivery with multiple projects at the same time.
- Tracking and reporting project portfolio information to the corporation.

Steps for Enterprise Project Management Office Creation



STEP	TASK	DETAIL	RESULTS
1	Project Planning & Initiation		Project Plan & Schedule
2	Assess Current Environment	Resource (Staff, Skill set, Funding, Project Tools) Org. Readiness (Culture, Org. Support) Governance & Escalation Mode	Strengths, Weaknesses, Opportunities, Threats, Analysis
3	Establish Vision & Mission	PMO Mandates PMO Policy & Direction Critical Success Factors PMO Models	Consensus, PMO Vision & Mission
4	Establish Goals & Objectives		Consensus, PMO Vision & Mission
5	Develop Business Case	High Level PMO Requirements	Business Case Document

Phase One – Plan

1. Purpose and Goals: What is the PMO's fundamental purpose and goals? A simple statement of purpose and goals should serve as a guide for the PMO team and as a core communications platform to stakeholders.

Potential goals include:

- a) Better alignment of project activity and business strategy and investments
- b) Implement a more consistent project management process and methodology
- c) Facilitate better collaboration and knowledge and best-practice sharing
- d) Ensure resource pool is trained and competent to meet evolving IT and business needs
- e) Better manage resource utilization and capacity
- f) Provide executive visibility to project, program and portfolio-level status, issues, risks, costs, etc.

Building a Project Management Office (PMO)

2. **Scope & Maturity:** What is the scope of the PMO based on organization needs and target organizational maturity?
3. **Service Offering:** What core services will the PMO provide and how will success/value be measured?
4. **Service Metrics:** Define a FEW metrics you can actually measure and then a few you can grow into in the future.
5. **Business Processes:** Define the business processes your PMO will support.
 - a) Processes may include change management, issues management, risk management, quality management, financial management, and resource management. Other processes include information gathering and reporting (don't forget a communications plan).
6. **Governance, Stakeholders & Team Structure**
 - a) Identify direct reporting relationship and dotted-line sponsors/champions (i.e. PMO customers)
 - b) Define organizational structure and responsibilities
 - c) Solicit and track stakeholder agreement
7. **Timeline/Milestones**
8. **Create a project Charter Document** (summary of above), a [PMO Charter](#) and sample [PMO Charter with Instructions](#). It is critical to be very clear concerning the purpose and goals of any PMO. This should not be taken for granted and the specific charter for the PMO must be documented and agreed by stakeholders. What is the authority of the PMO? What is it expected to accomplish, exactly? How will it be measured and by what process?

IMPORTANT THINGS TO NOTE:

Understand the scope to be delivered at the end. Working with the executive to build the PMO Charter will start you off on solid footing. You should include 'what' the PMO will be responsible for. Will it be an administrative PMO; governance PMO, a delivery PMO, or a strategic PMO? Once you understand what role the PMO will play in the organization, you can determine the PMO processes and best practices. (Do not confuse PMO process with methodology, they are not the same). Remember a process defines the activities and tasks to get the work done and provides the systems, tools and templates and the knowledge required to complete them.

The next step would be the training to assist in the understanding of the processes. Now that there is an understanding of the PMO processes and people are trained on how to use them, the PMO can now look for tools. I mention tools here because in my experience not one tool meets the complete needs of a PMO.

Now to staff the organization. Base your staffing on the goals that the PMO would like to achieve and the type of PMO that has been defined. After several months, do an interim assessment to understand if your model needs some tweaking to ensure that you will meet your goals defined in the PMO Charter.

As you can see, when you implement a PMO it is not something that can take place overnight. Getting the leadership to understand that fact is usually a hard pill for them to swallow. They want to be executing ASAP. If that is the case, it will be done haphazardly. Rather than meeting the needs of the business, the PMO will be seen as ineffective and in jeopardy of being considered a failure.

Building a Project Management Office (PMO)

Phase Two – Implement



STEP	TASK	DETAIL	RESULTS
1	Define Org. Structure Staffing Req.	Roles & Responsibilities Identify PMO Lifecycle Framework Identify PMO Process Domains	Org. Structure
2	Facilitate Supporting Governance & Escalation Structure	Integrate PMO with Current Governance Processes Facilitate Buy-In Consensus	Update IT Governance & Escalation Structure
3	Define Project Management Methodology Framework	Define PMO Lifecycle	Project Management Methodology Framework
4	Establish Goals & Objectives		PMO Processes & Supporting Documentation
5	Establish Review Process & Performance Metrics	Balance Scorecard, 360 Feedback, etc.	PMO Review Metrics
6	Develop Training Requirements	PM Training & Certification Coaching Skills Development Sourcing & Relationship Management Skills	Training Requirements

Building a Project Management Office (PMO)

9. Job Descriptions & Hiring
 - a) **PMO Director:** Sets strategic direction. Defines, manages to and reports KPIs. Creates and maintains tool, template, best-practice and methodology documentation
 - b) **PM Manager/Support:** Manages the PM resources and provides PM coaching and mentoring. May serve as PM resource for strategic projects. Tracks organization-wide resource capacity and utilization recommending optimal allocation.
 - c) **Training/Professional Development Manager:** Assesses organizational and individual competency levels and skills to determine needs. Designs and delivers curriculum/service offering and certification program.
 - d) **PMO Analyst:** Maintains PMO dashboard and reports. Assists project teams with reporting and tracking. Provides systems support and administration (project inventory database, knowledge repository, collaboration platform, etc.).

10. Project Portfolio Inventory & Analysis
 - a) **For every active and proposed project, the PMO should gather:**
 - i. Project Name, Description and Scope
 - ii. Alignment (BU, program, portfolio, strategy, etc.)
 - iii. Project Type
 - iv. Project Personnel (PM, project sponsor, project team)
 - v. Requestor and Internal Priority
 - vi. Dates
 - vii. Financials (budget, costs, ROI, approved changes)
 - viii. Outstanding Issues

11. Methodology and Standards Definition

12. Skills Assessment and Development
 - a) **Potential PM skills assessment and development plan actions:**
 - i. Assess current project delivery skills
 - ii. Implement training and development plan in coordination with functional/resource managers
 - iii. Track training in PPM solution
 - iv. Implement PM certification program (optional)
 - v. Develop feedback system to assess training effectiveness
 - vi. All or some of above may be outsourced

13. PPM Solution Plan
 - a) Evaluate and select a PPM system in consultation with stakeholders
 - b) Offer Solution training to everyone including the project management process
 - c) **Example requirements:**
 - i. Portfolio Dashboard with Project Health/Status
 - ii. Portfolio Alignment
 - iii. Rollups and Variances
 - iv. Easy integration with installed systems
 - v. Integrated knowledge base for best practices, tools and training docs
 - vi. Training

Building a Project Management Office (PMO)

Phase Three – Manage

PHASE THREE



STEP	TASK	DETAIL	RESULTS
1	Develop Deployment Plan	Schedule Resources Costs	PMO Operations
2	Deploy PMO	Acquire / Develop PM Methodology Add PMO Staff Pilot PMO	Program Assessments Semi-Annual PMO Review

Building a Project Management Office (PMO)

14. Project Reviews: **Conduct periodic project and program reviews that focus on:**
 - a) For Projects
 - i. Consistent project planning, delivery and reporting
 - ii. Ensuring the project is focused on scope and objectives
 - iii. Task assignment and reporting process and results
 - iv. Issues and changes
 - v. Project communication effectiveness
 - b) For programs
 - i. Master schedule and rollup of issues/costs
 - ii. Project dependencies being met and reported
 - c) For both:
 - i. Assess team skills and offer training as needed
15. Project Management and Monitoring for: Issues, Risks, Costs, Resources, Quality, Time, and Change
 - a) Monitor / Detect
 - b) Qualify / Quantify
 - c) Communicate / Escalate
 - d) Resolve / Mitigate
16. Working with Governance
 - a) The PMO should stand ready to make project recommendations in the following areas:
 - i. Retaining
 - ii. Consolidating
 - iii. Reprioritizing and shifting project resources
 - iv. Killing projects based on metrics, duplications, alignment with corporate initiatives, revenue, and project resource availability
17. Re-Validation with Senior Leadership
 - a) **Questions the PMO should be able to periodically answer:**
 - i. Are we providing value?
 - ii. Are any changes needed?
 - iii. Have we driven our organizations maturity to the next level?
 - iv. Can we answer the critical questions?
 - Are we doing the right projects?
 - Do we know the current status of all projects?
 - Are we managing, escalating, and resolving project Issues?
 - Do PMs have the right training?
 - What is our overall resource utilization?
18. Maturity Assessment and Development:
 - a. Assess your current PMO maturity and where you want your future PMO maturity
 - b. Perform gap analysis
 - c. Create a roadmap for improvement
19. **Get Started!**

Building a Project Management Office (PMO)

Alternative Steps for Starting a PMO

STEP 1 (1-3 months)

- Meet with Governance or the Project Steering Committee to craft a PMO Director or PMO Manager's position description.
- Hire the right people

STEP 2 (3-5 weeks)

- Hold PMO Planning session to discuss PMO Roles, assign committee chairs, discuss deliverables, and timeframes.

STEP 3 (10 weeks)

Project Inventory Focus (or Committee):

- Initiate a review of current projects by segmentation: by Division, by Project Management Office, by Initiative, by department or division, etc.
- In this age of electronic communications, establishing a physical project office will not move your company ahead. You need to establish a collaborative workspace, a Virtual PMO to allow your management, stakeholders, project team members, and clients to stay informed and connected with project information in real time.

Gather:

- Project Number (if present)
- Project Name
- Project Description
- Business Initiative Alignment
- Internal or External
- Division
- Department
- Project Type (Application Development, Infrastructure, etc.)
- Project Manager
- Project Sponsor
- Requestor and Internal Priority
- Start Date
- Estimated End Date
- Actual End Date
- Percent Complete to date
- Estimated Budget (Planned Value or Cost Forecast)
- Actual Cost (AC) to date (may be estimated)
- Estimated Risk (H, M, L)
- Customer Impact/Benefit
- Investment Type (Expense, Capital, etc.)

Calculate:

- Estimated ROI or Revenue
- Earned Value (Performance Index)
 - Schedule Variance (SPI)

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- Cost Variance (CPI)

If possible, use Project Portfolio Management (PPM) Tool to Present:

- Project Health or Status
- Portfolio Alignment (by Initiative, Goal, LOB, Department, Division, etc.)
- Project Variances (Costs, Resources, Scope, Change, Schedule, etc.)

Project Development/Training Focus (or Committee):

- Define Roles and Responsibilities (Project Review Boards, Project Governance Committee, Project Office Personnel, Project Managers, Project Coordinators)
- Create Job Descriptions
- Create Career Paths
- Designate individuals per identified roles
- Create Project Management Methodology, Templates, and Toolkits by project phases

Project Tools Focus (or Committee):

Create Tools Requirements for

- Project Management Tool
- Project Portfolio Management Tool
- Project Portfolio Scorecard
- Evaluate tools and make recommendations for solutions.

HARD RULE: Tools MUST work together and training MUST be a part of solution.

Alternate STEP 3 (6 Weeks)

Project Inventory and Governance Focus (or Committees):

- Make recommendations for retaining, consolidating, shifting project resources, or killing projects based on metrics, duplications, alignment with corporate initiatives, revenue, and project resource availability.

Project Development/Training Focus (or Committee):

- Create training plan with outlined courses and course progression toward company project management training and certification if desired
- Ensure every project manager has Development Plan in place for including company project management certification training
- Create company project management certification training tracking system to track and communicate training progression
- Develop feedback system to assess training effectiveness

STEP 4 – IMPLEMENTATION (3 months)

Development / Training

- Initiate company project management certification training
- Initiate PM Tool(s) training
- Bi-Weekly Report on training progress and student feedback
- Communicate PM Career path and post any open positions.

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Tools

- Execute PM Tool(s) installation
- Communicate installation progress and tools strategy

PMO

- Track active projects for PPM updates
- Offer coaching and mentoring for PMOs and projects without PMO coverage
- Offer PM Consulting with available resources

Building a Project Management Office (PMO)

PMO Maturity Levels

Maturity Level	Key Process Area Concentrations	Strategic Focus	Effective Span	Next Phase
<p><u>5</u></p> <p>Integrated</p> <p>(Strategic Alignment – World Class PMO)</p>	<ul style="list-style-type: none"> Value, Procurement, Outsourcing, and Contract Management Business Continuity Planning PM Center of Excellence 	Integration with Business	Enterprise / Industry – Strategy Execution	A whole new paradigm for Enterprise PPM and governance is invented.
<p><u>4</u></p> <p>Managed</p> <p>(Business Maturity – Advanced PMO)</p>	<ul style="list-style-type: none"> Program Process, Vendor, Project Integration, and Staff Performance Management PM Career Path Best practices dissemination Enterprise-wide resource planning/mgmt 	Dynamic Micro-Level Change, Continuous improvement	Multiple business units – Strategic Alignment	Project success is the norm and little PMO resource goes to crisis management. PMO established as focal point for optimizing project execution performance enterprise-wide
<p><u>3</u></p> <p>Defined</p> <p>(Process Support – Standard PMO)</p>	<ul style="list-style-type: none"> PM Methodology Skills, Risk, Staff/Environment Resource, Change, Conflict/Issue Management PM Training and Consulting Knowledge Management 	Static Macro-Level Change	Multiple Programs or Portfolios	PMO viewed as an important link between project/program delivery and the business. PMO takes lead in objective setting and performance monitoring.
<p><u>2</u></p> <p>Stable</p> <p>(Process Control – Basic PMO)</p>	<ul style="list-style-type: none"> Planning, Tracking, Estimating, Risk Identification, Schedule, Scope, Budget/Cost, and Progress Reporting Skills 	Stabilize Performance, Standardize processes	Multiple Projects (Program)	PMO now viewed as Program Management Office
<p><u>1</u></p> <p>Initial</p> <p>(Project Oversight – Project Office)</p>	<ul style="list-style-type: none"> Basic tools/techniques, methodologies, services, roles, standards established (underlying disciplines may not be understood or consistently followed) 	Success Stories, Low-hanging fruit	Individual Projects	Start to see initial “pull” for PMO services and info.

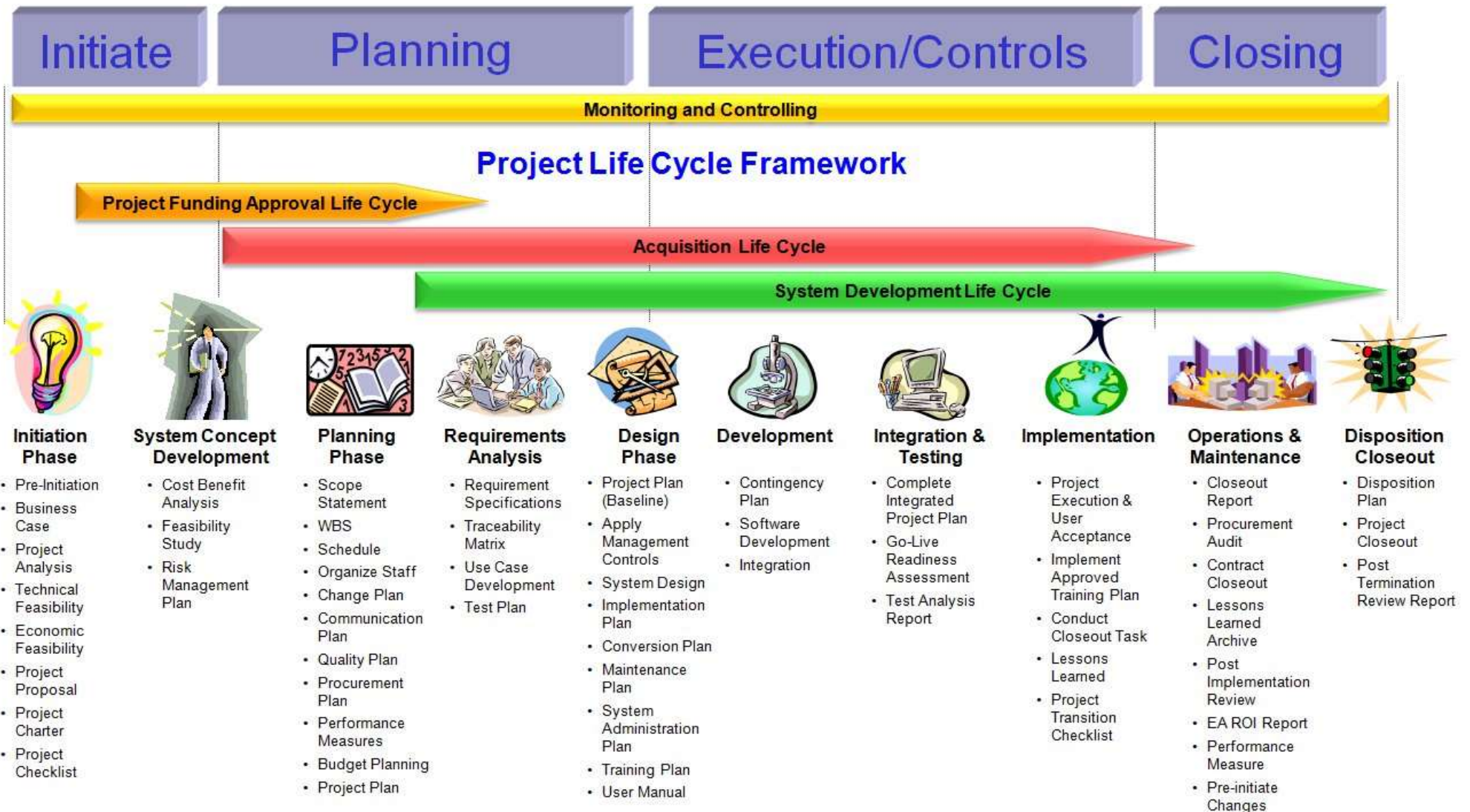
CHAPTER 5 – PMO METHODOLOGY



Building a Project Management Office (PMO)

The Project Life Cycle Framework (PLCF) Flow Chart

Now you're ready to start developing your PMO's methodologies and life cycle framework as identified in the illustration below.



Building a Project Management Office (PMO)

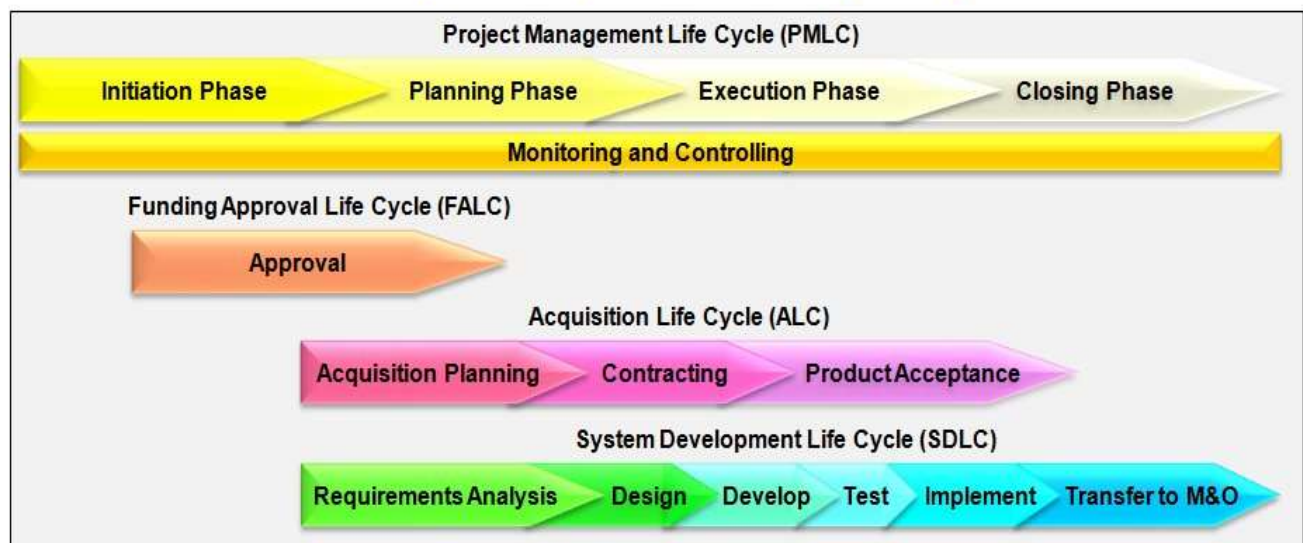
Project Life Cycle Framework Process

The Project Life Cycle Framework (PLCF) flow chart below leverages Project Management as the overarching process which coordinates the underlying life cycle processes of project funding approval, acquisition and system development. At various stages in the project life cycle, each of the underlying processes may occur and overlap with each other based on a variety of factors including organizational control requirements. Project approval and funding must be obtained prior to completion of the acquisition activities and before any activities begin during the system development phases.

These life cycle activities, while discrete, are often intertwined due to certain dependencies on each other. The exact timing of these activities will be based on organizational, project, and control organizational requirements.

In this PLCF flow chart below includes the System Development Life Cycle (SDLC) to demonstrate how Information Technology projects integrate into the project's life cycle.

Project Life Cycle Framework (PLCF)



Project Management Life Cycle

The Project Management Life Cycle (PMLC) is the overarching discipline used by the industry for the acquisition, and maintenance of software intensive systems covering the full range of life cycle activities from initiation to closeout.

- **Initiating:** In the Initiation phase the overall project parameters are defined, the Project Concept Statement and Project Charter are developed and approved to start the project.
- **Planning:** The Planning phase includes all the activities necessary for the project office to acquire the resources needed to establish the project staffing, project infrastructure and stakeholder accountability, along with all the project plans.

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- **Executing:** During this phase, the project office executes all of the plans, processes, and procedures summarized and referenced in the Project Management Plan with particular attention to the production and quality of deliverables.
- **Monitoring & Controlling:** This activity occurs during all phases of the project and includes: monitoring of resources, quality, risks and issues, schedule, costs, requirements status, and overall project status.
- **Closing:** The closeout phase includes all the activities necessary for the project office to bring closure to the project effort, either upon system acceptance and transfer to its support organization, or upon system retirement or replacement.

Funding Approval Life Cycle

The project Funding Approval Life Cycle (FALC) describes the process by which departments receive authorization to undertake a Project. The purpose of this process is to establish the business case for the investment of resources in the project and to analyze and justify its costs and benefits. The approach will vary depending upon whether it is federal funding or a cooperative agreement is requested, both of which require the creation of specific project and funding approval documents. Control organization project and funding approval must be received before beginning work on the project or expending any funds.

Acquisition Life Cycle

The Acquisition Life Cycle (ALC) begins with the decision to acquire a product/service. It includes all the activities necessary for the Project to solicit, evaluate, and award a contract to a vendor for a new/revised system after obtaining approvals and funding for development, implementation, and ongoing operations of the system.

Acquisition Planning: Planning begins when the need for a product is identified and ends when the Request for Proposal (RFP) is released.

- **Contracting:** The Contracting phase begins upon release of the RFP. It includes the evaluation of vendor proposals and ends in the selection of a vendor meeting the RFP requirements. The phase ends with execution of the contract.
- **Product Acceptance:** This is the contract management phase. The vendor's efforts are monitored to ensure compliance with contract requirements and product acceptance criteria. The phase ends when all contract terms are fulfilled.

System Development Life Cycle

The System Development Life Cycle (SDLC) is a framework used in project management that describes the stages involved in a system or software development project. The SDLC is a structured, integrated approach that is characterized by a sequence of phases in which each phase is incomplete until the appropriate deliverables are produced. This SDLC feature ensures a consistent approach and control throughout the system development project and includes six phases:

Building a Project Management Office (PMO)

- **Requirements Analysis:** The Requirements Analysis phase is focused on understanding and documenting the user's business needs to a level of sufficient detail to allow for system design.
- **Design:** The Design phase involves the interpretation of the system requirements identified in the analysis phase into a unified system design that describes the characteristics of the system to be built.
- **Development:** In the Development phase, the design specifications are transformed into a complete and integrated system. All system components are validated for compliance to requirements and design.
- **Test:** In the Test phase, the various components of the developed system are integrated and methodically tested to validate that all identified requirements have been satisfied prior to system implementation.
- **Implementation:** In the Implementation phase, the system is installed in the production environment and continues until the production system is operating in accordance with the requirements.
- **Transfer to M&O:** During the transition to Maintenance and Operations (M&O) phase, the production system is operational and the system operations are transitioned to the support organization for routine maintenance and performance monitoring.

PMM & SDLC Guide

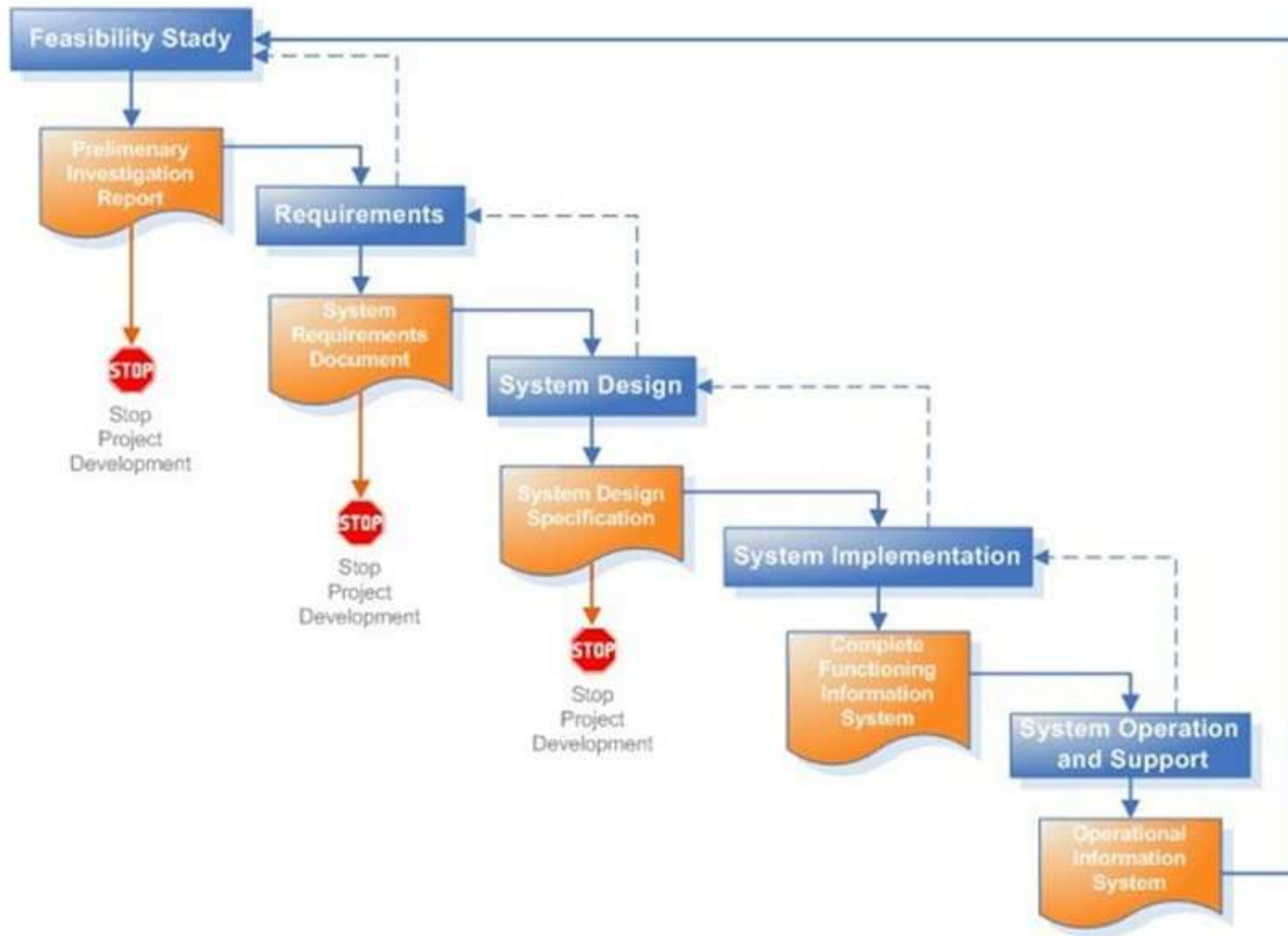
Project Management Methodology and System Development Life Cycle are two different aspects of managing a Software development project but they do have to work side by side to beget better results. Many people believe Project Management training to be a part of SDLC whereas some believe in vice versa. But the real scenario is totally different. Review this [guide](#) for additional information

For those involved in projects with SDLC processes, review the three most common SDLC practices on the following pages.

Three SDLC Process Models

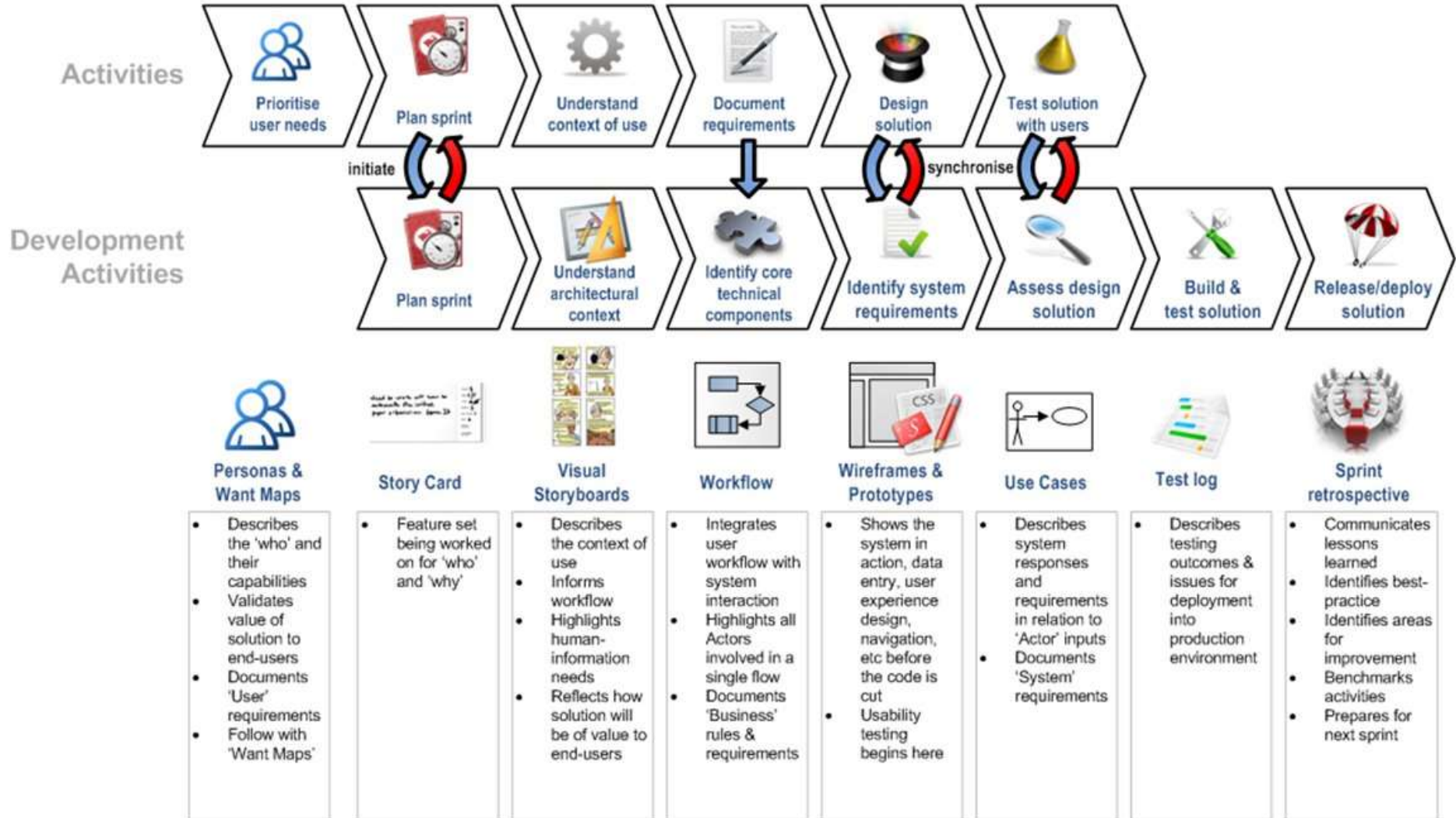
1. Waterfall Model
2. Agile Model
3. Scrum Sprint Model

SDLC – Waterfall Model



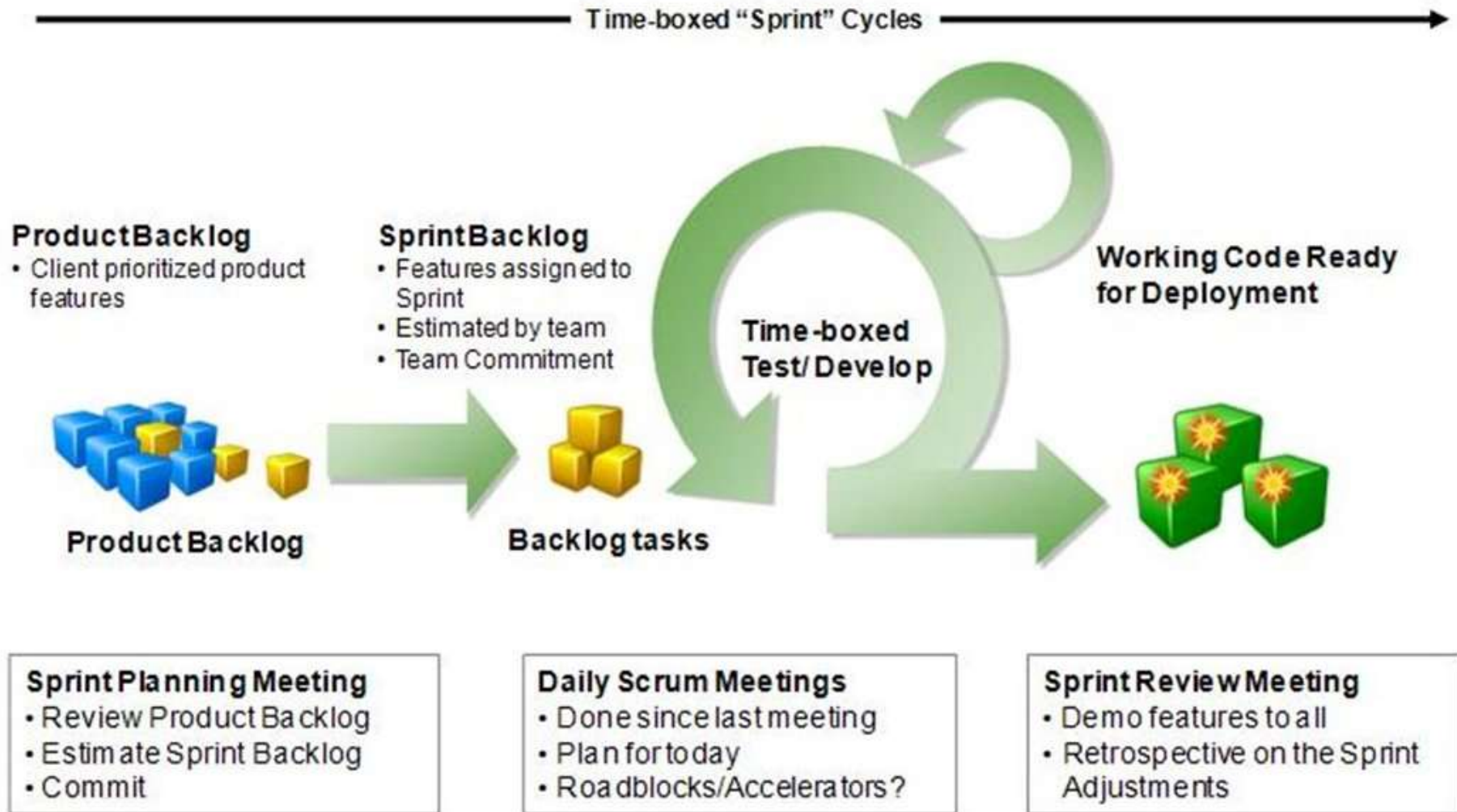
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SDLC – Agile Model



(Source unknown)

SDLC - Scrum Sprint Cycle Model



(Source unknown)

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The PLCF Process

To further expand on the Project Life Cycle Framework (PLCF) as depicted in **Chart 1** below, this provides a breakdown of the process subsets of the Project Management Life Cycle (PMLC).

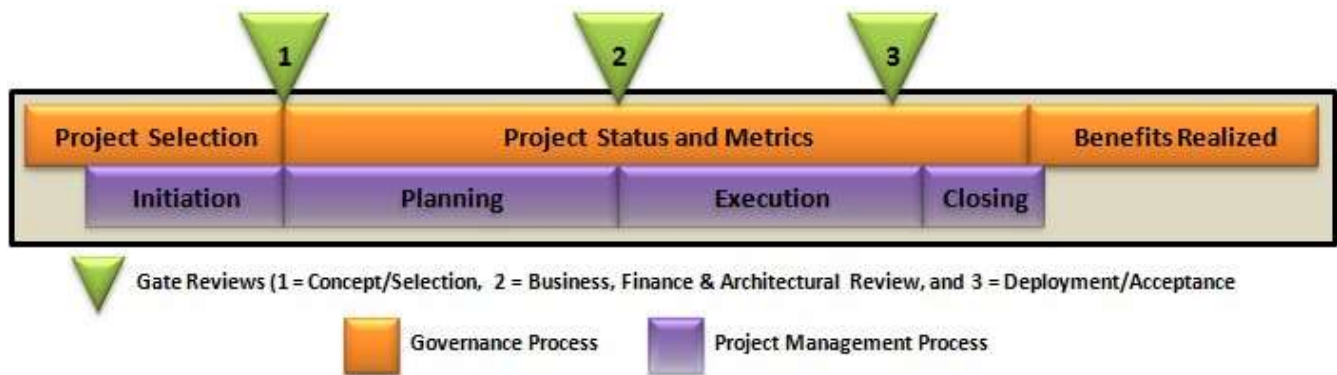


Chart 1- Project Management Life Cycle (PMLC)

The Project Management Life Cycle (PMLC) is the overarching discipline used for the selection, acquisition, and maintenance & operation of enterprise intensive systems covering the full range of life cycle activities from initiation to closeout and lessons learned.

Initiation: In the Initiation phase the overall project parameters are defined, the Project Concept Statement and Project Charter are developed and approved to start the project.

Planning: The Planning phase includes all the activities necessary for the project office to acquire the resources needed to establish the project staffing, project infrastructure and stakeholder accountability, along with all the project plans.

Execution and Control: During this phase, the project office executes all of the plans, processes, and procedures summarized and referenced in the Project Management Plan with particular attention to the production and quality of deliverables, and include monitoring of resources, quality, risks and issues, schedule, costs, requirements status, and overall project status.

Closing: The closeout phase includes all the activities necessary for the project office to bring closure to the project effort, either upon system acceptance and transfer to its support organization, or upon system retirement or replacement.

Lessons Learned: At the end of the each phase of the PMLC, a phase review is conducted and lessons learned are documented for future consideration.

Building a Project Management Office (PMO)

What is a Project?

Work generally involves either operations/process or projects.

A Project is defined as:

- Temporary endeavor undertaken to create a unique product or service
- Has a definite beginning and an end
- Uses resources
- Causes change
- Meets pre-established goals for cost, schedule, and quality

Operations or Process can be defined as (Chart 2):

- Ongoing and repetitive – normal business
- Sometimes the product of a project

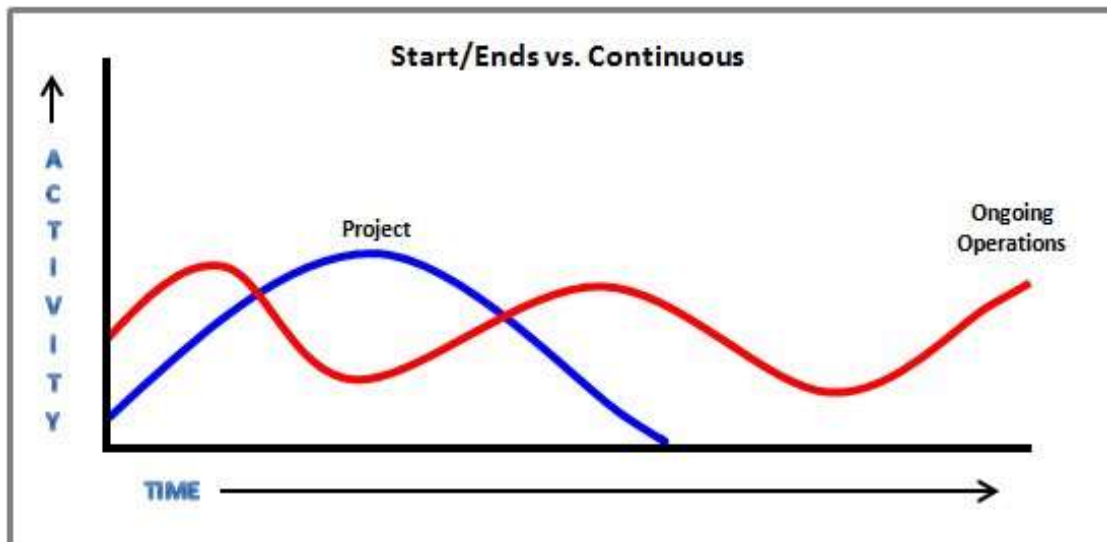


Chart 2

What is Project Management?

Project management is the application of **knowledge, skills, tools, and techniques** to project activities in order to meet or exceed project objectives while balancing competing demands among:

- Factors such as Scope, Schedule, Resources, Cost, Risk, Quality and Change
- Stakeholders with differing identified requirements (needs) and unidentified requirements (expectations)

Building a Project Management Office (PMO)

Project Roles and Responsibilities

People involved with projects can have various and even multiple roles noted below.

- **Customer or Client** – The person or group that causes the project to start because of a need, funds the project effort, and accepts the project when it is completed.
- **Project Stakeholder** – Anyone who will be participating in, has influence over, or is affected by, the project results.
- **Governance Committee** – An executive committee chartered with selecting projects for initiation, monitoring project progress to ensure they are addressing stated goals, and following up after project completion to gather and report on the actual versus projected project return on investment and customer satisfaction.
- **Project Sponsor** – Typically an executive or a member of the top management team having the greatest investment in the project and who represents the project at corporate level with ultimate ownership of the project. On the customer side, the Project Sponsor provides the financial resources for the project. For the performing organization, the Project Sponsor:
 - Is an advocate for required resources?
 - Helps the project manager overcome organizational conflicts and barriers to project performance.
 - Ensure timely decision making and issue escalation.
 - Appoints and coaches coach the project manager as needed.
 - Provide guidance in key decisions and influence key stakeholder groups.
 - Provides project oversight and review.
- **Project Manager** – A good project manager is like a good orchestra conductor. The conductor brings together all the diverse talents of the orchestra members (project team members) with their variety of instruments and talents to create beautiful music (deliver the project on time and on budget). The project manager:
 - Is appointed by Business Partner, Project Sponsor, or the Governance Committee to lead the project.
 - Is the individual responsible for managing the project through planning, organizing, managing and leading?
 - Controls project scope, schedules, resources, quality, costs, and change.
 - Enables others to do their job by acting as conduit for information and activities.
 - Interfaces with the customer as the primary contact.
 - As the project team members are specialists in their respective fields, it is key to remember the project manager is also a specialist in his/her field: project management.

Building a Project Management Office (PMO)

- **Project Team Members** – Possess unique skills needed to perform project activities under the management of the project manager to produce project deliverables.
- **Project Team Lead** – Project team members leading sub-teams to create deliverables of a project (business, technical, financial, etc.); while taking direction from the project manager.

Project Controls

The focus of Project Management = Control + Communications + Documentation as illustrated in (Chart 3) below.



Chart 3 - Project Controls

- The project manager controls:
 - Scope by working with the client to define the scope and objectives of the project and managing to those definitions during the project implementation.
 - Costs by managing the project budget.
- Resources by organizing and managing schedules according to project objectives.
 - Risks through risk identification and mitigation.
 - Changes through change control process.
- The project managers must also manage work relationships through motivation, delegation, supervision, team building, conflict management, and other techniques.
- The project manager that uses General Management skills provide much of the foundation for building project management skills.

Communications

- Communications skills are used to exchange information.

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- The sender is responsible for making the information clear, unambiguous, and complete so that the receiver can receive it correctly and confirm it is properly understood.
- The receiver is responsible for making sure that the information is received in its entirety and understood correctly.
- Stress how Project communications is critical and what aspects it takes on.

Documentation

- Another aspect of communications is Documentation.
- Unless you're like wife and have a photographic memory, then "write it down" all the time.
- The need for documentation during the life of a project cannot be stressed too much.
- The more times you can document a conversation, a process, a plan, a schedule; and have it validated by other team members or a client, the more you will be seen to be organized and in control of the project.

Duties of the Project Manager

- All meetings require a Meeting Report to be completed and filed in the project workspace.
- Manages Change Control, Issues escalation and resolution, Schedule, Costs, and Resources.
- Manages the collaborative project workspace environment for the program or project and updates the workspace on a timely basis.
- Responsible for having most current project documents.
- Conducts team building and team development activities.
- Establishes reward and recognition systems.
- Monitors & acknowledges performance.
- Increases team member proximity if possible.
- Provides coaching, mentoring, and assistance to team members as needed.
- Works closely with functional managers to resolve team members' workload conflicts.
- Ensures needed training is provided to accomplish project objectives.
- Identify and resolve conflicts.

Duties of the Project Team

- Implement project activities outlined in Project Management Plan, Project Schedule, and Project Design under management of Project Manager.
- Create and update project documents as called for and ensure all documents are posted to the project workspace while being created or complete.
- Distribute documents per the Communications Plan.
- Keep Project Manager and other management informed of all project activities and issues.
- All project team members responsible for having most current project documents from the project workspace.
- Finish timecards on timely basis to provide time information for Status Report and Cost Report.

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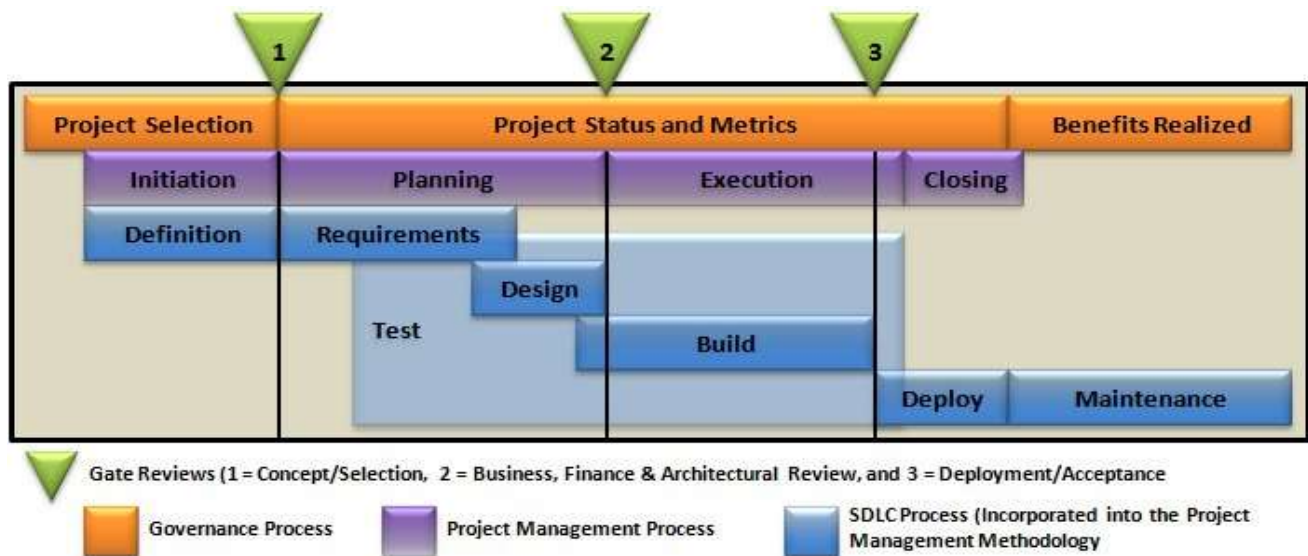


Chart 4 - Project Life Cycle with SDLC Process

Gate Reviews

A Gate Review provides a mechanism for management review and approval of project deliverables, artifacts, and milestones and the approval for the project to move to the next phase or stage or to deem the project is worthy of continuation and the associated risks are manageable. It also provides a framework for better project management and to provide correct and relevant information for business decisions.

Gate Review Board (GRB) Process



One of the best practices for effective gate review management is to provide a checklist of phase deliverables/milestones to your Gate Review Board (GRB) at a set time prior to the gate review. The GRB members are asked to review the project deliverables and other items on the checklist for compliance to process and company standards and make comments or approve as needed. The goal is to come to the Gate Review meeting prepared to vote with minimal discussion. Each project review should be limited to 5 minutes to allow the GRB to do other duties during the meeting such as reviewing project prioritization and selection.

The GRB conducting the reviews usually stays constant across all projects to bring consistency to the review process and to maintain a comparative perspective among projects so they better recognize the good projects and the projects are in trouble. This multi-functional management team often consists of vice-president or director level personnel across multiple divisions or departments.

This team might be made up of the same members as the Product Steering Committee or Product Committee managing the development pipeline and establishing project priorities.

Phase Gate Review Meetings

The aims of a Gate review are to find an agreement between the project leader and the GRB on the deliverables and also to make a review of the gate criteria. Prior to the first Phase Gate Review, the GRB should agree on the necessary criteria to needed for approval to pass through a gate. If the criterion is not completely met, the project will not pass through the gate and will have to apply again to the GRB for approval.

The phase-gate review process and criteria should have well-defined and published. Each meeting should include an agenda, an attendee list, projects for review, issues for discussion, and any other items for discussion. The gate review for a project should be limited to 5 minutes with brief discussion and a vote. GRB members should come to the meeting ready to vote as they have already gone through all the project information.

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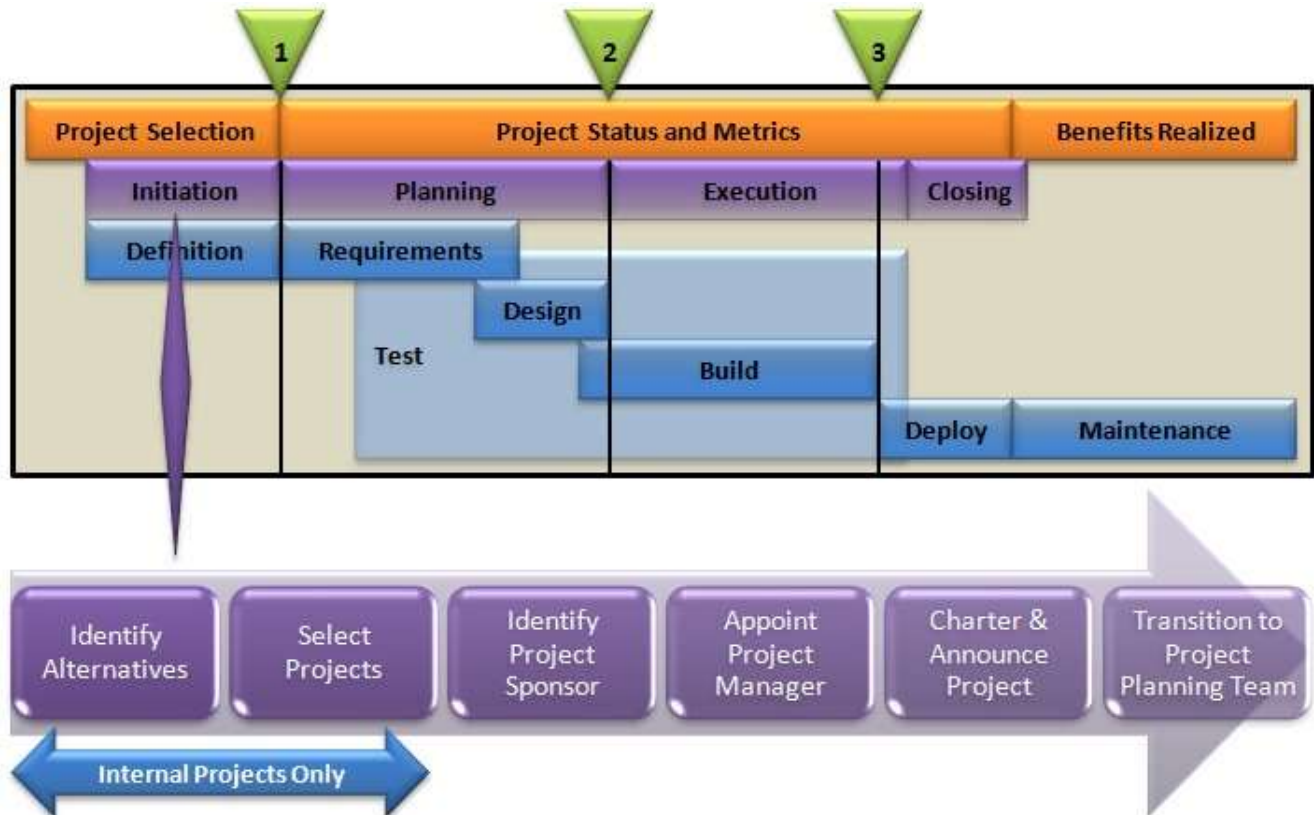


Chart 5 - Initiation Phase

During the Initiation Phase

The Initiation phase (Chart 5) includes all the activities necessary for the ePMO to define the system concept and obtain approval from CIO and Executive Steering Committee to start a new project. After the executive management and project stakeholders have approved the Project Concept Statement, the Project Sponsor assigns or hires a Project Manager. The Project Manager is responsible for the development of the Project Charter based on the approved Project Concept Statement. The Project Charter formally establishes a project and authorizes the Project Manager to use organizational resources to perform project activities.

Project initiation includes the following key elements:

- Identify Project Alternatives
- Select Projects
- Identify Project Sponsors
- Appoint Project Manager
- Develop Charter and Announce the Project
- Transition to Project Planning Team

Building a Project Management Office (PMO)

This phase is ***important*** because it lays the groundwork for the remaining project phases.

Inputs

- Company Initiatives and Goals
- Company needs
- Company Project Budget
- Concept Proposals and Justifications

Outputs

- Meeting Reports
- Project Charter
- Contact List
- Roles and Responsibilities

Steps

- Establish processes to define, analyze, prioritize, and approve a project before work can begin.
- Each new project begins with the creation of selection documents such as a Business Case, a Project Summary, a Concept Proposal, and the completion of the Project Prioritization Scoring Sheet.
- Once the project is approved, it is assigned a project sponsor, project manager, and is scheduled against all other active projects using resource and budget constraints.
- As the project moves to the next phase, a planning team is organized and the project is kicked off.

Building a Project Management Office (PMO)



Chart 6 - Initiation Phase - Alternatives

Identify Alternatives

Organizations are faced with constant challenges requiring difficult choices about alternative courses of action. Since each alternative will require the commitment of limited organizational resources, making an effective project selection decision requires the identification of the major competing alternatives. Examples of such alternatives include:

- Which product improvements must be implemented to achieve customer satisfaction and the greatest profits?
- Which new products and services are needed to achieve competitive advantage?
- Which organizational systems need to be re-engineered or upgraded to keep pace with escalating demands or improve efficiency?

Evaluating these alternatives is complicated by the diverse or even conflicting demands placed on decision makers by the various potential project stakeholders:

- One client may require the addition of a new product feature while another demands changes to the user interface
- Marketing may want to respond to competitive product features or process improvement while engineering feels strongly that a new product architecture or re-engineering should be a higher priority
- Finance may believe that product or process cost reduction should be the highest priority while the service department wants to improve process or product reliability.

These competing demands represent alternative projects from which the organization must choose before a project can be authorized and work begun. The collaborative nature of a project workspace can aid the committee while choosing the project alternatives by allowing them to discuss alternatives using the discussion area and even vote on alternatives using polls.

Steps

- Solicit input from stakeholders of relevant potential projects.
- Create a list of potential projects (Capital Planning or Capital Work Plan).
- Review list with stakeholders to ensure completeness (Steering Committee).

Templates

- Meeting Report
- Concept Proposal
- Project Summary
- Business Case

Owner of This Step

- Corporate Governance, Executive Committee, or Steering Committee.
- Other Corporate/Divisional/Department Management and other Resources as necessary.

Building a Project Management Office (PMO)



Chart 7 - Initiation Phase – Select Projects

Select Projects

An effective project selection process must be in place to ensure that:

- It is in alignment with the organization's strategy and plans.
- Key stakeholders are involved and buy into the resulting decisions.
- Selection decisions are made in a timely manner.

The key to effectively choosing among the various project alternatives is to first define the project selection or scoring criteria. Apply the criteria to all current and proposed projects so they can be objectively judged by representatives of the stakeholder groups according to its expected ability to satisfy project selection criteria. These criteria typically include such considerations as:

- The degree of strategic alignment
- Impact on the customer
- Impact on the business
- Cost of the project
- Resources needed for the project and their availability
- Financial return and other financial factors (ROI, Payback, etc.)
- Feasibility
- Alignment with Corporate/Division/Department Strategy
- Risk

A matrix can be constructed in which the alternatives can be evaluated against the defined criteria. Each alternative can be judged on a simple scale from low to high (1 = low, 2 = moderate, 3 = high) and totaled to determine its relative importance or priority to the organization.

There are a number of methods to help in selecting projects including Decision Models:

- Benefit measurement methods—comparative approaches, scoring models, benefit contribution, or economic models.
- Constrained optimization methods—mathematical models using linear, nonlinear, dynamic, integer, and multi-objective programming algorithms.

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Expert judgment will often be required to assess the inputs to this process. Such expertise may be provided by any group or individual with specialized knowledge or training and is available from many sources including:

- Other units within the performing organization
- Consultants
- Professional and technical associations
- Industry groups

Organizations are also challenged to respond more quickly to the constantly shrinking windows of opportunity for their new products, services, or improvements in operational efficiency. The advantages of entering the market before the competition include increased market share and profitability. The "gestation period" for evaluating, authorizing, and deploying new products often consumes a significant portion of the overall market window. Timeliness to market is directly impacted by the timeliness of the initiation process.

Steps

- Identify project selection criteria
- Ensure acceptance of criteria by potential project stakeholders (Governance)
- Create a project selection matrix. The matrix can be created and posted to the project workspace as a document for collaboration while it is being completed.
- Meet with stakeholders (Governance) to evaluate project alternatives
- Calculate the highest value project alternative
- Check for acceptance for the project selection decision from stakeholders

Templates

- [Concept Proposal](#)
- [Meeting Report](#)
- Project Summary
- [Business Case](#)

Owner of This Step

- Corporate Governance Committee.
- Other Corporate/Divisional/Department Management and other Resources as necessary.

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Chart 8 - Initiation Phase – Identify Project Sponsor

Identify Project Sponsor

Organizations attempt to accomplish many things at the same time with limited resources. Competing demands make it difficult for project teams to get management attention and commitment of resources needed for their projects to succeed.

The project sponsor is an executive or a member of the top management team with the following duties:

- Ensure timely decision making
- Advocate for needed resources
- Overcome organizational conflicts and barriers to project performance
- Responsible for appointing and coaching the project manager
- Ensure timely decision making and issue escalation
- Coach the project manager as needed
- Provide project oversight and review

Steps

- Identify the member of management, in the performing organization, with the greatest stake in the project outcome
- Make sure the candidate has a track record of success sponsoring similar projects
- Check with candidate to ensure availability and commitment to the project
- Get concurrence among members of the management team
- Announce sponsorship to key project stakeholders.

Templates

- [Meeting Report](#)

Owner of This Step

- Corporate Governance Committee.
- Other Corporate/Divisional/Department Management and other Resources as necessary.

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Chart 9 - Initiation Phase – Project Manager Selection

Appoint Project Manager

The Business Partner, Other Corporate/Divisional/Department Management, and Project Sponsor will appoint the project manager for the project as the date to start the project draws near. Key considerations in the decision include the candidates’:

- Technical and Integration skills
- Leadership ability
- Project management experience
- Knowledge of the organization
- Ability to gain the cooperation of key stakeholders

The Project Manager is held accountable for ensuring project success, leading the project team to achieve its objectives, ensuring effective communications with management and other non-project organizations, and ensuring that project problems are identified and resolved in a timely manner.

Steps

- Determine the qualifications needed to manage the project
- Identify potential candidates that meet the qualifications
- Check for potential availability with candidates’ management (if within the performing organization)
- Evaluate potential candidates based on their suitability
- Check for interest and commitment of the most suitable candidate
- Confirm selection with the candidate’s manager (if within the performing organization) announce project manager appointment to project stakeholders

Templates

- [Meeting Report](#)

Owner of This Step

- Project Sponsor
- Business Partner
- Other Corporate/Divisional/Department Management

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Chart 10 - Initiation Phase – Charter

Develop Charter and Announce the Project

The **purpose** of the project charter is to formally recognize the existence of a new project or the next phase of a project. Content and format guidelines for this document are prescribed by the organization's policy and vary from company to company. The initiation of the selected project is formally documented and communicated through the project charter and it provides the project manager with the authority to apply organizational resources to begin project activities. The project charter should be created by the Project Sponsor and Project Manager and issued to all affected organizations in the company to inform them of the start of a project. The distribution of the Project Charter paves the way for inter-organizational cooperation and should minimally take the form of a memo or e-mail from the project sponsor to everyone who will contribute to or be impacted by the project. Further, the project sponsor and project manager should meet directly with managers and key contributors in the affected organizations to obtain their personal support for the project.

Templates for the project charter may be standard to an organization and should include:

- The names of both the project manager and sponsor.
- A statement of the overall project purpose and the execution authorization.
- Specific management objectives for the project.
- An estimated duration of the project.
- The priority of the project relative to other organizational initiatives.
- The extent of and limits to the project manager's authority and accountability.
- A description of known assumptions and constraints, including expected completion time and resources limitations that may directly affect the project.

Steps

- Complete the Project Charter from the template.
- Identify all the stakeholders and organizations potentially affected by the project.
- Formally communicate the project authorization in writing or electronically.
- Follow-up by meeting with key project stakeholders in person to discuss expectations and concerns.

Templates

- [Project Charter](#)

Owner of This Step

- Project Sponsor with the Project Manager

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Chart 11 - Initiation Phase – Transitions

Transition to Project Planning Team

Before you gather the project requirements, you need to select project planning team members. Use the Concept Proposal, Business Case, and Project Summary to identify key individuals to gather requirements and plan the project during the Planning/Design Phase. After initial selection of the project team (further refinement of your needs will take place after the creation of the Project Schedule) hold a kick-off meeting to allow you to introduce team members, discuss the project overview, discuss project roles and responsibilities, and review any documentation created or collected to date. Identify any training needs during the meeting. The training will be scheduled and obtained at a later date.

If time allows, you might want to have team-building exercise such as an icebreaker, especially if the team has never worked together before.

Steps

- Identify preliminary skills needed for the project from the requirements gathering
- Select initial team
- Hold Project Kick-off Meeting
 - PM reviews use of, and expectations for the project collaboration workspace with the project team
 - PM reviews project roles and responsibilities
 - Review project objectives
 - Identify any training needed

Templates or Documents needed

- Meeting Report
- Concept Proposal
- Business Case
- Project Summary
- Training Plan

Owner of This Step

- Project Manager

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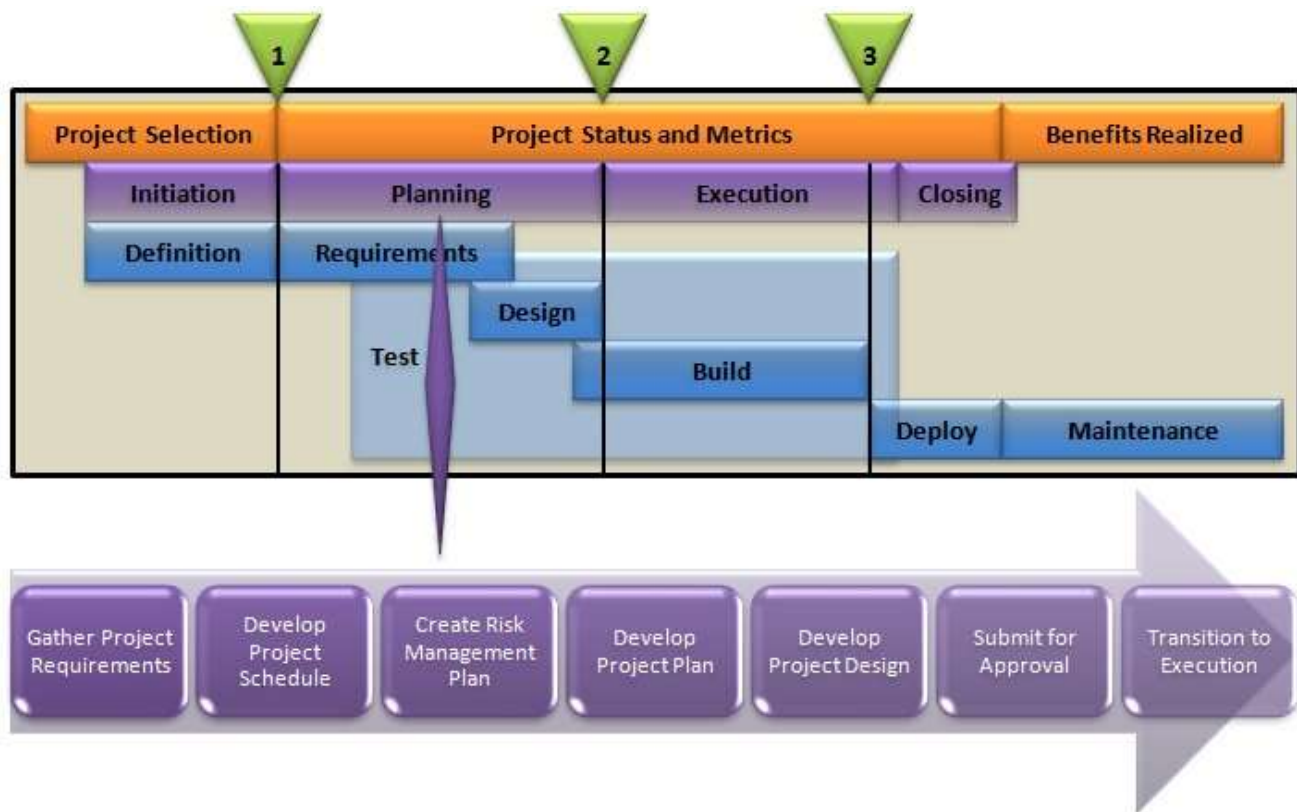


Chart 1 – Planning Phase

During the Planning Phase

Project planning phase is the process of defining an orderly arrangement of activities and resources to deliver a unique product or service. The project plan is the primary document developed during the planning phase and communicates project activities in terms of: what tasks will be performed; who will perform the tasks; when will the tasks be performed; what resources will be applied to accomplish the tasks; and how the tasks will be sequenced. Time spent developing the appropriate structure for organizing and managing project activities improves performance in the Execution and Control Phase. The Project Planning Phase begins after approval of the project charter and concludes with approval of the project plan.

Project planning includes the following key elements:

- Gather Project Requirements
- Develop Project Schedule
- Create Risk Management Plan
- Develop Project Management Plan
- Develop Project Design
- Submit Documents for Approval
- Transition to Execution Phase

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Chart 1 – Planning Phase - Requirements

Gather Project Requirements

The **Planning Phase** (can also be called the **Planning/Designing Phase**) defines the project by:

- Gathering and finalizing the project requirements
- Identifying the project risks and ways to manage them
- Producing the detailed project schedule, the project management plan, and the project designs to guide the project
- Obtaining the authorization to proceed with the project.

Planning is of major **importance** to a project because the project involves mapping out all the logistics of deliverables and timelines. If planning is done correctly and thoroughly, the rest of the project will be easier to manage.

The Project Schedule provides detailed task information in relation to the calendar, the relationship of the tasks, individual task costs, and the resources associated with the tasks. The Project Schedule will be used as a key project status document.

The approved Project Management Plan serves as a contract between the project manager, the client, and the project sponsor; defining the scope of the project and what is required, the anticipated benefits, the resources required, and the performance-based rewards and penalties. Some companies use the Project Charter to fill this role. The purpose of the contract is to commit the project manager, the project team, and the project sponsor to the terms of the project plan. This includes understanding the potential risks and the actions that are necessary to manage them. By reading the Project Management Plan, a person should gain a good understanding of the project.

In order for the project team to produce the Project Design, they should analyze the business activities, needs, and data associated with the proposed solution, develop the solution in terms of the automated and manual procedures, develop proposed formats for input and output, and prepare the design to ensure a seamless transition to the new solution.

Inputs

- Project Charter
- Concept Proposal
- Project Summary

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- Business Case
- Meeting Reports
- Project Selection Criteria

Outputs

- Project Requirements
- Project Schedule
- Risk Assessment and Management Plan
- Project Management Plan
- Issues/Action Item Matrix
- Training Plan
- Use Cases, Test Cases, and Test Plan
- Deployment/Transition Plan
- Project Designs
- Meeting Reports

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Chart 1 – Planning Phase - Schedule

Develop Project Schedule

First of all, note the title of this step: Develop Project Schedule; not Develop Project Plan. A project-scheduling tool such as Microsoft Project creates a Project Schedule. A Project Schedule is a tool to manage time and resources to accomplish work

To create the Project Schedule:

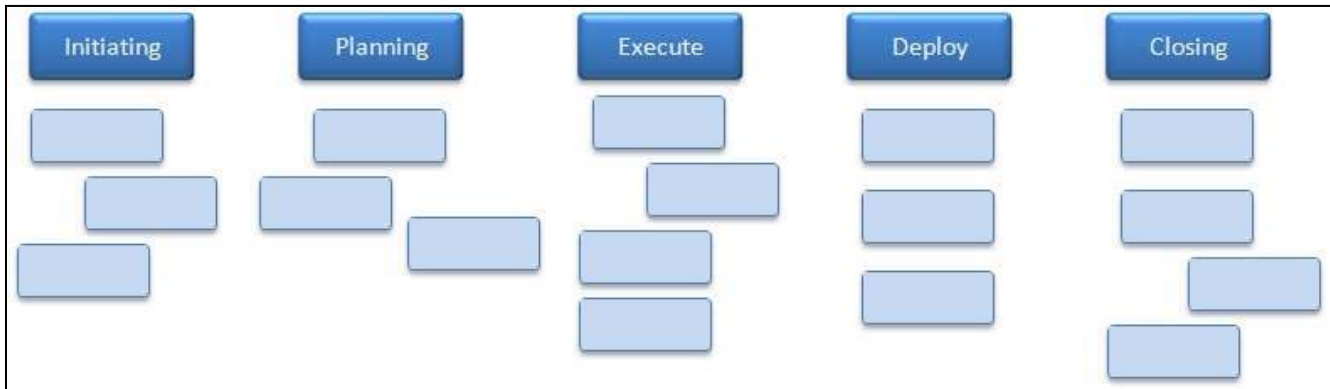
- Assemble your planning project team and give each team member a sticky pad.
- Cover a wall of your conference room with white paper or use white boards.
- On the white paper or white boards, write the highest-level categories from the Work Breakdown Structure (WBS).
 - Following the Delivery Process, our high level categories would be Requirements, Design, Build, Test, Deploy, and Closeout. Following project management process, the categories would be Initiating, Planning/Designing, Implementing/Testing, Deploying, and Closing.

A Work Breakdown Structure groups project elements to organize and define the total scope of the project. If it isn't in the WBS it is outside the scope of the project. The WBS is used with the scope statement in the Project Management Plan to develop or confirm a common understanding of project scope. Each descending level of the WBS represents an increasingly detailed description of the project elements. A WBS from a previous project can often be used as a template for a new project.

- Have the planning project team decompose the WBS into tasks (1 day of effort or less) and write the tasks on the sticky pad sheets.
- Be sure to define the tasks so the project objectives will be met. Any historical information should be considered from previous projects. Place the sticky sheets under the category of the WBS. Identify major tasks and detailed tasks needed to complete the major tasks.

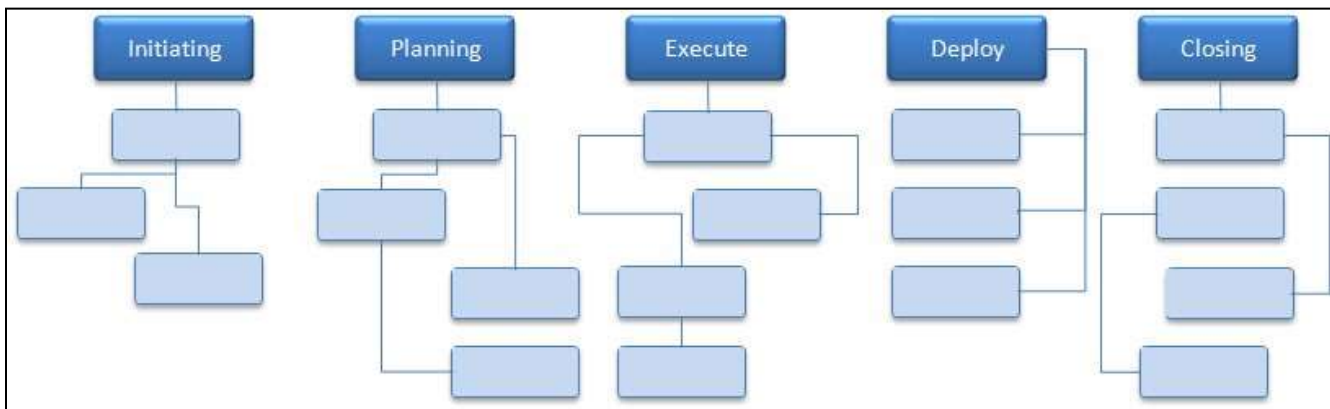
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WBS Examples



Un-organized WBS

- Next, sequence the activities into chronological order. Identify any dependencies.



Organized WBS

- For each task, estimate the hours of work needed and duration if different. The duration estimates can be generated from historical information of similar projects or by performing estimation calculations to provide the most likely duration for the task.
- Assign the resource ROLE such as developer, architect, or network specialist needed for the task.
- The PM will replace generic resources with specific resources when they are assigned by the resource or functional manager.
- Be sure to document any assumptions and dependencies made in the schedule.
- Other Key Points.
- Include Business Owners in estimates.
- Estimate future support and maintenance needs.

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Completed WBS Example

NOTE: Initially, you want the team to brainstorm all project tasks without stopping. They can post the sticky pad sheets anywhere under the main WBS phase. As the phase is built out, the activities can be sequenced to show relationship to predecessors.

Initiation Phase	System Concept Development	Planning Phase	Requirements Analysis	Design Phase	Development	Integration & Testing	Implementation	Operations & Maintenance	Disposition Closeout
<ul style="list-style-type: none"> • Pre-Initiation • Business Case • Project Analysis • Technical Feasibility • Economic Feasibility • Project Proposal • Project Charter • Project Checklist 	<ul style="list-style-type: none"> • Cost Benefit Analysis • Feasibility Study • Risk Management Plan 	<ul style="list-style-type: none"> • Scope Statement • WBS • Schedule • Organize Staff • Change Plan • Communication Plan • Quality Plan • Procurement Plan • Performance Measures • Budget Planning • Project Plan 	<ul style="list-style-type: none"> • Requirement Specifications • Traceability Matrix • Use Case Development • Test Plan 	<ul style="list-style-type: none"> • Project Plan (Baseline) • Apply Management Controls • System Design • Implementation Plan • Conversion Plan • Maintenance Plan • System Administration Plan • Training Plan • User Manual 	<ul style="list-style-type: none"> • Contingency Plan • Software Development • Integration 	<ul style="list-style-type: none"> • Complete Integrated Project Plan • Go-Live Readiness Assessment • Test Analysis Report 	<ul style="list-style-type: none"> • Project Execution & User Acceptance • Implement Approved Training Plan • Conduct Closeout Task • Lessons Learned • Project Transition Checklist 	<ul style="list-style-type: none"> • Closeout Report • Procurement Audit • Contract Closeout • Lessons Learned Archive • Post Implementation Review • EA ROI Report • Performance Measure • Pre-initiate Changes 	<ul style="list-style-type: none"> • Disposition Plan • Project Closeout • Post Termination Review Report

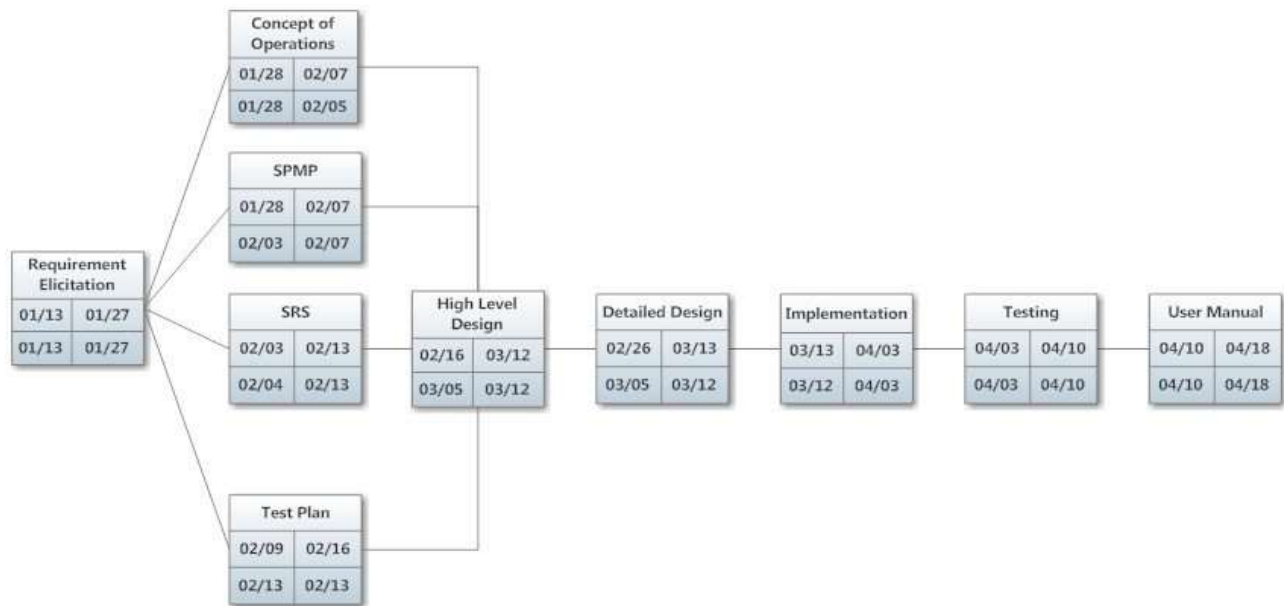
Completed WBS

At the completion of this exercise, the project manager will be able to complete the Project Schedule using the layout and transfer it to a project scheduling application such as Microsoft Project, Oracle Primavera, or your project management solution. This exercise is not only a great way to create a project schedule utilizing the specialized training from your project team, but it is also a great team-building activity allowing team buy-in for the project; the effort needed for proper project completion, and increased communication to the project team. A collaborative workspace will help the project manager to a great extent when the project schedule is complete. The tasks can be imported directly into the collaborative workspace and assigned to project team members allowing them to see their assignments and provide real-time feedback to all project stakeholders.

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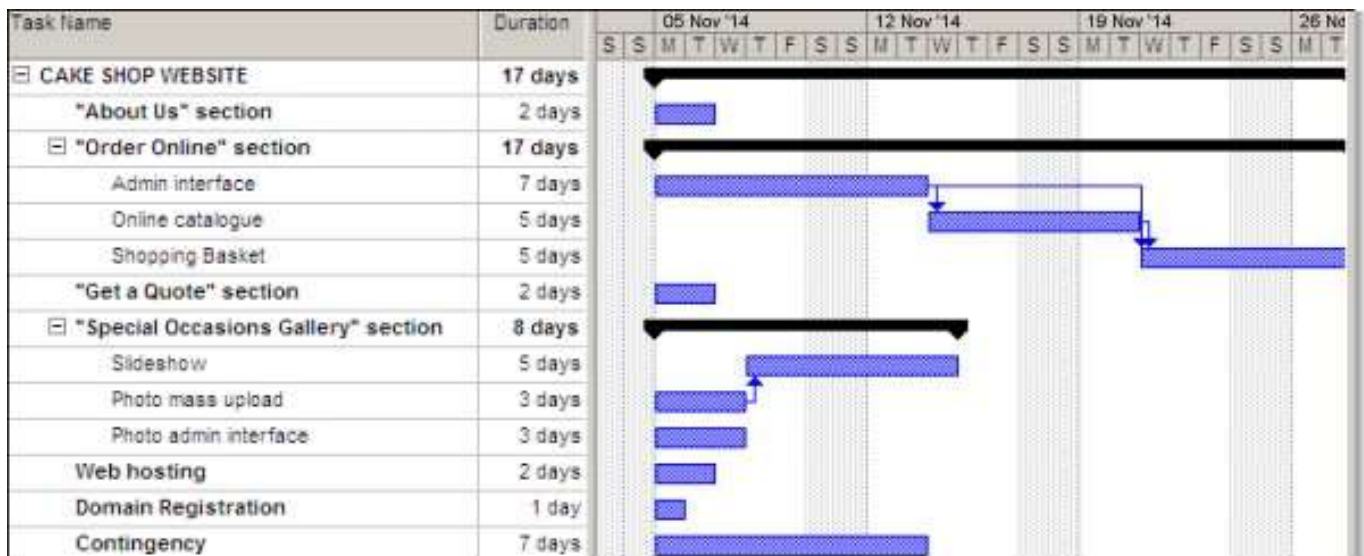
There are a number of ways to display your project schedule on the white board or white paper. The figure below illustrates the Project Network Diagram with duration in the boxes. You can also list start and end dates as you sequence your project tasks. The Project Network Diagram is a type of Precedence diagramming method (PDM), sometimes called activity-on-node (AON) or program (or project) evaluation and review technique (PERT) using boxes or rectangles (nodes) to represent the activities and connecting them with arrows that show the dependencies.

PERT Chart Example



Gantt charts show a variety of data activity start and end dates and expected durations on bars. The Gantt chart is relatively easy to read and commonly used for project presentations.

Schedule Gantt Chart Example



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If you are using a stand-alone project scheduling tool, ensure the project is leveled and you have documented any dependencies (mandatory or discretionary). It is recommended the project manager receive training for any project-scheduling tool to be able to use all the features of the tool.

Steps

- Identify major tasks and milestones to complete the project
- Identify detail tasks, in chronological order, that are required to achieve each major task
- Work collaboratively with the planning project team to estimate each task's duration and start & end dates
- Identify tasks that are dependent on the completion of other tasks
- Assign resources to each task
- Document any assumptions in the schedule
- Transfer the schedule to a scheduling tool
- Estimate overall project budget
- Facilitate the approval of the schedule by the sponsor & other key stakeholders
- Remember when distributing a schedule in Microsoft Project, not everyone has the software, so converting it to Excel or printing with Adobe Acrobat may be necessary

Templates

- MS Project Schedule

Owner of This Step

- Project Manager with Project Team

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Create Risk Management Plan

Project Risk Management includes the processes concerned with identifying, analyzing, and responding to project risk, maximizing the results of positive events and minimizing the consequences of adverse events. The Risk Management Plan will be created before and after you create the Project Schedule, as you will be looking at the tasks in the Project Schedule and other factors in the Project Management Plan for potential risk items. Consider how much effort your company wants to put into risk planning before you start. At minimum, identify areas of potential risk (the WBS may help), identify risk triggers for the risks, and figure out before and what your project team will do if the trigger even occurs.

To adequately analyze risk, you'll need a detailed plan. So, the best time to perform an initial risk analysis is just prior to starting the project during the PM Initiation Phase. Waiting to consider risk until the project is being implemented is like trying to build a car as the car is moving down the road. It just won't work.

Also, don't make the mistake of thinking that risk analysis is a one-time task. You'll want to reevaluate the risk management plan and your risk analysis from time to time throughout the project and whenever major deviations from the plan occur.

Steps

There are four steps to assessing and managing risks, and effective risk management requires all four of them.

1. Identify the risks
2. Qualify the risks
3. Assess each risk for impact to the project if it does occur
4. Assess the likelihood of the risk occurrence
5. Plan for risks by creating a watchlist of risk triggers and how to handle the risk if it does occur
6. Monitor and manage risks

Templates

- Risk Assessment and Risk Management Plan

Owner of This Step

- Project Manager

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Develop Project Plan

The Project Management Plan is your project guide, outline, and main communications tool and provides a documented basis for making project decisions and for confirming or developing common understanding of project scope among the stakeholders. It also serves as guiding document for project execution and control and provides the rules and limits for your project.

The main inputs for the Project Management Plan are the Requirements Document, the Concept Proposal, the Risk Management Plan, and the Project Schedule. The Requirements Document and the Concept Proposal will provide the project goal, objectives, risks, assumptions, constraints, alignment, and other information. The Project Schedule will provide project timelines and milestones.

The Risk Management Plan allows you to highlight noteworthy risk items. The Project Management Plan should contain the following in the detailed level necessary for project information.

- The **Project Background** should introduce the customer environment leading to the change requiring the project. The information is collected during Requirements gathering.
- The **Project Goal** should provide a clear statement of what the project team will accomplish by project implementation. Proper scope definition is critical to project success and will avoid scope creep.
- **Project Objectives or Scope Statement** should be measurable criteria that must be met for the project to be considered successful in terms of cost, schedule, or quality measures. The Objectives should define what is in scope for the project and also what is out of scope for the project. The objectives will be matched to project deliverables during the Acceptance of Deployed Solution during the Deployment phase.
- **Solution Approach** outlines the approach taken by the Project Team to meet project objectives. There are a number of solution approaches to take for an application development project and the one chosen should be explained in this section.
- The Project Management Plan should spell out and clear up any project ambiguities by documenting **Assumptions** and **Constraints**.
 - **Assumptions** are factors that, for planning purposes, will be considered to be true, real, or certain. Assumptions generally involve a degree of risk and may be identified here or they may be a part of risk identification. Never assume anything on a project; write it down and have it validated!

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- **Constraints** are factors that will limit the project management team's options. For example, if substantial project resources will be needed, more consideration will need to be given to handling contract information. When a project is performed under contract, there are often specific contractual provisions that affect communications and project planning. Some projects have constraints such as mandatory government rules
- A project **Risk Assessment and Mitigation Plan** should be completed prior to entering data into the project plan. A matrix of the high risk items along with high-level management or mitigation plans to address the risk is provided in the Project Management Plan.
- After review of the requirements and Project Schedule, a **Staffing or Resource Plan** can be created for the project implementation. Resource planning involves determining what physical resources (people, equipment, materials) and what quantities of each should be used to perform project activities. It is a good practice to provide an organization chart for quick reference and define roles and responsibilities in this section of the Project Management Plan.
- The schedule section of the plan should contain your project Work Breakdown Structure (WBS), Project Timeframe, and project milestones.
- After review of the Project Schedule, a **Cost Plan** and budget can be added to the Project Management Plan at the detail level required. In some cases, the Cost Plan might be preliminary until it can be updated with an addendum to the Project Management Plan during the Implementation Phase or as more details of the project become available. The budgeting of the project must be closely coordinated with cost estimating and will improve as more actual information is captured at the completion of many projects.
- All projects require a **Communications Plan** detailing what will be communicated, when it will be communicated, and who is going to do the communications. The Communications Plan is an important factor for project success because it ensures the proper communication flow and consistency. Determine the information and communications needs of the stakeholders such as:
 - Who needs what information?
 - When will they need it?
 - How will it be given to them?

The majority of communications planning is done as part of the earliest project phases but should be reviewed regularly throughout the project and revised as needed to ensure continued applicability. Any project review will ask the customer if they are getting the right kind and amount of information. The Communications Plan should provide an outline of the agenda for all status meetings so the project team and stakeholders know what to expect.

- If your project has procurement needs, a Procurement Plan should be completed.
- The Procurement Plan should provide the quantity and timing for all items needed. An inventory should be included upon receipt of any item on the Procurement Plan.
- The Project Management Plan also outlines the **Change, Issues, and Document Management Plans**.

Building a Project Management Office (PMO)

Steps

- Create the Project Management Plan containing:
 - Project goal, objectives, and what is in and out of scope
 - Project assumptions and constraints
 - Project solution approach
 - Risk Items from Project Risk Management Plan
 - Resource Plan with roles and responsibilities
 - Project WBS and Project Schedule milestones
 - Project Communications Plan identifying key roles and appropriate communications media
 - Project Budget and Cost Plan
 - Project Quality Plan
 - Change Control Plan
 - Issues Control and Escalation Plan
 - Project Procurement Plan

Templates

- Project Management Plan

Owner of This Step

- Project Manager

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Develop Project Design

The Subject Matter Experts (SMEs) and Architect on the project team will complete the project design with information gathered during the requirements phase along with additional detailed information from the customer team and customer environment. The designs will progress from Conceptual, through Logical, to Physical for many project types.

The design will be reviewed and validated before a final project design is created. All versions of the design should be placed in the project repository for reference. All design meetings should be documented and the Meeting Reports placed in the project repository.

In some cases, equipment will be required for project execution. If your project calls for equipment, obtain the equipment and track the equipment via an inventory list.

Steps

- Analyze the business activities, needs, and data associated with the proposed solution
- Develop the solution in terms of the automated and manual procedures
- Develop proposed formats for input and output
- Prepare the design to ensure a seamless transition to the new solution
- Create Conceptual Design
- Validate design with client
- Create Logical Design
- Validate design with client
- Create Physical Design
- Validate design with client
- Obtain signoff for all designs
- Identify any Issues

Templates

- None

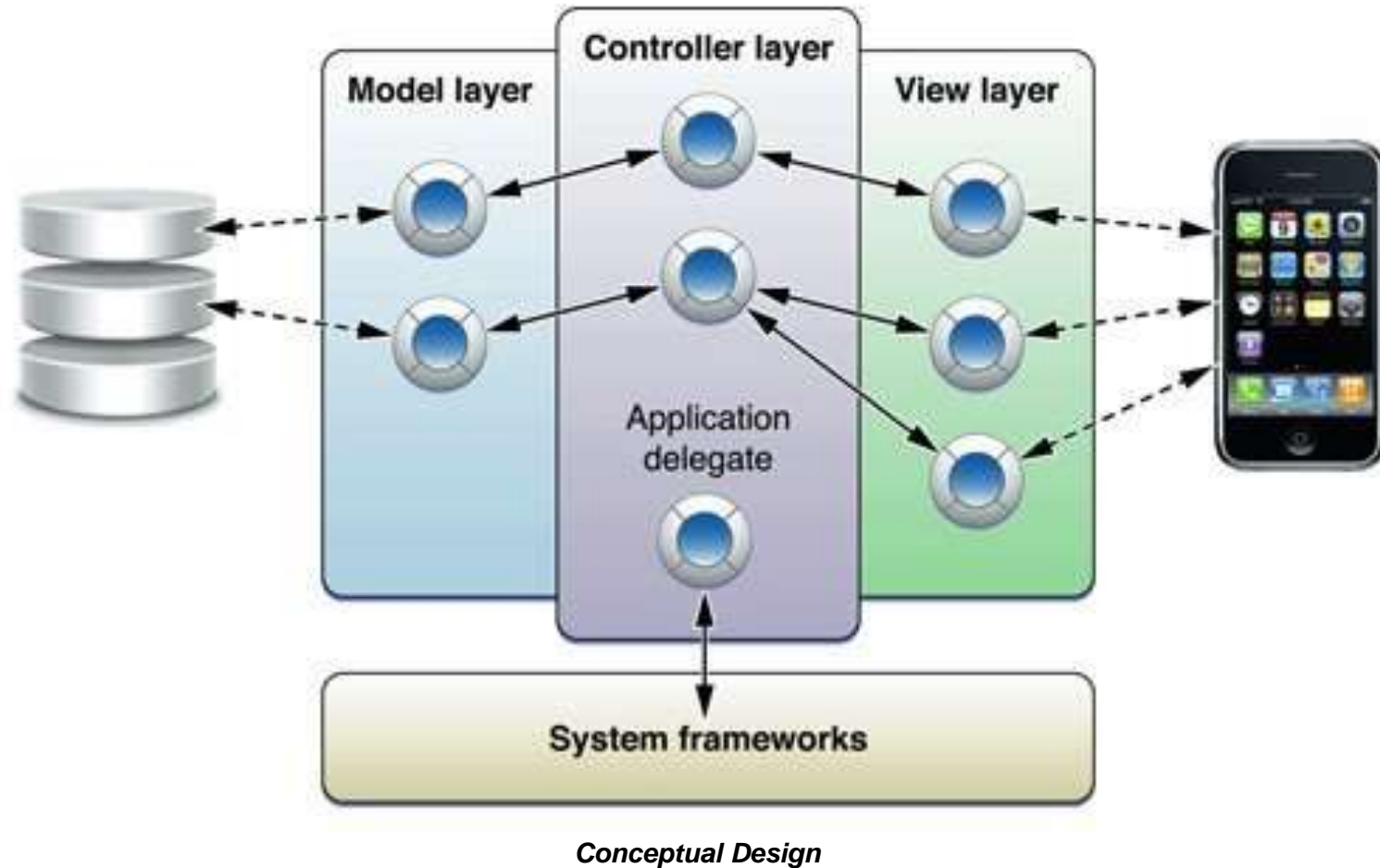
Owner of This Step

- Project Manager with Project Team

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Example of Conceptual Design

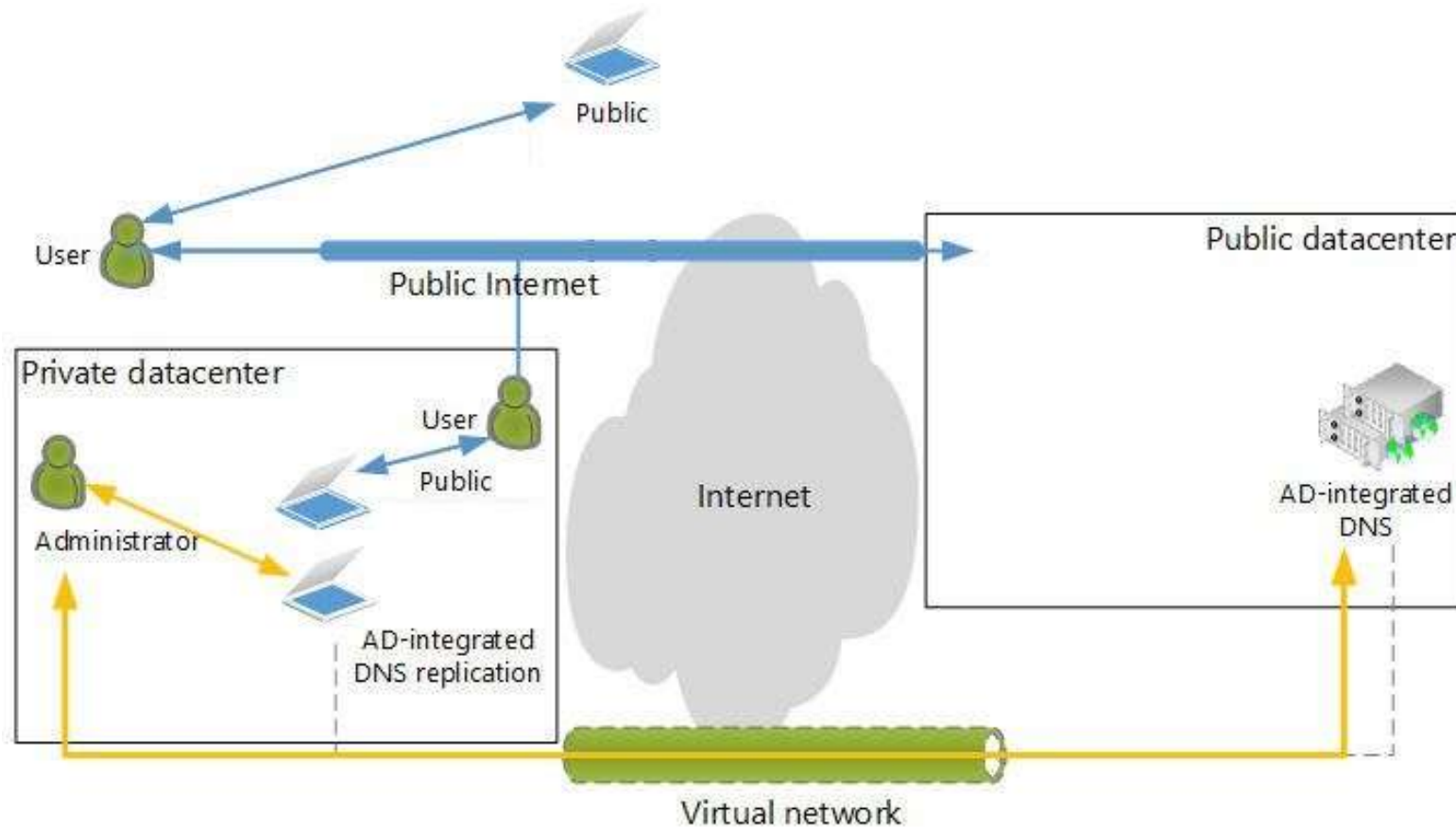
The System Design translates the Requirement Specifications into a document from which the developers can create the actual system. It identifies the top-level system architecture, and identifies hardware, software, communication, and interface components. Here's a detailed overview Conceptual Design by IBM ([Link](#)).



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Example of Physical or Component Design

The purpose of component level design is to define data structures, algorithms, interface characteristics, and communication mechanisms for each hardware and or software component identified in the architectural design. Component level design occurs after the data, architectural, and interface designs are established.

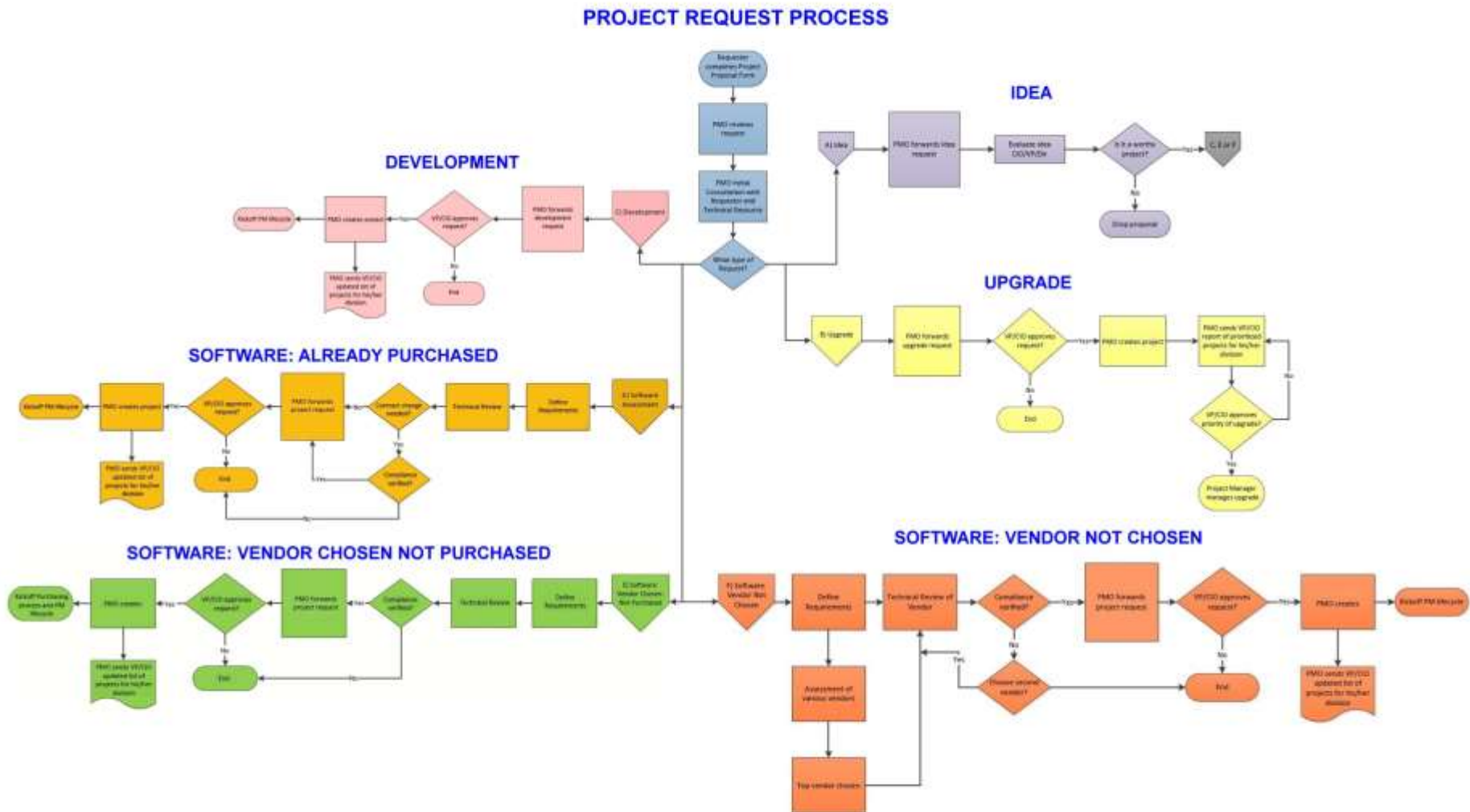


Hybrid Cloud Infrastructure Design

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Project Request Process Design Example

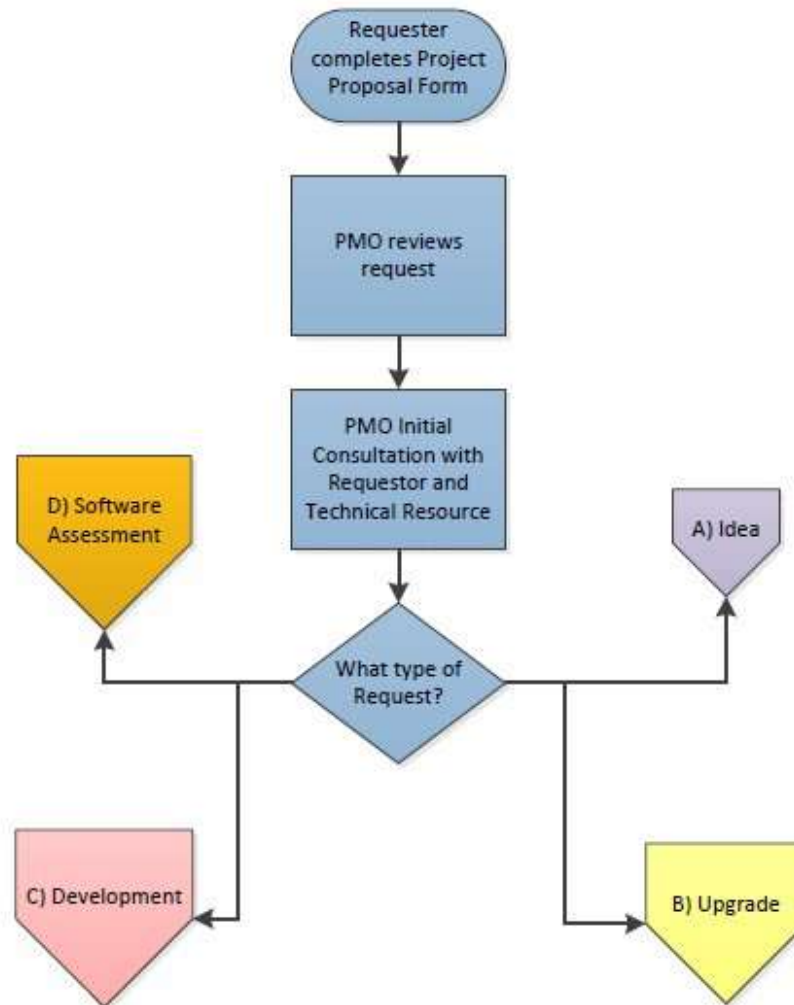
The purpose of designing a project request and approval process ensures consistency, quality and meeting organizational goals by managing resources and expenditures.



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Project Request Process Design Example - Request

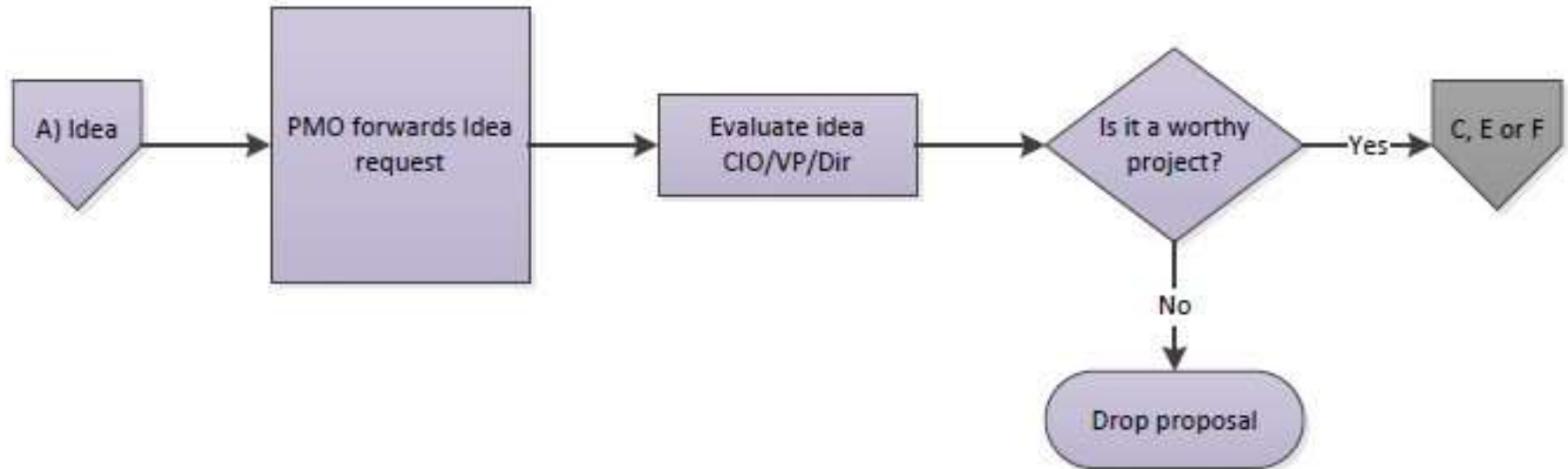
PROJECT REQUEST PROCESS



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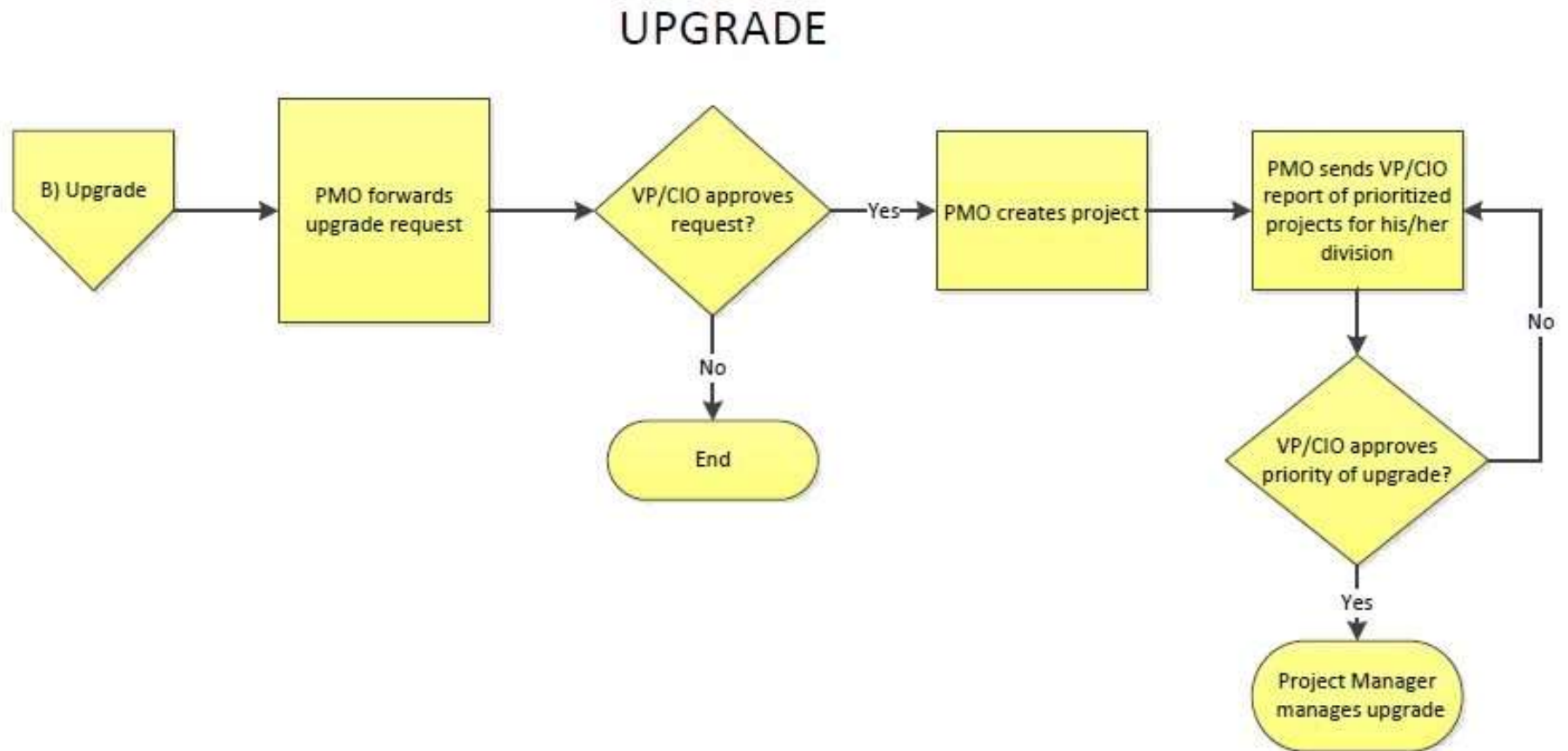
Project Request Process Design Example – A

IDEA



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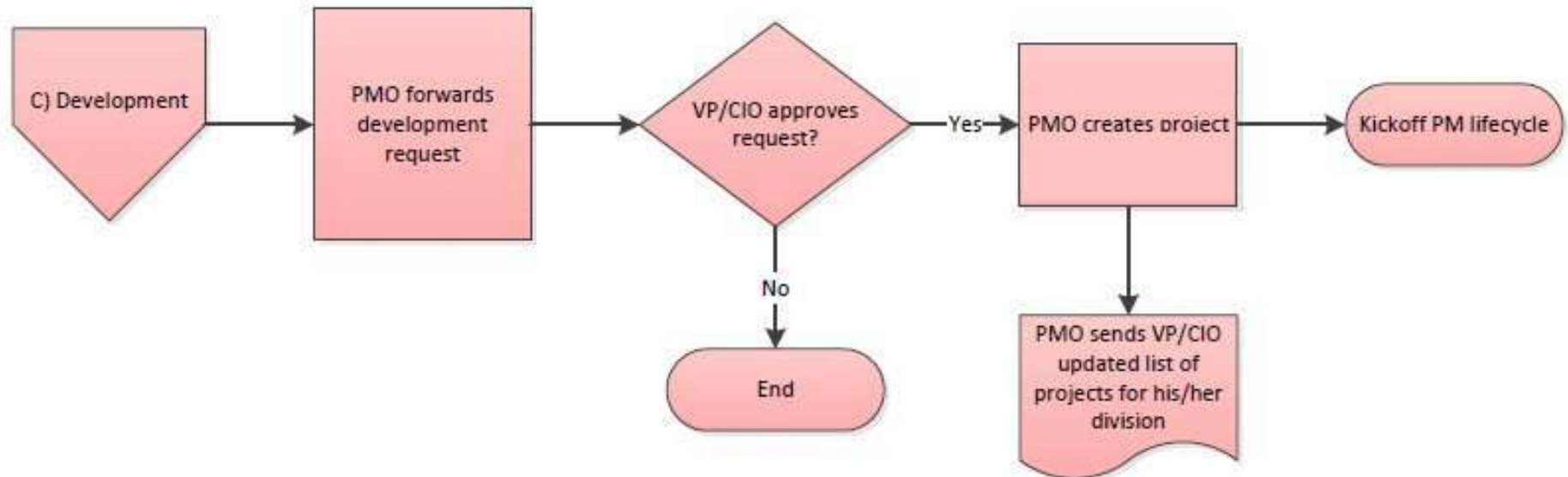
Project Request Process Design Example – B



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Project Request Process Design Example – C

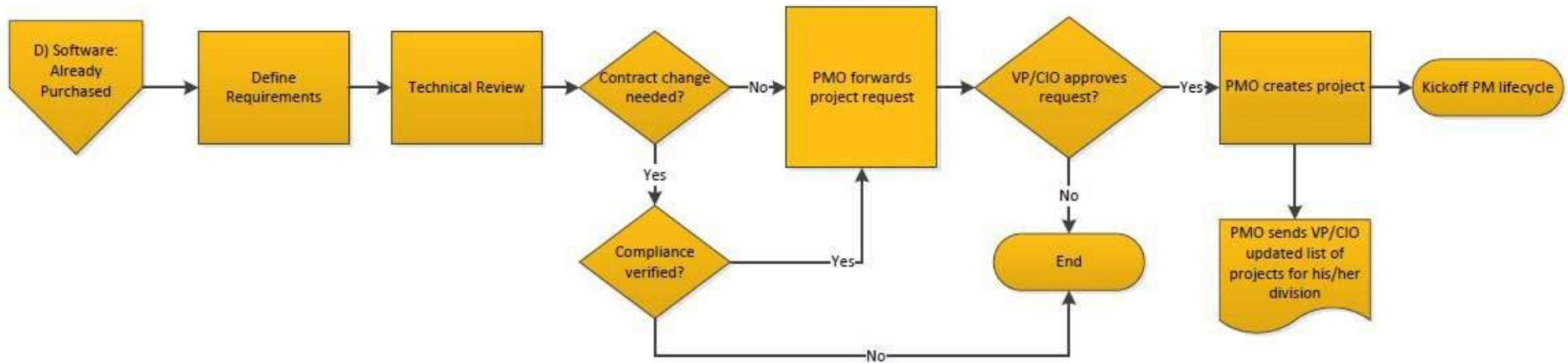
DEVELOPMENT



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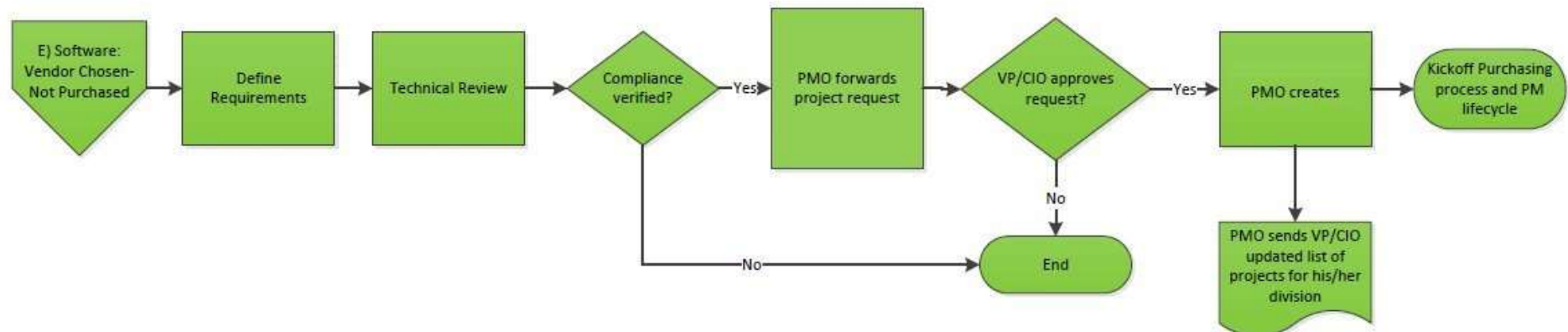
Project Request Process Design Example – D

SOFTWARE: ALREADY PURCHASED



Project Request Process Design Example – E

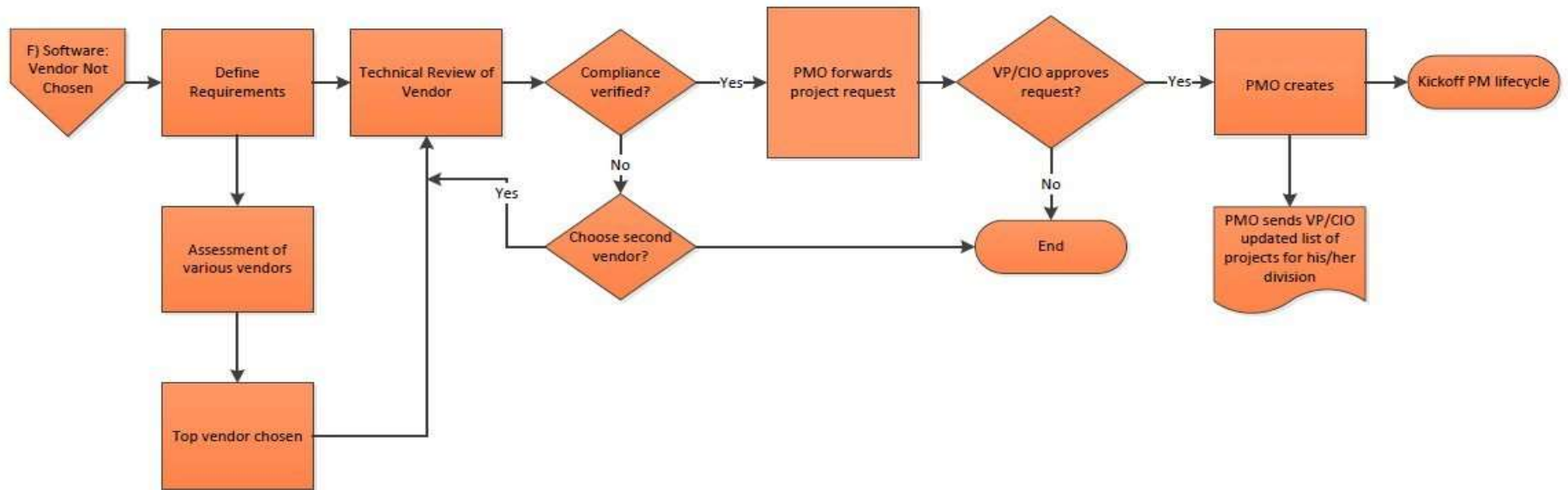
SOFTWARE: VENDOR CHOSEN NOT PURCHASED



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Project Request Process Design Example – F

SOFTWARE: VENDOR NOT CHOSEN



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PMO Operational Framework Example

An operational framework is a guide to a company's policies, goals, standards, procedures and training. The framework sets out the way the company does business and promotes a corporate culture and identity.



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Project Approval Process

Overview

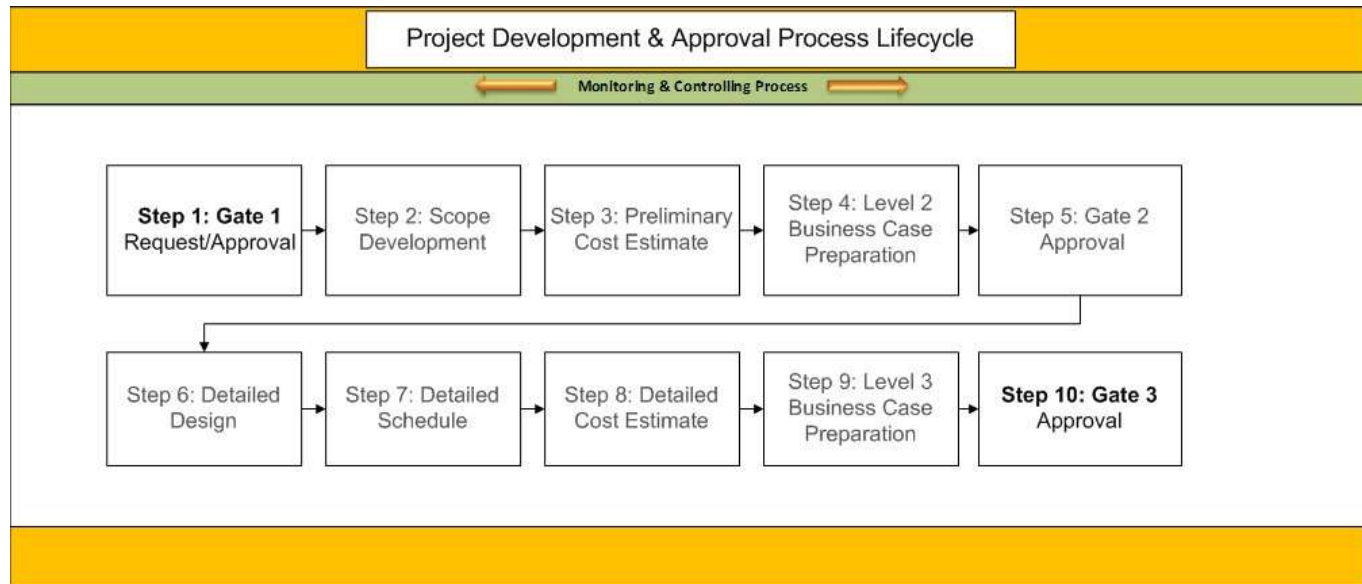
In this PMO example, the Project Approval follows a 10 Step process called the Capital Project Planning Process (CPP) which is aligned with the company's business planning and budgeting processes. Once fully implemented, the majority of capital project and program requests should flow through the process during the annual budgeting cycle. CPP is also aligned with the company's project management processes. The project manager works closely with the project sponsor (planner) to ensure continuity throughout the project life cycle.

CPP is designed as a collaborative process to ensure that company's planning; design, construction, operations and maintenance groups are all actively involved in the development and approval of a capital proposal. The standard process has multiple steps, including three approval gates. As a proposal progresses through the steps, the level of detail for scope, cost and schedule increases, as does the company understands of potential risks.

The process is made up of two primary phases: planning and designing. During the Planning Phase, the Project Sponsor has the lead, initiating the **Level 1 Business Case** and following through until the **Level 2 Business Case** is approved. At that point, there is a formal hand-off to the Project Manager, who leads the effort from detailed design through **Level 3 Business Case** approval. *Diagram A* next page provides an overview of the Planning life cycle.

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Diagram A: Capital Project Planning Overview



Standard Process Details

This section provides details on the activities associated with each step in a standard process. It defines roles and responsibilities for key stakeholders, such as Services Planning, Asset Management, Project Management, Engineering, Operations Management, Materials Services, Corporate Finance, Project Management Office (PMO), and the Capital Committee. It establishes timelines and checklists to facilitate the process.

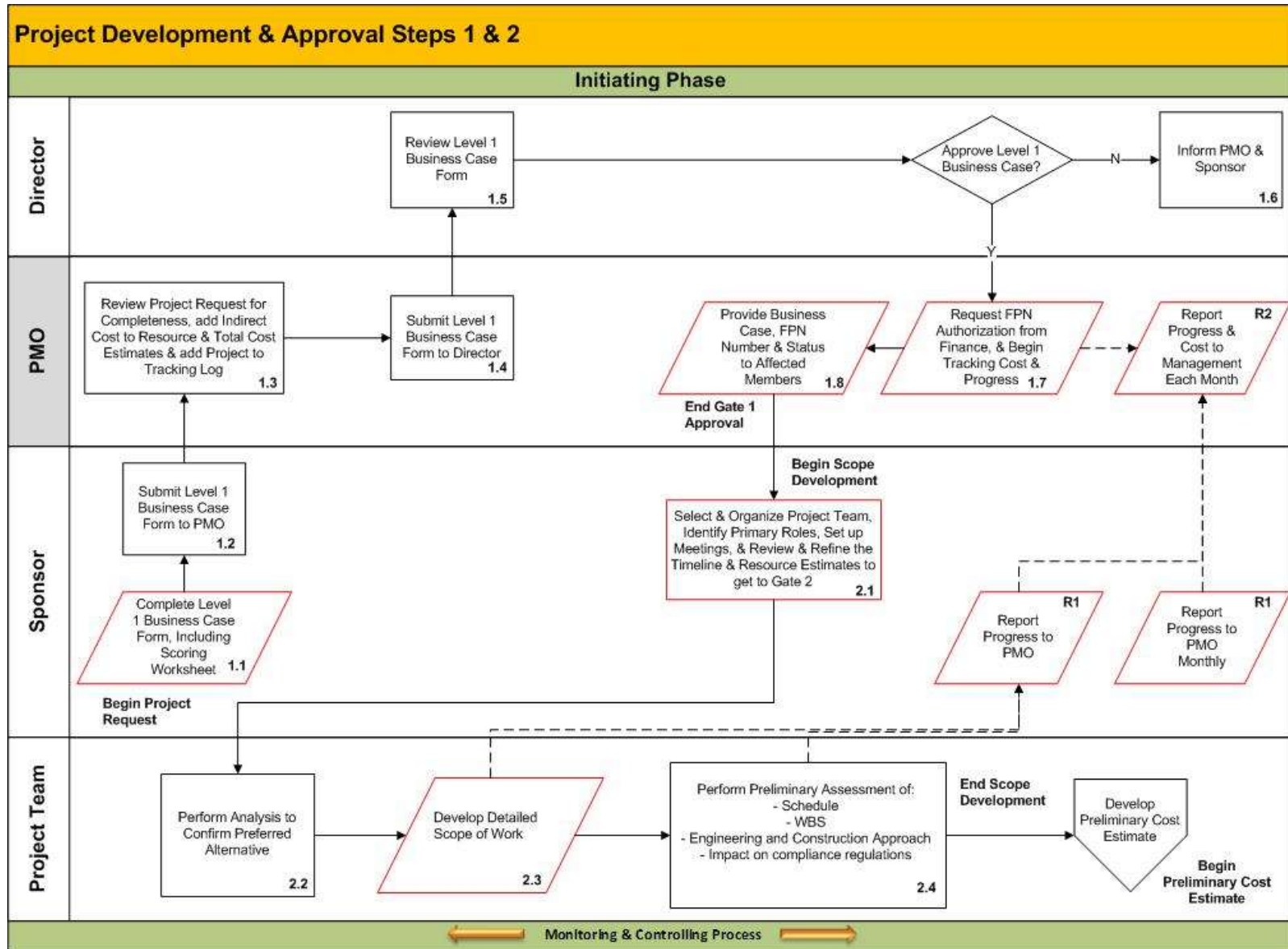
The PMO serves as the process owner, and as such, is responsible for receiving and vetting proposed revisions to this guideline and associated forms, and for broadly communicating changes.

BEGIN LEVEL 1 - Step 1: Gate 1 Request / Approval

The **Gate 1** request / approval step kicks off the process. The Sponsor completes a **Level 1 Business Case** that provides a detailed description of project need, as well as brief descriptions of scope (description or 1-line diagram), alternatives, risks, benefits, cost (high level estimate by primary work breakdown structure), and schedule. The focus for **Level 1** is on the need for the investment. While a formal project team is not established during the development of the **Level 1 Business Case**, the Sponsor will seek input from key partners to ensure that the case reflects their insights.

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Diagram B - Process Map for Steps 1 & 2 (Gate 1 Approval and Scope Development)



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In addition to the cost of the overall project, the Sponsor will also propose internal and external resources needed to develop the **Level 2 Business Case**, and provide an estimate for how long it will take to get to **Gate 2**. This activity ensures that resources are committed to develop the next level of detail required for **Gate 2** approval. The element of cost for these resources is not restricted to company's labor and should include outside services, if required. The Sponsor will complete the Individual Proposal Scoring worksheet and attach it to the business case.

The **Level 1 Business Case** form is submitted to PMO for review and tracking purposes, and then sent to the Director to approve the need for the proposal and authorized spend limits. The form includes a checklist of required attachments. Once approved, PMO secures authorization from Corporate Finance to issue a Financial Project Number (FPN), and begins tracking progress and cost. At this point in the process, the Sponsor, PMO, and the Director make judgments about whether the proposal is a Project or a Program, planned or reactive, and whether it belongs to a specific category. For more detail on the activities and process flow for **Step 1**, see **Diagram B**. However, the life of a specific program will be determined during the business case approval process.

BEGIN LEVEL 2 - Step 2: Project Team Selection and Scope Development

To initiate **Step 2**, the Sponsor assembles the Project Team. For most projects, a project manager will be identified at this point to serve on the team. Typically, in the Business Case form includes a checklist to aid in project team selection. Project Team members are not required to attend all meetings. The Sponsor will plan activities to make best use of Team members' expertise and time.

The Team begins with a review of the Sponsor's cost and schedule estimates to get through **Gate 2**. After that, the team thoroughly reviews alternative solutions. This activity ensures that the alternative proposed by the Sponsor is the best solution for company. Once the preferred alternative is confirmed, the Project Team develops a detailed scope of work. The detailed scope of work will add to the 1-line diagram or description from the **Level 1 Business Case** and include key assumptions. At this point, the Project team will develop a detailed work breakdown structure (WBS) that will be used in subsequent estimating, scheduling and design steps. To further test key assumptions and dependencies, the Project Team will also complete preliminary assessments of the schedule and engineering and construction approaches. The primary focus for **Level 2** is Scope and WBS.

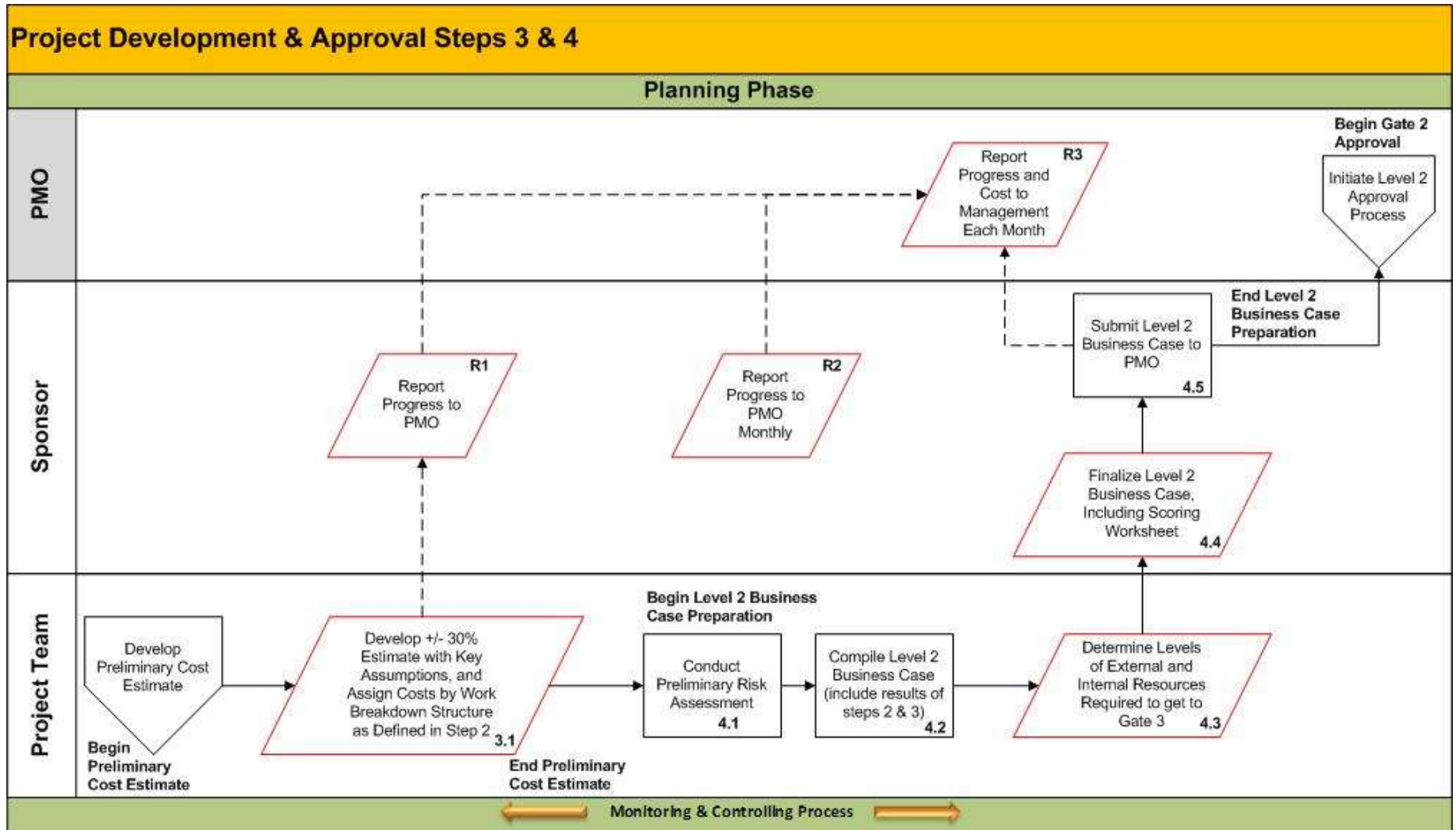
The Sponsor will report the conclusion of this step to PMO, in addition to reporting progress monthly. For more detail on the activities and process flow for **Step 2**, see **Diagram B** on the previous page.

Step 3: Preliminary Cost Estimate

The focus of **Step 3** is the development of a preliminary cost estimate. The estimate accuracy is targeted for +/- 30%. The Project Team will establish a baseline of key assumptions, timelines, and resources critical to project success. The Project Team will use historical data, labor rate information, and other estimating tools to complete this task. In some cases, it may be necessary to secure outside technical support to develop an estimate to this level of accuracy. As the estimates are developed, the Project Team will break costs down into WBS elements for tracking purposes. For more details on the activities and process flow for **Step 3**, see **Diagram C**.

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Diagram C - Process Map for Steps 3 and 4 (Cost Estimate and Business Case Prep)



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Step 4: Level 2 Business Case Preparation

The Project Team and Sponsor will conduct a preliminary risk assessment of the preferred alternative to kick off **Step 4**. The risk assessment should expand on known risks from the **Level 1 Business Case**, as well as any risks that are newly identified or assumed during refinement of scope and WBS, and preliminary cost and schedule estimates.

In addition to the preliminary cost estimate from **Step 3**, the Project Team will also identify the additional internal and external resources required to develop the next level business case (**Level 3**), and provide an estimate for how long it will take to get from **Gate 2 to 3**. This step ensures that resources are committed to develop the next level of detail required for Gate 3 approval. The Sponsor will update, as necessary, the Individual Proposal Scoring worksheet and attach it to the Business Case.

The Sponsor will then submit the **Level 2 Business Case** to PMO for review and tracking purposes. The Business Case form includes a checklist of required attachments. The Project Team will need to confirm earlier designation of Project vs. Program, since a program business case does not need to proceed to the **Level 3** process. For more details on the activities and process flow for **Step 4**, see **Diagram C** on previous page.

Step 5: Gate 2 Approval

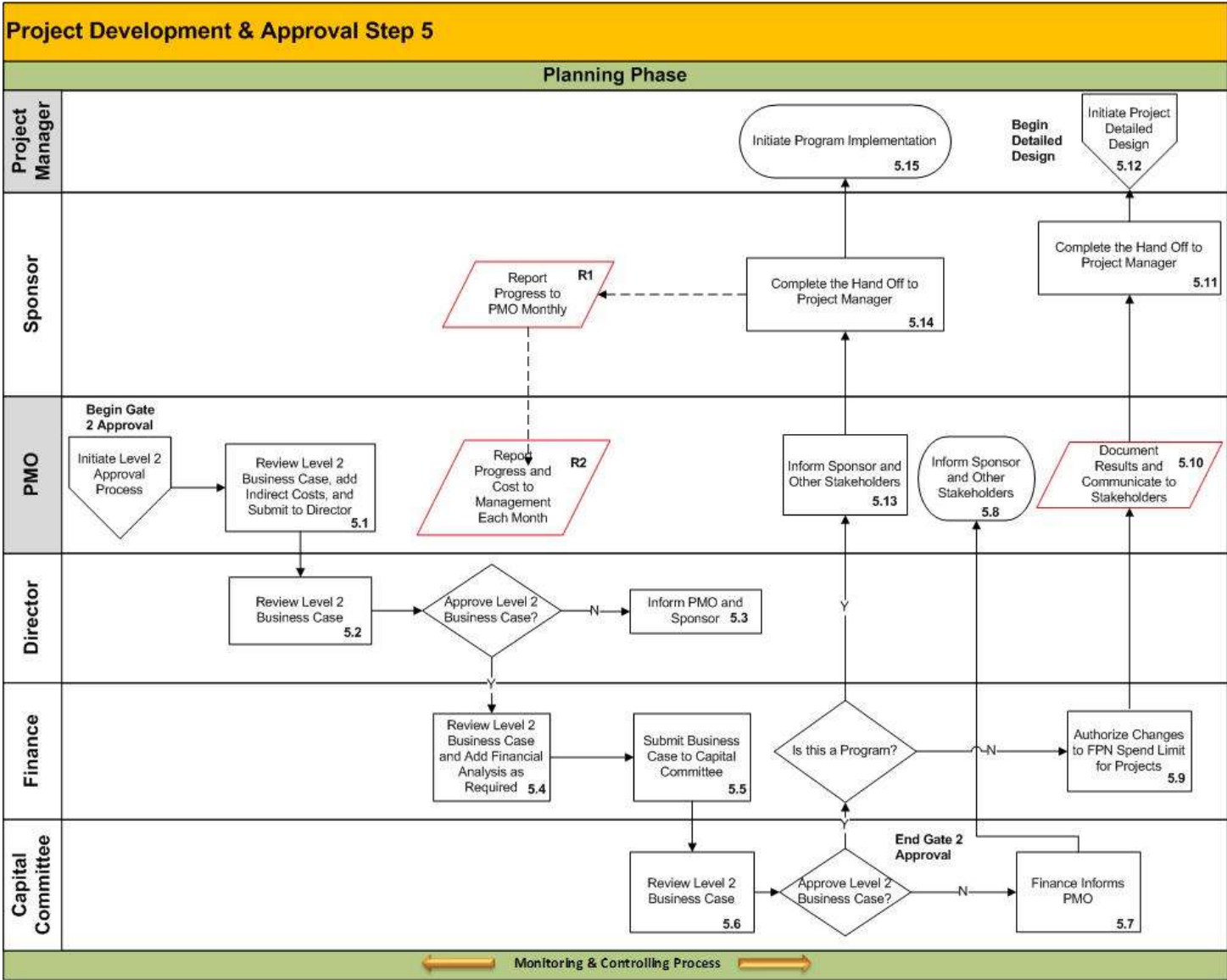
During the **Gate 2** step, approvals are secured to move forward with detailed design, and construction planning. In preparation for Capital Committee review, PMO and Finance ensure that the business case is complete, and the Director approves it. Successful completion of **Gate 2** shows a project is aligned with company's objectives and passes an initial evaluation of key assumptions, and that the Capital Committee approves the need and authorizes additional spending for continued design.

Once approved by the Capital Committee, the Sponsor will meet with the Project Manager and hand off all applicable documents to facilitate a smooth transition to the design phase. For a Program, the Sponsor may also be the Project Manager and continue to lead the effort to prepare for implementation. For more details on the activities and process flow for **Step 5**, see **Diagram D**.

The Project Manager will work with the Sponsor and Director to ensure that the proper technical resources are assigned to the Project Team for the next phase. The Team will then review the timeline and cost requirements to get through **Gate 3** before going to work on detailed design.

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Diagram D - Process Map for Step 5 (Gate 2 Approval)



BEGIN LEVEL 3 - Step 6: Detailed Design

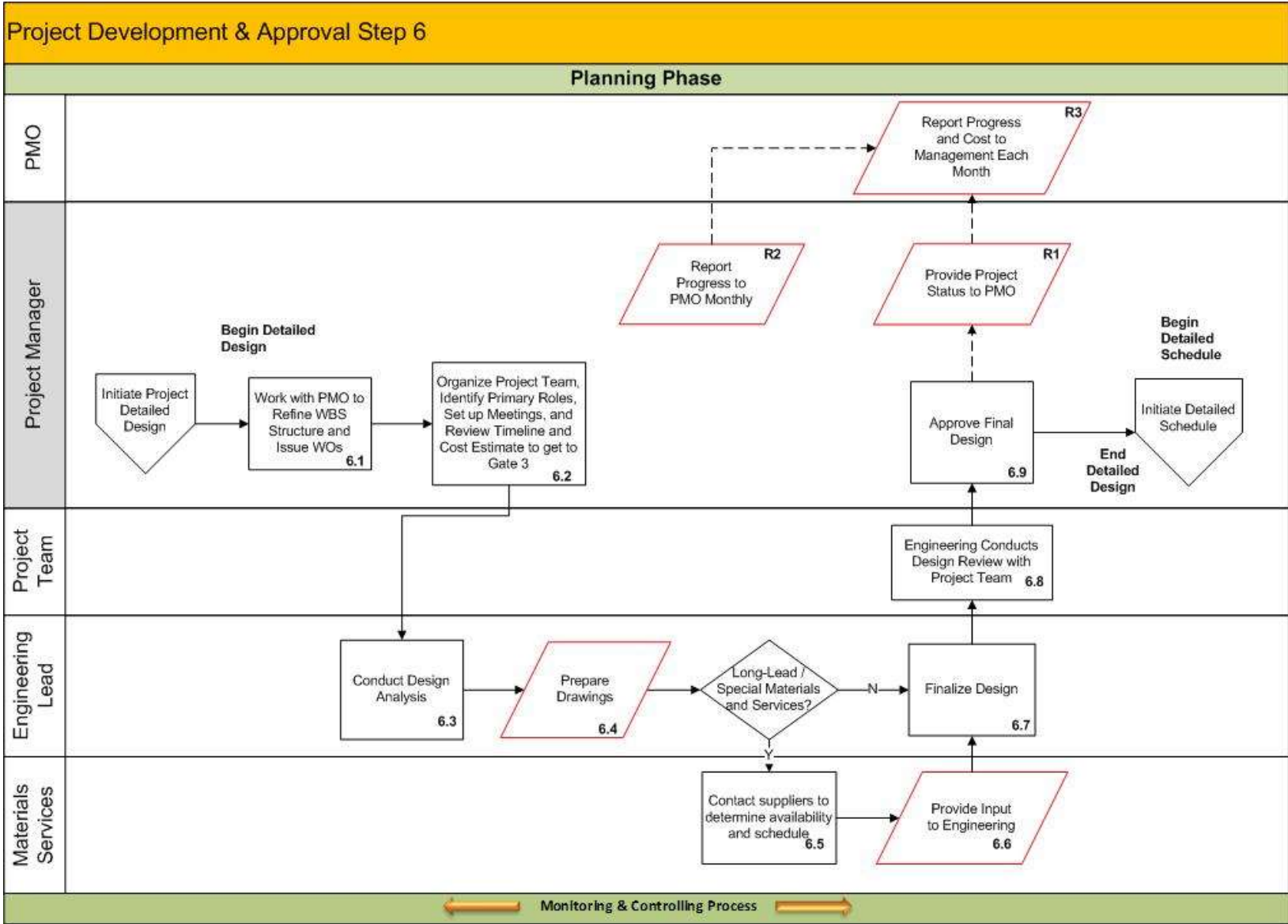
The main focus of **Step 6** is to complete detailed technical design and prepare drawings. The Engineering group is highly involved in this step, and will provide the expertise needed to establish a technical requirement and design baseline.

Once the design is substantially complete, the Project Team will identify long-lead or special materials and equipment items, which may require further refinement of the design if they present unacceptable schedule challenges.

The Project Team and Project Manager will complete a final design review to ensure that all stakeholders are engaged, and will inform PMO when this milestone is complete. For more details on the activities and process flow for **Step 6**, see *Diagram E*.

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Process Map for Step 6 (Detailed Design)



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Step 7: Detailed Schedule

Step 7 is focused on developing a detailed schedule for construction. The detailed engineering design and WBS from **Step 6** are used to complete the schedule. Once the schedule is established the Project Team discusses construction options with PMO. Some Project types will generally be constructed by company's crews and other types by Contractors. These decisions are based on expertise and equipment required. For more details on activities and process flow for **Step 7**, see *Diagram F*.

Step 8: Detailed Cost Estimate

The focus of **Step 8** is to develop a final cost estimate for the project. The target is +/- 10%. The estimate is created by loading resources based on the detailed schedule developed in **Step 7**, and may require securing supplier bids (material and labor) if a sizable amount of work is done outside of company's crews and company's warehouse. The Project Team will use historical data, labor rate information, and other estimating tools to complete this task. For more details on the activities and process flow for **Step 8**, see *Diagram F*.

Step 9: Level 3 Business Case Preparation

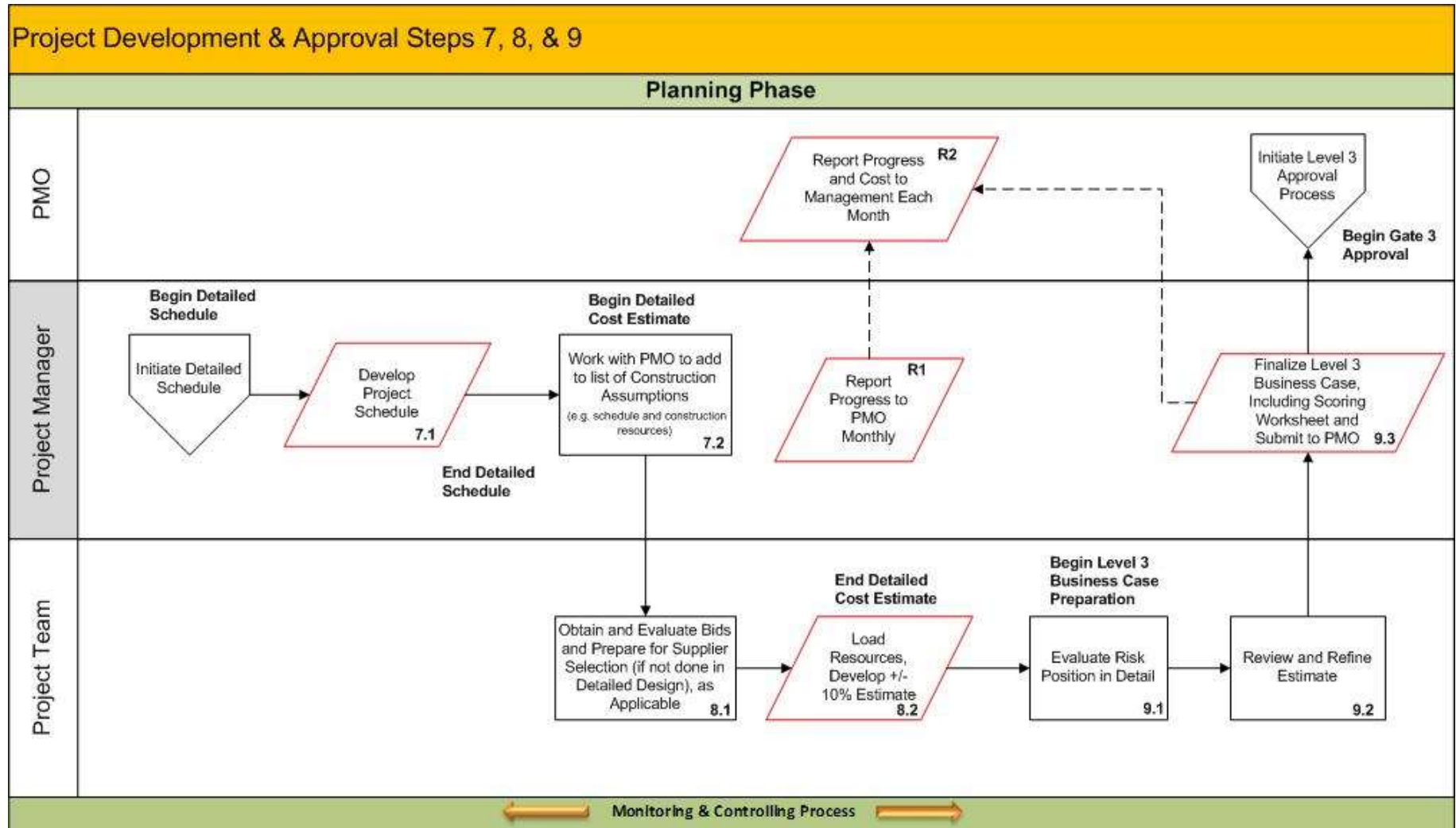
Once the Project Team has developed the final cost estimate in **Step 8**, they begin preparing the **Level 3 Business Case**. The Project Team and Project Manager begin compiling the applicable supporting documents, including an evaluation of project risks. This risk assessment should expand on known risks from the **Level 2 Business Case**, as well as any risks that are newly identified or assumed during refinement of the detailed cost estimate. The Project Team will follow applicable company's risk management guidelines for the assessment and documentation, which may require mitigation planning for some projects.

The purpose of the Risk Analysis is not to discuss the risk associated with not approving a project. If appropriate, that discussion would be included in the Alternative Analysis conducted in **Step 2**. The Business Case form should include a checklist of required attachments. The Project Manager will update, as necessary, and an Individual Proposal Scoring worksheet attach to the Business Case.

The Project Manager will then submit the **Level 3 Business Case** to PMO for review and tracking purposes, and PMO will initiate the **Level 3 Approval** step. For more details on the activities and process flow for **Step 9**, see *Diagram F*.

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Diagram F: Process Map for Steps 7, 8, & 9 (Schedule, Cost and Business Case Preparation)



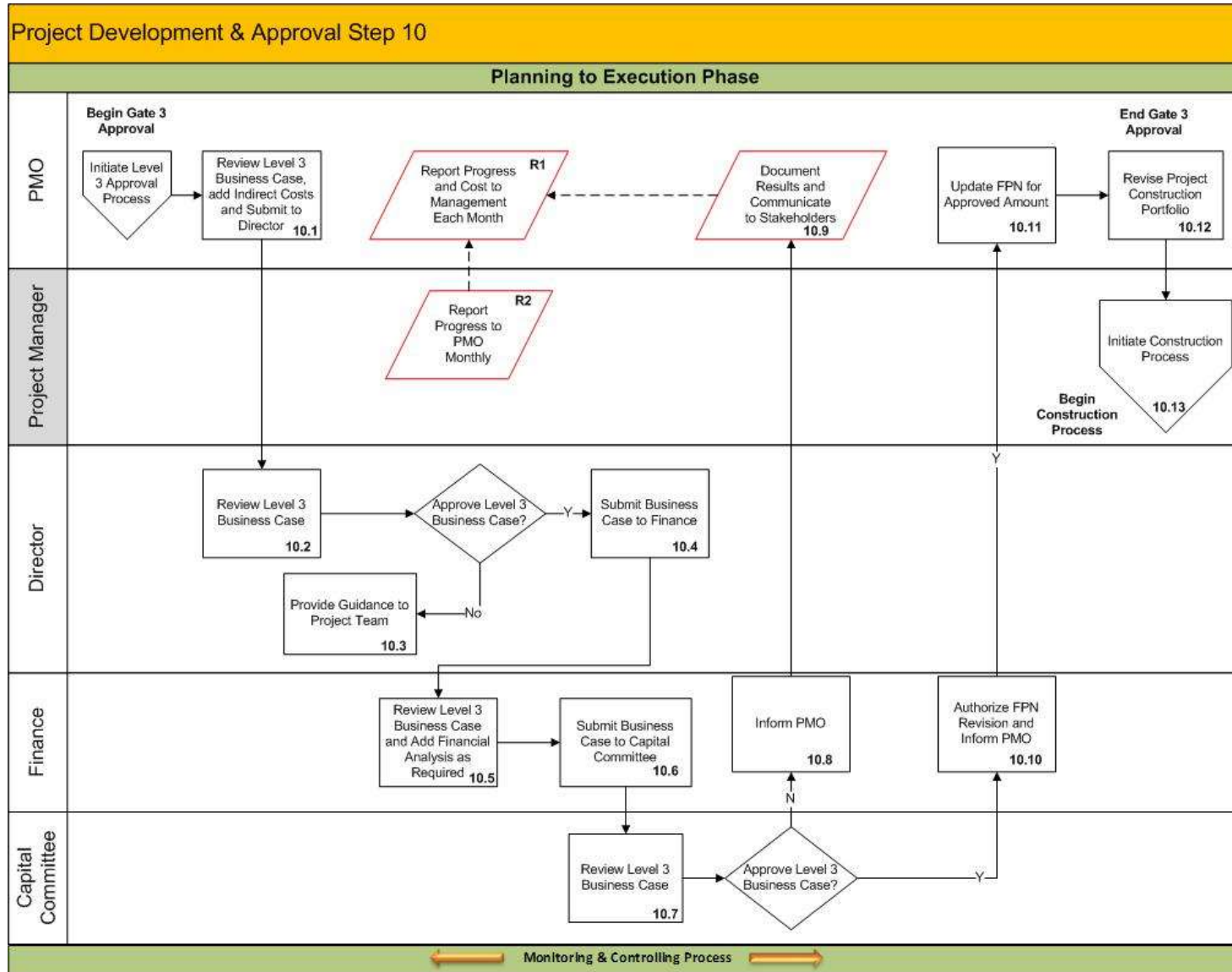
Step 10: Gate 3 Approval

Similar to **Gate 2, Level 3 Business Cases** require a review by PMO, Finance, Director, and Capital Committee. A **Level 3 Business Case** successfully making it through **Gate 3** shows that the project is aligned with company's objectives, passes a detailed evaluation of key assumptions, and has been funded.

Once approved by the Capital Committee, PMO will update the Approved Project Budget list, and Finance will revise the FPN, if required. At this stage, the authorized spend is equal to the approved project total dollars. For more details on the activities and process flow for **Step 10**, see **Diagram G**.

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Process Map for Step 10 (Gate 3 Approval)



Submit for Approval

The completed project documents should be submitted to management and the Sponsor for approval to allow the project to proceed

Steps

- Present documents to client for approval
- Client approves documents
- Inform Stakeholders
- Brief participants
- Manage expectation

Templates

- Develop as needed

Owner of This Step

- Project Manager with Project Team

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Transition to Execution

After the project is approved, the project team should review the approval process timeframe and any project requirements changes to the project plan and against the project schedule and make any adjustments if necessary and report accordingly of any project impact.

Steps

- Hold Project Execution Kick-off Meeting
 - Review Project Plan and Schedule
 - PM recaps use of, and expectations for the project collaboration workspace with the project team
 - PM recaps project roles and responsibilities
 - Review project objectives

Templates or Documents needed

- Meeting Minutes

Owner of This Step

- Project Manager

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Meeting Minutes Example – Page 1

Meeting Minutes

PROJECT: Project Management Scheduling Team

PROJECT PHASE: Monitoring & Control

MEETING DATE: 5/23/2013

MEETING NUMBER: #3

PREPARED BY: Mike McCormick

DATE SUBMITTED: 5/28/2013

COPIES TO:

These Meeting Minutes, copies of which have been furnished to all interested parties as shown, sets forth an understanding of all comments and decisions made during this meeting. The Team will proceed in reliance upon the decisions and statements set forth below. If there are any discrepancies or misunderstandings, the parties are directed to bring them to our attention in writing (with copies to all parties who receive these meeting minutes) within five (5) days. If not, kindly enter this in your files as an accurate record of the above proceedings.

PROJECT MILESTONES

Milestone	Priority	Start Date	End Date	Actual Date	Status
New Scheduling Program	1	4/25/2013	6/1/2013		Open
Project Required Schedule List	1	5/6/2013	5/15/2013	5/17/2013	Closed
Draft WBS Capital Schedule Template	1	5/6/2013	5/7/2013	5/7/2013	Closed
Draft P6 Schedule Sample with WBS Formatting Standards	2	5/7/2013	5/15/2013		Open
Schedule Variance Report	1	4/25/2013	6/1/2013		Open
Scheduler Resource Schedule	3	5/6/2013	5/31/2013		Open
Establish Meeting Minutes	3	5/6/2013	5/13/2013	5/6/2013	Closed
Resolve P6 XML Export Issue	1	4/25/2013	5/15/2013	5/8/2013	Closed
Add Milestone	Select Level				

Priority Level: 1 Highest, 5 Lowest

PROJECT TEAM MEMBERS

Team Member	Organization	Role	Attended Y/N	On-site	Off-Site
Jim R	Manager	Client	Yes	Yes	No
Mike McCormick	Contractor	Sr. PMO Consultant	Yes	Yes	No
Mike C	Contractor	Lead Scheduler	Yes	Yes	No
Andy T	Contractor	Scheduler	Yes	Yes	No
Bob M	Contractor	Scheduler	Yes	Yes	No
Select Member	Select				

Note: ACTION Column Abbreviations: JR – James R, MC – Mike C, MM – Mike McCormick, AT – Andy T, BM – Bob M.

Page 1 of 5
Project Management – Scheduling Meeting Minutes #3

	Red – high risk
	Yellow – not late, but urgent
	No color – identified and tracking
	Green – closed





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Meeting Minutes Example – Page 2

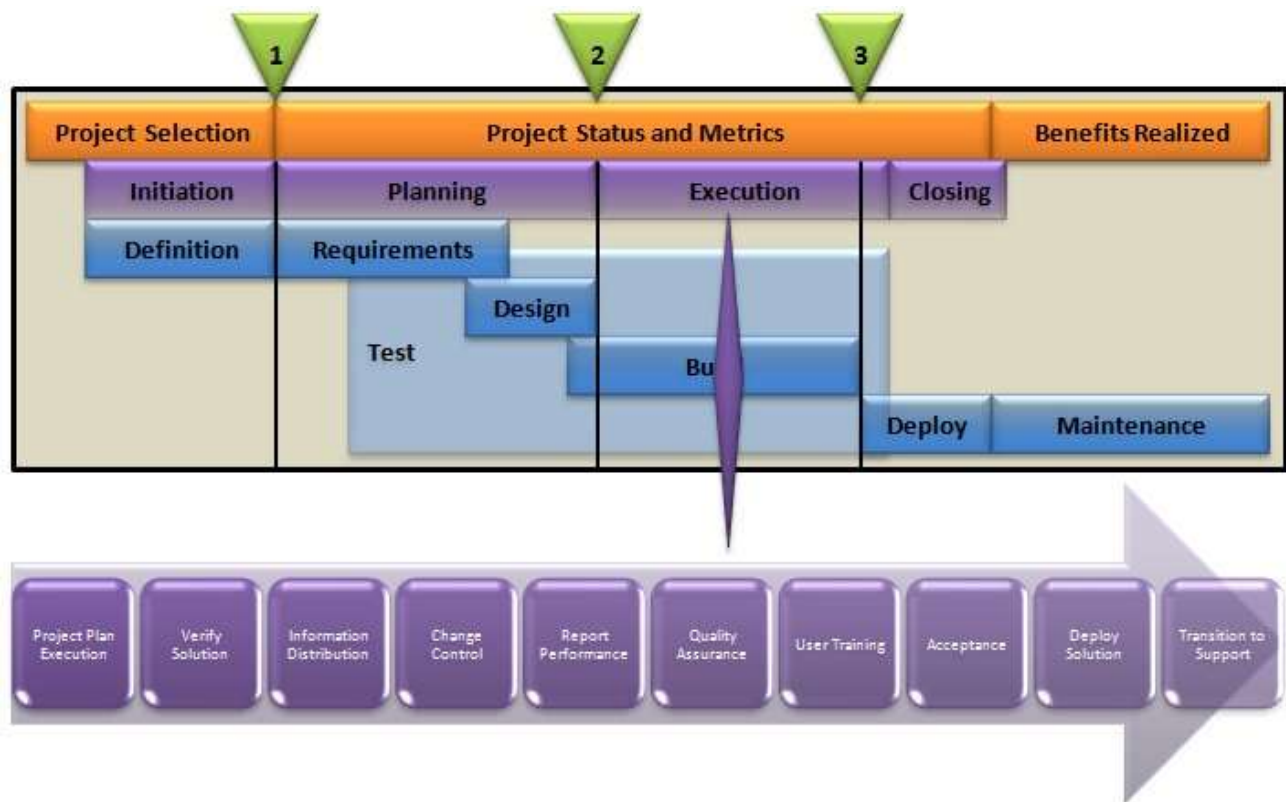
Meeting Minutes												
ITEM #	ACTION	STATUS	DUE DATE	DESCRIPTION								
Category:		Primavera (P6)										
1.01	MC	Closed	5/15/2013	Issue: P6 XML Export ⇒ 4/30/2013 – MC Followed up IT Support Export issue. Provided screen shots with error messages. ⇒ 5/3/2013 – Issue elevated to Cathy Brennan and provided her with XML Export Log report. ⇒ 5/6/2013 – Cathy still working to resolve issue. No update. ⇒ 5/8/2013 – JR & MM called Cathy and she explained that she had removed all security levels on the P6. MM tested P6 and exported 2 schedules successfully. Issue resolved.								
1.02	MC	Open	5/31/2013	Issue: Saving Custom Reports ⇒ 5/16/2013 – MM contacted MC regarding getting security access in P6 changed to allow MM to save custom report templates. ⇒ 5/23/2013 – No update.								
1.03	MM, MC	Open	5/28/2013	Issue/Task: XML Import ⇒ 5/23/2013 – Import failed but will try on Tues using MS Project by importing XML and save as a MPP file, export as MS XML file and import into P6 once more. ⇒ Click here to enter a date. Description								
1.04	Select Member	Open	Click here to enter a date.	Issue/Task: Title Here ⇒ Click here to enter a date. Description ⇒ Click here to enter a date. Description								
Category		Schedule Reports & Tracking										
2.01	MM	Closed	6/1/2013	Task: Schedule Status Report Template (Draft) ⇒ 4/30/2013 – Mike McCormick submitted draft Collier report to JR & MC. ⇒ 5/1/2013 – Submitted updated Collier Schedule Report to JR, MC & Bob Teachout (BT). Response/updated schedule needed weekly. Not received to date. Last Schedule up 4/29/2013. ⇒ 5/15/2013 – JR provided feedback.								
2.02	MM	Closed	6/1/2013	Task: PM Project Portfolio Status Report (PPS) ⇒ 4/29/2013 – Submitted Bob Teachout draft PPS report to JR. ⇒ 5/2/2013 – Final draft submitted to JR. BT PPS report. ⇒ 5/17/2013 – Revision #4 submitted to JR. Template approved for establishing for all PM's								
2.03	MM, MC	Closed	5/15/2013	Issue: Schedule XML Files ⇒ 5/6/2013 – Need all selected Projects to get a Schedule in XML file in order to produce required reports by June 1, 2013 deadline. ⇒ 5/8/2013 – Resolved by IT.								
2.04	MC	Closed	5/15/2013	Task: Project Schedule Summary Report ⇒ 5/3/2013 Provided Collier (10-0038) Project Schedule summary report to MC & BT. ⇒ 5/17/2013 – Still need updated Schedule from MC.								
2.05	MM, MC	Open	5/20/2013	Task: Project Schedule Status ⇒ 5/2/2013 – Prepared Excel tracking sheet to MC which identifies which projects currently have a Schedule, Project Status, Assigned Scheduler and Version Date of Schedule. ⇒ 5/17/2013 – MM to reform tracking sheet to mirror Capital Work Plan and incorporate identified projects to have a schedule per today's meeting. ⇒ 5/23/2013 – MM created new (3 rd version) list that Team is working from. Must finalize by Tues 28 th and update weekly. ⇒								
Page 2 of 5 Project Management – Scheduling Meeting Minutes #3												
		<table border="1"> <tr> <td>Red</td> <td>Red = high risk</td> </tr> <tr> <td>Yellow</td> <td>Yellow = not late, but urgent</td> </tr> <tr> <td>No color</td> <td>No color = identified and tracking</td> </tr> <tr> <td>Green</td> <td>Green = closed</td> </tr> </table>			Red	Red = high risk	Yellow	Yellow = not late, but urgent	No color	No color = identified and tracking	Green	Green = closed
Red	Red = high risk											
Yellow	Yellow = not late, but urgent											
No color	No color = identified and tracking											
Green	Green = closed											

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Meeting Minutes Example – Last Page

Meeting Minutes	
Issue Instructions:	
(Delete instructions from your report and save the report with a new file name, keeping this template in tack.	
Issues: Update each issue accordingly with the update "date" and information. High light the previous "Issue" details text to gray (change text color from black to gray #4 dark tones), and leave until Issue is closed. Each week only the current update text is black. This will highlight the current issue from the old information making it easier to read the meeting minutes.	
Closed Issues: When an issue is "Closed" highlight the text to gray (change text color from black to gray) and leave in the meeting minutes for one week to create an historical record and then delete the issue if Issue is no longer important.	
Issue Status: In the Status column, highlight the cell the appropriate color in accordance with the Status Legend in the footer of the document.	
<u>END OF MEETING MINUTES</u>	
The next Schedule Meeting is scheduled for:	
Day & Date:	Friday, May 31, 2013
Time:	10 AM
Where:	2nd Floor Conference Room 211
NOTE: We are tentatively scheduled for this meeting which is our final meeting to meet the required deadline. Future meetings will be established to provide necessary updates.	
Page 5 of 5 Project Management – Scheduling Meeting Minutes #3	
	Red = high risk
	Yellow = not late, but urgent
	No color = Identified and tracking
	Green = closed

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During the Execution Phase

The Project Execution (or Implementing Phase) is the part of the project and product life cycle where the tasks that build the deliverables are executed. The Project Execution and Control Phase begin when the project plan is approved and the resources necessary for executing the starting task are assembled. Project execution should be in accordance with the approved project plan and the project schedule. This phase concentrates on the creation of new (or revision of existing) processes, application solutions, and/or technology infrastructure components necessary to sustain business objective.

For IT project types, testing really starts during the Planning and Design Phase as the requirements are outlined and move through the progression of Use Cases, Test Cases, and Test Plans to ensure the functionality is included in the finished product. Testing validates the behavior of the solution and it's "fitness" for deployment. Testing should progress from the validation of business or technical requirements through customer acceptance and operational readiness.

Objectives

The focus of the Execution/Implementing Phase is to:

- Complete the solution according to the project design and plan following the project schedule and managing change.
- Monitor and review the project's progress against the plan; identifying when the project is off track and taking corrective actions as required.
- Gain project acceptance.

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- Transition the customer to the new solution.

Project execution includes the following key elements:

- Project Plan Execution
- Verify Solution (Test & Modify)
- Change Control
- Report Performance
- Quality Assurance
- User Training
- Acceptance Testing
- Deploy Solution
- Transition to Closing (M&O Support)

Inputs

- Project Charter
- Concept Business Case
- Actual Business Case
- Industry Best Practices
- Finalized Project Requirements
- Project Plan which includes:
 - Project Scope
 - Project Assumptions and Constraints
 - Staffing Plan
 - Cost Plan
 - – Communication Plan
 - – Risk Assessment and Mitigation Plan
 - – Quality Plan
 - – Procurement Plan
- Project Schedule
- Risk Assessment and Issues/Action Item Matrix
- Meeting Reports

Outputs

- Issues/Action Item Matrix
- Change Control Documents
- Timesheets
- Status Reports
- Meeting Reports

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Project Plan Overview

During this step, the Project Team, under the direction of the Project Manager, will perform the project tasks as outlined in the Project Schedule, the Project Management Plan, the Project Designs, and other project planning documents to fulfill the project objectives. Prior to the start of this step, hold a meeting with your project team to ensure everyone understands the current project environment along with roles and responsibilities. Review all the accepted project documentation to date. During this step, the Project Manager must coordinate and direct the various technical and organizational interfaces existing in the project. The project deliverable or product is actually created during this step.

If this is an application development project, the project team will follow the cycle outlined in the graphic to the left. In order to keep the development flowing smoothly, the developers will be building while the Quality Assurance (QA) team is testing. Any variance in the test results from the objectives of the project will result in a modification of the build process and the cycle will start again.

If changes are required, the change control process will be invoked and the Project Management Plan and other project documents will be modified as required for accepted changes. The Project Manager will not only manage the activities, but also coach and mentor the project team as they perform their activities.

Steps

- Perform project activities as outlined in the Project Schedule and Project Management Plan.
- Identify needed changes and inform the Project Manager.
- Work with Project Manager to resolve issues.
- Identify barriers inhibiting the timely performance of project activities.

Templates

- Project Plan

Responsibilities

- Project Manager with Project Team

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Verify Solution Overview

As the project solution is going through the process of Build, Test, and Modify for application development or Build for other project types; the solution should be installed in a pilot or test setup so acceptance tests can be run. The Subject Matter Experts on the Project Team will help create the acceptance test, which are accepted by the customer. The tests are run on the pilot setup and the solution is modified according to test results. The testing process is repeated until the solution meets the acceptance criteria agreed on by the customer.

Steps

- Install solution in test environment
- Run Integration/Function Tests
- Run System Tests
- Run Acceptance Tests
- Review test results
- Modify solution according to test results
- Run tests again until solution meets acceptance test criteria

Templates

- Test Plan

Responsibilities

- Project Manager with Project Team

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Information Distribution Overview

Information distribution involves making needed information available to project stakeholders in a timely manner and requires the project manager and team members to perform the following five tasks:

- Review and implement the Communications Management Plan outlining:
 - Who needs information?
 - What information they need?
 - When do they need the information?
 - How is it going to be delivered?
 - Who is going to maintain/send the information?
 - Where the information is stored?
- Conduct project meetings as needed to keep people informed:
 - Create an agenda and take minutes.
 - Distribute minutes to Stakeholders after each meeting.
 - Maintain information in the Project Management Information System.
 - Track issues and action items from each meeting.
- Communicate all relevant project information informally and formally as needed through the project manager, the project focal point.
- Identify and communicate barriers to project execution.
- Attempt to respond to special requests for information from key stakeholders.

Project team members are responsible for communicating effectively with one another as the project requires and forwarding all relevant project information to the project manager for disposition and broader distribution. Team meetings, e-mail, networked databases, enterprise document management systems, project management software, and the organization's intranet can all be used to facilitate easy, effective, and timely distribution and recording of project information.

Steps

- Follow Communications Plan
- Provide timely information distribution to stakeholders
- Post all documents and updates on the collaborative workspace
- Report project status to stakeholders
- Solicit feedback about adequacy of communications

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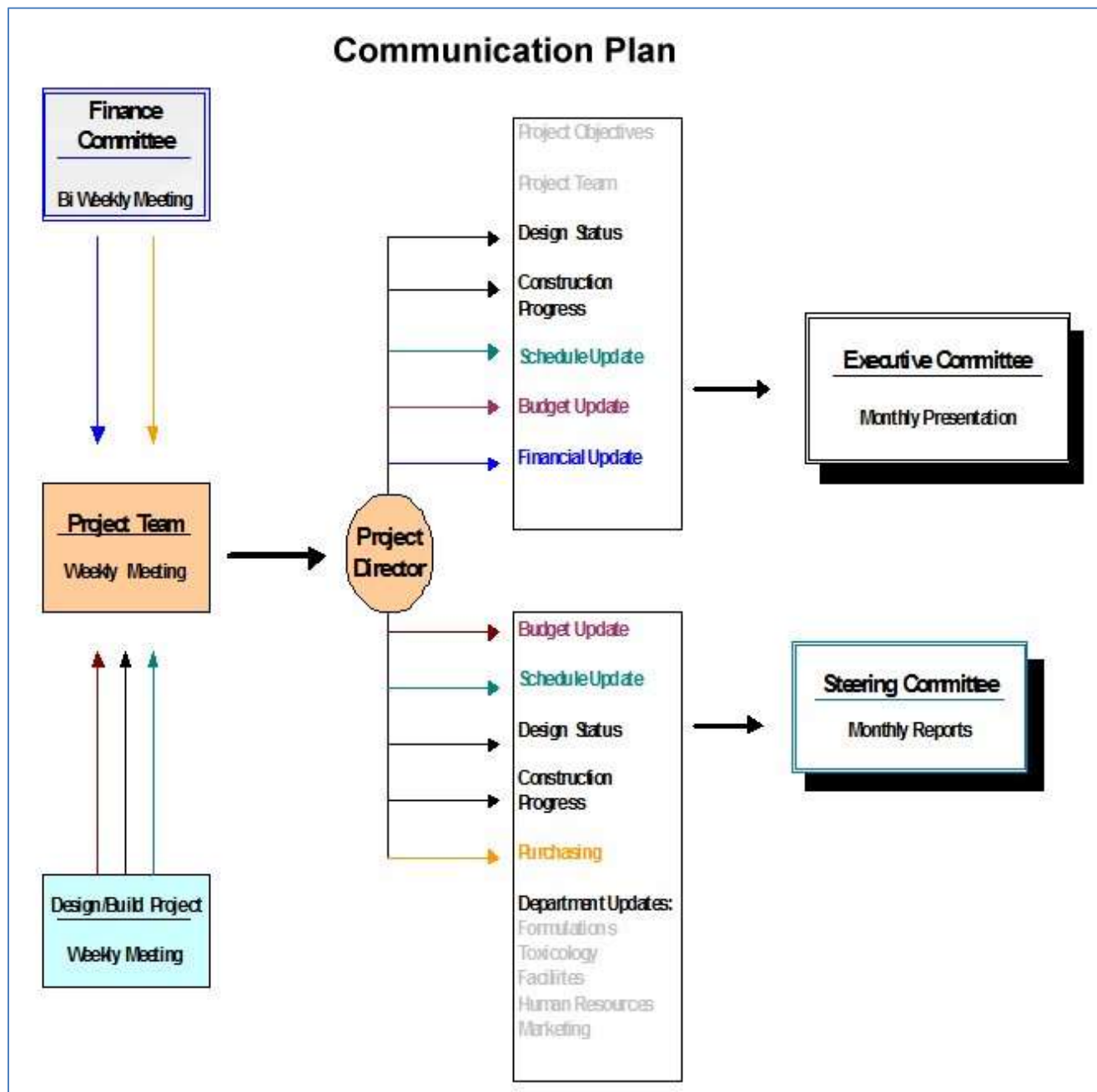
Templates

- Communications Plan (can be part of the Project Management Plan)

Responsibilities

- Project Manager with Project Team

Communication Plan Flowchart Example



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Change Control Overview

Overall change control is concerned with:

Influencing the factors which create changes to ensure that changes are beneficial

Determining that a change has occurred

Managing the actual changes when and as they occur

Change control requires all approved changes should be reflected in the project plan as changes to the product scope, as changes to the project timeframe (also noted in the project schedule), or as changes to the resource plan. Change Control is the act of coordinating changes across all knowledge and control areas of project management. For example, a proposed schedule change will often affect cost, risk, quality, and staffing.

The Change Control system includes:

- Monitoring performance to detect variances from plan
- Creating and submitting Change Requests to make changes to any aspect of the project
- Ensuring all appropriate changes are recorded accurately
- Preventing incorrect, inappropriate, or unauthorized changes from occurring (this can be done by utilizing a Change Control Board)
- Informing appropriate stakeholders of authorized changes.

All change requests will be recorded and submitted using a Change Control Form. The project manager will investigate any impact on the project scope, schedule, or cost and make estimates of the work it will take to accomplish the change. The PM will review the Change Control Form with the project office or change control board if in place; and return the Change Control Form to the requestor with a description of any impact and any additional costs associated with the change request.

The Change Control Document will then be signed by the requestor (if it is the customer or the requesting business partner) signifying acceptance of the changes to the project scope, cost, time, or resources; providing the ok to proceed with the amended implementation. Depending on the scope of the change, a Change Order may result in a new project to handle the requirements or a significant change to the current project. All change requests should be noted in the Status Report and significant changes may need to go to Governance for approval.

Steps

- Initiate Change Control Process.
- PM evaluates all submitted changes for impact to schedule, cost, resources, risk, and quality.
- Obtain Client approval for all changes.
- Revise Project Management Plan and Project Schedule for accepted changes.
- Use Change Control Log for all changes submitted.
- Communicate all approved changes to Project Team and Stakeholders.

Templates

- Change Control Plan
- Control Log
- Change Control Form

Responsibilities

- Project Manager with Project Team

All Change Control Forms should be posted to the project collaborative workspace for tracking and updating. A separate Change Control folder should be created. All discussions on a change should take place in the collaborative workspace.

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Tracking Change Plans

eDashboard ePortfolio eProjects pTracker

Dashboard Budget: ● Status: ● Priority: ● Visibility: ● Impact: ● Risk: ● End Date: ● New End Date: ●

Project Details Entered Date: 6/5/2010 6:27:16 AM Priority: High Current Date: 2/22/2016 Project Number: XYZ-0001

Project: [ENOVIA Integration Assessment](#)

Start Date: 6/28/2010 End Date: 1/28/2011 ^{+/-} 4 Days Schedule Wks: 30 Schedule Risk Wks: 1 or 4 Days

Complete Date: 2/2/2011 New End Date: 2/1/2011 1 Days Schedule Days: 214 Revised Schedule Wks: 31 or 218 Days

Closed Date: 2/5/2011 Estimate Job Years: 0.58 Final Risk Wks: 1 Final Schedule Wks: 31 or 222 Days

Sponsor/Owner: William McCutcheon Project Manager: Michael McCormick Budget in Days: 245 Risk Score: 3.0

Budget Status: On Budget Project Status: Active Change Orders: \$3,500.00 2.6%

Funding Budget: \$92,000.00 Funding Balance: \$175,550.00 Current Task Billings: \$204,450.00 84.0%

Performer Cost: \$243,509.35 264.7% Less Current Billings: \$39,059.35 Available Funds (Bal): \$132,990.65 144.6%

Project Details Milestones/RASCI Estimates/Budgets Project Risk Change Plan Change Log PM Report Project Roles Docs Log Lessons Log Closeout

CCMP ID	Contractor	Company ID	Start Plan	Due Date	Change Risk	Plan Status Risk	Plan Priority Level	Version #
2	International Business Machines Corporation	3	10/31/2012	11/2/2012	●	●	●	0
3	Platinum Solutions Inc.	2	11/1/2012	11/2/2012	●	●	●	0
Total								

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Building a Project Management Office (PMO)

Change Plan Example

The screenshot shows a web-based form titled "Change Control Management Plan: ENOVIA Integration Assessment". The form is divided into several sections for data entry and documentation.

Form Fields:

- Contract Name:** PCR #7 SOW URKT-7HQLXW
- Contractor:** International Business Machines Corporation
- Project Manager:** Michael McCormick
- Priority:** High
- Version #:** 0
- Plan Status:** In Progress
- Start Plan:** 10/31/2012, 5 Days
- Due Date:** 11/2/2012, 2 Days
- Risk Status:** 3
- Version Date:** 10/31/2012
- Sent To Approver:** 11/5/2012
- Plan Approver:** Kimberly Addis
- Approved:** Yes
- Approval Date:** 11/5/2012

STEP 1 - Introduction

The repository for all project configuration and change control documentation is located:
ENOVIA system displays the Change and Configuration Management Plan to provide a process and guidance for managing change during project execution.

The following Tools will be used:
A change management log and change request documents are used as tools to monitor, track, and approve request to change items under change control or configuration management.
The IT support contractor is expected to provide the input to the change control process.

STEP 2 - Participant Roles and Responsibilities

The Department Roles are:
Originator, Review Process and Final Approval

The role for the Project Sponsor/Stakeholder is:
Originator and Final Approver

The role for the Federal Partners is:
N/A

The role for the Counties and Local Offices is:
N/A

Building a Project Management Office (PMO)

Change Log Example

[eDashboard](#) [ePortfolio](#) [eProjects](#) [pTracker](#)

Dashboard Budget: ● Status: ● Priority: ● Visibility: ● Impact: ● Risk: ● End Date: ● New End Date: ●

Project Details Entered Date: 6/5/2010 6:27:16 AM Priority: High Current Date: 2/22/2016 Project Number: XYZ-0001

Project: ENOVIA Integration Assessment

Start Date: 6/28/2010 End Date: 1/28/2011 ^{+/-} 4 Days Schedule Wks: 30 Schedule Risk Wks: 1 or 4 Days
 Complete Date: 2/2/2011 New End Date: 2/1/2011 1 Days Schedule Days: 214 Revised Schedule Wks: 31 or 218 Days
 Closed Date: 2/5/2011 Estimate Job Years: 0.58 Final Risk Wks: 1 Final Schedule Wks: 31 or 222 Days

Sponsor/Owner: William McCutcheon Project Manager: Michael McCormick Budget in Days: 245 Risk Score: 3.0
 Budget Status: On Budget Project Status: Active Change Orders: \$3,500.00 2.6%
 Funding Budget: \$92,000.00 Funding Balance: \$175,550.00 Current Task Billings: \$204,450.00 84.0%
 Performer Cost: \$243,509.35 264.7% Less Current Billings: \$39,059.35 Available Funds (Bal): \$132,990.65 144.6%

Project Details | Milestones/RASCI | Estimates/Budgets | Project Risk | Change Plan | **Change Log** | PM Report | Project Roles | Docs Log | Lessons Log | Closeout

CC #	Change Title	Contract Name	Request Date	Due Date	Status	Cost Estimate	Approval Status	Change Risk	Pr
12	My What A test	PCR #7 SOW URKT-7HQLXW	11/5/2012	11/9/2012	Completed	\$1,500.00	Approved	●	
13	Today's CC Log test	PCR #7 SOW URKT-7HQLXW	10/30/2012	11/12/2012	In Progress	\$500.00	Reviewing	●	
17	A Test To Validate	Upgrade test	10/31/2012	11/5/2012	Completed	\$2,000.00	Approved	●	
Total		3				\$4,000.00			

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Building a Project Management Office (PMO)

Change Request Form Example

Change Control Request

CC - 12

Project: ENOVIA Integration Assessment Contract Name: PCR #7 SOW URKT-7HQLXW Supporting Docs: No

Change Title: My What A test Project Manager: Michael McCormick Add

STEP 1 - Change Identification

Request Date: 11/5/2012 Change Type: Technical Requested By: Kristen McCormick Status: Completed Priority: High Due Date: 11/9/2012 Impact Days: 0 Risk: 3

CC Process Days: 4 Sent To Reviewer: 11/5/2012

Description: Data validation test. Reason: Current function not working.

Review Process (Days) and Required Review Dates

Reviewer Days	PM Days	Approver Days
2	1	1
Due Date	Due Date	Due Date
11/7/2012	11/8/2012	11/9/2012

STEP 2 - Change Evaluation

Reviewer Role: Performer Team Lead Reviewed By: David Dowdell

Effort Estimates (hrs): Evaluation: 6 Project Plan: 0 Requirements: 0 Design: 0 Test: 20 Implementation: 0 Total Man Hours: 26

Project Timeline Impact: Task Timeline(s): No Milestones: No Release(s): Yes Schedule: No Budget: Yes Quality: No Contract: No

Review Complete: 11/8/2012 Review Days: 3 Cost Estimate: \$1,500.00 Validation: Yes Sent To PM: 11/8/2012

Risk Evaluation:

Recommendation:

Project Manager Review

PM Comments: Corrective solution is recommended. PM Reviewed: 11/8/2012 PM Approved: Yes Sent To Approver: 11/8/2012 Recommendation: Agree

STEP 3 - Change Decision/Approval

Approval Status: Approved Sponsor/Owner: Mark Estel Sponsor/Owner Role: Team Lead Due Date: 11/9/2012 Decision Date: 11/9/2012 Delay Days: 0 Request CO: Yes

Decision Comments: Request approved.

Building a Project Management Office (PMO)



Performance Reporting Overview

Performance reporting involves collecting and disseminating performance information in order to provide stakeholders with information about how resources are being used to achieve project objectives. This process includes:

- Status reporting—describing where the project now stands.
- Progress reporting—describing what the project team has accomplished including timecards and task information.
- Forecasting—predicting future project status, progress against plan, and expected time to completion.

Performance reporting should generally provide information on scope, schedule, cost, and quality. Many projects also require information on risk and procurement. Reports may be prepared comprehensively or on an exception basis.

Some of the steps the project manager should take to ensure performance reporting are:

- Collect Regular Updates on project progress through timecards and project task completion information.
- Identify Variances from Plan and Needed Changes.
- Summarize Project Performance and Problems in the Status Report.

Although team meetings allow all team members to be apprised of project performance and problems, the project manager is able to have the best overall understanding of where the project stands. It is up to the project manager to collate and synthesize all the different inputs and summarize them for the team, project sponsor, and other stakeholders.

Steps

- Everyone on project team completes timesheet and updates project task information
- Project Manager uses timesheets to update Cost Plan and create Status Report

Templates

- Timesheet
- Project Status Report (Refer to example next page)

Building a Project Management Office (PMO)

Progress Status Report Example – Page 1

Project Progress Report

Project: ENOVIA Integration Assessment	Risk Score: 3
Project Manager: Michael McCormick	Start Date: 6/28/2010
Project #: XYZ-0001	End Date: 1/28/2011 4 Days
Priority: High Status: Active	Revised End Date: 2/1/2011 1 Days
Revised Risk Wks: 264	Funding: ● Impact: ● Risk: ● End Date: ● New End Date: ●

Project Notes:

#: 2 1/10/2011 IBM to submit Mitigation Plan with the removal of their Project Manager by 1/24/2011.

#: 3 1/11/2011 IBM will provide the following Statement of Work (SOW) to NETL for deployment and maintenance support in conjunction with the deployment of an ENOVIA MatrixOne based software solution at NETL.

Project Description:

IBM will provide the following Statement of Work (SOW) to NETL for deployment and maintenance support in conjunction with the deployment of an ENOVIA MatrixOne based software solution at NETL. This solution provides continued support of NETL specific ENOVIA MatrixOne code enhancements, previously delivered code and software implementation related issues to address the following NETL business issues:

IBM's Approach

IBM proposes to address these business issues using hourly services approach under a fixed price contract type. This approach provides NETL a price structure for different resources and a mix of tasks described in this SOW.

The tasks include:

1. ENOVIA MatrixOne Custom Code Maintenance Support (Custom and Embedded);
2. Installing software upgrades on NETL's Test and Development and Production environments
3. Assisting with documenting data and security model for ENOVIA MatrixOne
4. Correcting Label Deficiencies identified by NETL
5. Correcting maintenance request identified in Appendix C-1
6. Assisting with reporting interfaces between ENOVIA MatrixOne and COGNOS
7. Assisting with Fossil Energy dashboard development and the DOE CFO's Dashboard development
8. Tracking and Reporting of Custom and Base Code maintenance requests
9. Development Oversight and Project Management

Current Project Tasks:

Title	Due Date	Delay Days	Assigned To	Status	% Complete
IBM Project Plane (MS Project format)	7/2/2011	1	Craig Estridge	At Risk	0.00%
Comments: 7-5-2010 - Received IBM's Project Plan on Saturday (7-3-2010) in Excel format. The plan was rejected for non-compliance with SOW. Requested resubmit by 7-5-2010 in MS Project.					
IBM Document Security Data Model Task	7/11/2011		Craig Estridge	At Risk	100.00%
Comments:					
IBM Enterprise Integration Task	7/12/2011		Craig Estridge	No Activity	50.00%
Comments:					

Prepared By: Michael McCormick ePMO Tracker - Project Progress Report	MPCS, Inc. All Copy Rights Reserved	Monday, February 22, 2016 8:28 AM
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Building a Project Management Office (PMO)

Progress Status Report Example – Page 2

Project:	ENOVIA Integration Assessment		Risk Score:	3	
Project Manager:	Michael McCormick		Start Date:	6/28/2010	
Project #:	XYZ-0001		End Date:	1/28/2011	4 Days
Priority:	High	Status:	Active		
Revised Risk Wks	264	Funding:		Impact:	
		Risk:		End Date:	
		New End Date:			
Revised Risk Wks	264	Funding:		Impact:	
		Risk:		End Date:	
		New End Date:			
IBM Dashboard and Reporting Support Task	7/13/2011		Craig Estridge	No Activity	0.00%
Comments:					
IBM Label Discrepancies Task	8/19/2011		Craig Estridge	At Risk	0.00%
Comments:					
IBM Project Management Task	8/26/2011	17	Craig Estridge	Rebaselined	65.00%
Comments:	A test.				
IBM Emergency Ad-Hoc Support	9/1/2011		Craig Estridge	Deferred	0.00%
Comments:					
Current Contract Tasks:					
Title	Due Date	Assigned To	Status	% Complete	Priority
Contractor: Keylogic Systems Inc.					
Thursday's Test Also	11/8/2012		In Progress	0.00%	High
Title	Due Date	Assigned To	Status	% Complete	Priority
Contractor: Platinum Solutions Inc.					
Thursday Event Testing	11/8/2012		In Progress	0.00%	High
CMan	11/8/2012		Not Started	0.00%	Normal
1st Test	11/2/2012		In Progress	0.00%	Normal
Test Contract Task Link	11/8/2012		Not Started	0.00%	Normal
Title	Due Date	Assigned To	Status	% Complete	Priority
Contractor: International Business Machines Corporation					
Appendix A: A-2: Weekly Project Status Report		Craig Estridge	Not Started	0.00%	Medium
2.1 Project Scope Task 3.0 Report interface with COGNOS		Craig Estridge	At Risk	0.00%	High
2.1 Project Scope Task 4.0 - Dashboards		Craig Estridge	At Risk	0.00%	Medium
2.0 Project Scope Task 6 - Project Management Services		Craig Estridge	In Progress	0.00%	Medium
2.0 Project Scope Task 8 - Data Architecture Diagram & Security Model		Craig Estridge	At Risk	0.00%	Medium
2.2 IBM - Project Management		Craig Estridge	At Risk	0.00%	Medium
2.2 PM - Subtask 2 - Project Tracking & Reporting		Craig Estridge	At Risk	0.00%	Medium
Prepared By: Michael McCormick					
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Building a Project Management Office (PMO)

Progress Status Report Example – Page 3

Project:	ENOVIA Integration Assessment			Risk Score:	3
Project Manager:	Michael McCormick			Start Date:	6/28/2010
Project #:	XYZ-0001			End Date:	1/28/2011 4 Days
Priority:	High	Status:	Active	Revised End Date:	2/1/2011 1 Days
Revised Risk Wks	264	Funding:	●	Impact:	●
		Risk:	●	End Date:	●
		New End Date:	●		

Task	Start Date	Assignee	Status	Progress	Risk
2.2 PM - Subtask 5 - Strategic Planning		Craig Estridge	At Risk	0.00%	Medium
2.2 PM - Completion & Material Deliverables		Craig Estridge	At Risk	0.00%	Medium
2.2.1 ENOVIA MatrixOne Labels		Craig Estridge	At Risk	0.00%	Medium
2.2.1 Labels - Completion & Material Deliverable		Craig Estridge	Not Started	0.00%	Medium
2.1 Project Scope Task 2.0 Labeling Deficiencies	9/30/2010	Craig Estridge	At Risk	0.00%	High
2.2.3 MatrixOne Reporting Subtask 2 - HQ Reporting		Craig Estridge	Not Started	0.00%	Medium
Appendix A; Deliverable Materials Guideline - A-3: Monthly Reports		Craig Estridge	At Risk	0.00%	Medium
Appendix A: Deliverable Materials Guideline - A-4: Project Plan	7/2/2010	Craig Estridge	Completed	100.00%	High
Appendix A: Deliverable Materials Guideline - A-6: Functional Development Plan		Craig Estridge	Not Started	0.00%	Medium
Appendix A: Deliverable Materials Guideline - A-8: Demonstration Sessions		Craig Estridge	Not Started	0.00%	Medium
Appendix B: Project Procedures - B-2: Deliverable Materials Acceptance Procedure	6/18/2010	Kristen McCormick	At Risk	0.00%	High
2.3 NETL Responsibility - NETL Project Manager		Kristen McCormick	In Progress	100.00%	Medium
2.3 NETL Responsibilities - Other NETL Responsibilities	6/14/2010	Kristen McCormick	Completed	100.00%	Medium
2.2.3 MatrixOne Reporting		Craig Estridge	Not Started	0.00%	High

Current Project Issues:

Issue:	4 Dashboard Test				
Assigned To:	Harry Abemathy	Status:	Open		
Opened By:	Michael McCormick	Category:	M&O		
Opened Date:	5/2/2011	Due Date:	5/3/2011	Priority:	High <input type="checkbox"/> Risk Impact
Comments:					

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ePMO Tracker - Project Progress Report			8:29 AM

Building a Project Management Office (PMO)

Responsibilities

- Project Manager with Project Team



Quality Assurance Overview

Quality assurance is applied to ensure the project will satisfy the relevant quality standards and should be performed throughout the project. In most companies, the Quality Assurance/Quality Control teams will provide this function.

Some of the steps the project manager should take to ensure quality projects are:

- Review project deliverables prior to implementation using the project test plan.
- The earlier they any identified problems are fixed, the cheaper the solution.
- Anticipate quality deviations and take preventive actions.
- Test project and product processes prior to deployment.
- Solicit early customer review and feedback.

Ensure all quality assurance documentation are posted to the collaborative workspace and provided to all project stakeholders. As the project progresses, the Project Office or a senior project/program manager will ensure project quality by holding Project Quality reviews.

Steps

- Quality Assurance/Quality Control team will provide quality assurance throughout the project
- PMO or Sr. PM will conduct periodic project reviews.
- PM reviews project results against objectives with team.
- Anticipate quality deviations and take preventive actions.
- Test project and product processes prior to deployment.
- Solicit early customer review and feedback.

Templates

- Project Quality Review (Project Team)

Responsibilities

- Project Manager with Project Team

Building a Project Management Office (PMO)



User Training Overview

In most cases, training the end user is part of the project requirements or objectives to ensure the solution is managed and used as designed. The Project Manager and Project Team should develop and present the training to the end user along with developing a permanent training plan for ongoing training.

Steps

- Develop Training Plan
- Develop training materials
- Schedule training sessions
- Conduct training
- Develop permanent Training Plan

Templates

- Training Plan (can be part of the Project Management Plan)

Responsibilities

- Project Manager with Project Team

Building a Project Management Office (PMO)



Acceptance Testing Overview

Before the solution can be deployed, the customer will run and document acceptance tests. Acceptance for the product of the phase or project by the customer must be documented and made part of the project records.

Steps

- Client performs acceptance tests.
- All tests meet project criteria.
- Document test results.

Templates

- Acceptance Tests (Created by QA).

Responsibilities

- Project Manager with Project Team and Customer Team.

Building a Project Management Office (PMO)



Deploy Solution Overview

We are now ready to deploy the solution to the end users using the Deployment and Contingency Plan if needed. Depending on the terms of the contract, the project team will provide support during the Deployment and follow-on support after the Deployment to ensure the solution is working as specified.

Steps

- Finalize and test Deployment Plan with client
- Finalize Contingency Plan
- Client notifies end users of deployment plan
- Client authorizes deployment of new solution
- Deploy solution
- Use Contingency Plan as last resort
- Hold Post-Deployment meeting

Templates

- Deployment Plan (Created by Project Manager and Customer)
- Contingency Plan (Created by Project Manager and Customer)

Responsibilities

- Project Manager with Project Team

Building a Project Management Office (PMO)



Transition to Support Overview

The accepted project deliverable can now be transitioned to the support or maintenance team and project documents can be released to the support team by the customer for reference following the Support Transition Plan.

Steps

- Prepare Support Transition Plan.
- Transition solution to support organization.
- Customer will provide all necessary documentation to support team.

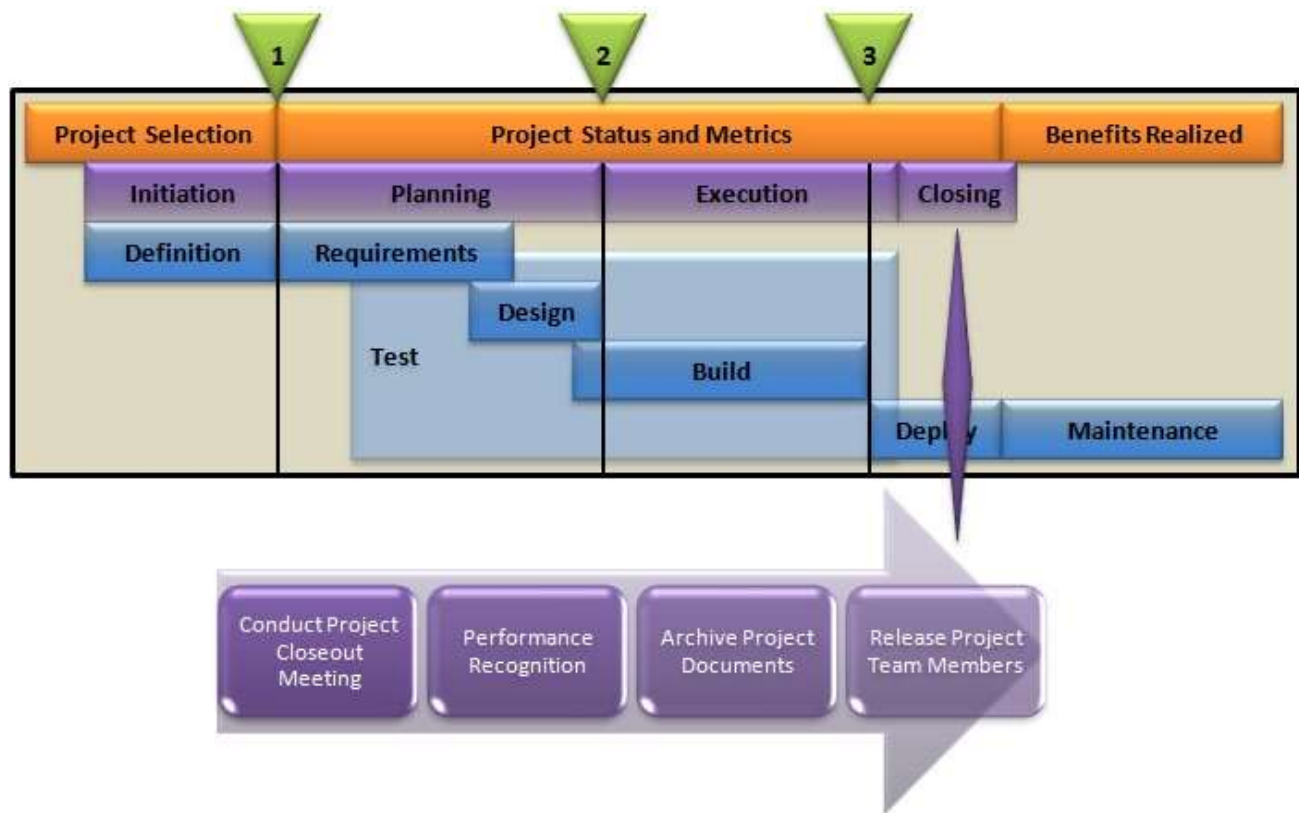
Templates

- Support Transition Plan (Created by Project Manager and Customer).

Responsibilities

- Project Manager with Project Team and Customer Team.

Building a Project Management Office (PMO)



During the Closeout Phase

The Project Closing or Closeout Phase is the last phase in the project life cycle. Closeout begins when the user accepts the project deliverables and the project oversight authority concludes that the project has met the goals established. The major focus of project closeout is administrative closure and logistics.

Project closeout includes the following key elements:

- Turnover of project deliverables to operations
- Redistributing resources—staff, facilities, equipment, and automated systems
- Closing out financial accounts
- Completing, collecting, and archiving project records
- Documenting the successes of the project
- Documenting lessons learned
- Planning for Post Implementation Review
- Release Team Members to resource pool.

The **Closing Phase** brings the project to an orderly conclusion and retains its history for the benefit of subsequent projects. Tasks include final acceptance of the project, archival of project materials, reporting project performance, celebration, and release the project resources for use on other projects.

The **Closing Phase** provides the opportunity to assess the effectiveness of the project processes, the delivered solution, and formally close the project. Lessons learned and best practices are captured to be used during continuous process improvement sessions and as a reference for future projects and administrative closure takes place to ensure all project accounting is completed. Project resources are formally released.

Benefits realization and customer satisfaction are handled after the project close by Project Governance or the Project Management Office.

Inputs

- All Project Documents

Outputs

- Project Closeout Form
- Lessons Learned Document
- Meeting Reports

CHAPTER 6 – PMO OPERATIONS



Building a Project Management Office (PMO)

Managing a PMO

Now that you have established a PMO with your methodology, project management templates or practical examples then you're ready to initiate managing the PMO life cycle of the 4P's:

1. Project Management Office
2. Portfolio Management
3. Program Management
4. Project Management

PMO Life Cycle

The **PMO Life Cycle** is a series of phases undertaken to initiate, plan, execute and improve a PMO as previously outlined in this guide by completing the four phases.

Here's a brief recap of the PMO life cycle:

PMO Initiation

To initiate a PMO, the team must first define the role of the PMO and obtain sponsorship. These first steps are formalized in the Business Case and Charter documents. The team then secures funding and a steering committee is appointed which ensures the complete support of the PMO across the organization. The physical location for the PMO is established, roles are defined and staff is appointed to those roles to complete the Initiation phase of the PMO life cycle.

PMO Planning

The next step in the life cycle is to create a high-level execution plan. The execution plan lists the services that the PMO will offer during the execution phase and the timeframes for their introduction to the organization.

Once the execution plan is prepared, the PMO selects the methods, standards, processes and tools that the organization will adopt. The following activities are completed:

- Adopt methodology - The project management methodology is an overall framework for project management which includes a life cycle appropriate to the organization.
- Adopt standards - Standards are the rules to be followed when running projects. They must conform to professional, governmental and industry requirements.
- Adopt processes - Processes are the specific instructions detailing how projects will be executed.
- Adopt tools - Tools include templates, checklists, forms and flow charts.
- Adopt software - This includes software for project management and executive dashboards for status reporting, as well as risk management tools and other software systems
- Adopt knowledge base - The knowledge base is a library of all current and historical project management information.

Building a Project Management Office (PMO)

PMO Execution

The *execution* phase is the ongoing operational phase of the PMO. During this phase, four types of services are offered:

- General services are offered by almost all PMOs.
- Supportive services provide support to managers and teams.
- Controlling services assess, review and audit project status.
- Directive services are used to directly manage projects.

PMO Improvement

After a PMO has offered these services for a reasonable period of time, it is ready to expand and improve. This is done by:

- Improving the PMO operation - The PMO improves its own operations by measuring its effectiveness, implementing changes to existing services and adding new services.
- Improving PM maturity - The PMO can assess the overall capability of the organization to reliably deliver acceptable project results on time and within budget. It can then develop and implement a long-term plan to improve that capability.

The improvements identified are more extensive than the minor, routine improvements to each service that are built into the PMO Execution Phase. PMO Improvement requires additional planning and a commitment of additional resources to undertake the extensive amount of change required to continue to improve the overall level of project management success in the organization.

PMO Metrics

The PMO value may be realized through better project performance or through some other portfolio, program or project management objective set by the organization. Whatever those objectives are, the PMO should link them to specific metrics that will indicate how project management practice and project performance change overtime (data trending). These metrics may be:

- Project performance: delivering on time.
- Project performance: delivering in budget.
- Project performance: delivering all agreed products or services.
- Customer satisfaction: product or service meeting customer expectations.
- Combination of various metrics in a Balanced Scorecard.

Other benefits more related to processes and strategic considerations include:

- Standardization of operations; efficient and effective operations.
- Better resource allocation, capacity planning.
- Quicker access to higher quality project information (progress, risks).
- More realistic prioritization of work.
- Company rather than silo decision-making.

Building a Project Management Office (PMO)

Metrics to track the PMO value should consider who is accountable and responsible for the specific areas. PMOs have been seen to have bipolar distributions with either very little or very significant decision making authority, and also with either no responsibility over Project Managers, or having all Project Managers reporting to the PMO. The expected benefit from each extreme type of PMO has to be different.

In “Lite” PMOs with little decision making authority (metric reporting) and where Project Managers report to Functional Managers, most accountability and responsibility for project performance resides in the Functional Managers domain rather than the PMO. Political or ownership tensions may arise on different views of project status. The contribution of the PMO to the organization should be clear, with defined functions and metrics according to its level of responsibility.

PMO Project Status and Metrics

One service that is typically associated with a PMO is to provide common, roll-up reporting on the state of all the projects being executed within the organization. This concept can be extended so that the PMO tracks a complete, portfolio-wide view of all active, pending and historical projects.

On the surface, this might seem like a trivial exercise. However, it can be quite time-consuming. First, the PMO must work with the management stakeholders to define what is in the consolidated status report. Some organizations like to keep each project to one line, with some type of overall status indicator such as green (okay), yellow (caution) or red (trouble). If the reader wants more information, he or she can follow-up with the project manager. Other organizations like to see a full status report on each project. If there are questions or concerns, the status report may contain the answers that the reader is looking for, without have to follow-up further with the project manager.

The PMO needs to collect status information on each project, consolidate it and report it. However, like all activities that rely on people, this can be easier said than done. Your PMO will probably encounter the following challenges.

- **Timeliness.** First, chances are all the project managers will not send you the required status information within the timeframe you need it.
- **Accuracy.** In many cases, the information will not be accurate. For instance, the project manager may make his or her project appear to be on schedule, even though not all scheduled activities are completed. Their rationale is that they will make up the activities in the next reporting period. You may spot this if the accomplishments for the previous period do not reflect the same work that was supposed to be completed according to the prior Status Report.
- **Completeness.** In many cases, the information on the report is accurate, and it may also be timely. However, you may find that it is not complete. For instance, the information provided may be very brief and does not provide a real sense for the status of the project.

Building a Project Management Office (PMO)

Of course, these problems need to be overcome. The PMO can address these types of chronic problems through activities such as the following:

- **Explain who is requesting the information and what it will be used for.** This is a key aspect of consolidated reporting. People do not like to spend the time to provide information if they don't feel it will be used. If they understand who is requesting the information, it might take on more priority in their mind.
- **Be clear on the information you need and use what you are requesting.** You want to be clear on the information you need and how it will be used. Make sure that you do not ask for status information that you don't need it for consolidated reporting.
- **Clearly communicate when the Status Reports are due.** The PMO will have difficulty gathering status information from some percentage of project teams. Make sure that you don't give anyone the excuse that they did not know when it was due.
- **Follow-up with project managers on items that need further explanation and clarity.** If you receive status information that does not contain the content or format you need make sure you follow-up with the project manager. This follow-up is designed to make sure that the project managers know what you need differently, with the hope that you won't then have to continue to follow-up with them afterward.
- **Use the governance process if necessary.** If you find that the PMO is spending too much time running around for the information every month, you are going to have to go back to the sponsor for help. This is where you need backing on the process governance. Senior managers need to be held accountable if project managers in their organization cannot get the status reports in correctly and on-time.

Consolidated Metrics

There are a number of places where the organization gains value with the implementation of project management. If the PMO does not attempt to track and quantify some of these benefits, the organization will have no idea what value has been provided. In general, the metrics associated with project management value are also indirectly indicative of the value of the PMO. For instance, if more projects complete within expectations, it would indicate the value associated with project management, and would, in turn, point out the value provided by the PMO.

Organizational Metrics

One of the most difficult items the PMO will be asked to work on is determining the value of the project management. It is one of the more fundamental questions for your sponsor and senior management to ask. And yet it is also one of the most difficult to successfully answer. There seems to be intuitive value in implementing a standard project management methodology, but if you try to quantify the value, you will quickly become stuck. It is a little like holding a cloud.

From the distance, it seems like there should be something there that is solid that you can get your hands on. However, the closer you get the vaguer and transparent everything becomes. There are a couple approaches to these organizational metrics. One is to rely on industry research and look for companies and case studies that are similar to your organization to compare yourselves to. The thought is that if someone else was able to measure value and you are a similar company implementing in a similar way, you should be able to claim similar value.

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For instance, the PMO can work with project managers on different types of projects to determine cost savings associated with maintaining good scope change procedures, managing risk proactively, and managing client expectation effectively. As you continue to interview a subset of the project managers, you should start to see some trends that you can apply to the rest of the projects in your organization.

Look for the reuse value associated with using the common project management processes. Again, this approach asks project managers to estimate the savings associated with using similar processes on multiple projects and getting their estimate of the cost and time savings associated with reusing the common processes on an ongoing basis.

There are some areas of service where the PMO does not already have a sufficient level of expertise. Metrics could be another one of these areas. Many companies do not know much about defining and capturing a good set of metrics. Some consulting firms have a strong expertise in this area that could be leveraged to make sure you start off on the right foot.

The PMO Value Proposition

The value provided by a PMO is summarized below. Although PMOs can be established to provide a narrow or broad set of services, this list includes many of the common responsibilities a full PMO would perform. In general, a PMO:

- Establishes and deploys a common set of project management processes and templates, which saves each project manager, or each organization, from having to create these on their own. These reusable project management components help projects start-up more quickly and with much less effort.
- Builds the methodology and updates it as needed to account for improvements and best practices. For instance, as new or revised processes and templates are made available, the PMO deploys them consistently to the organization.
- Facilitates improved project team communications by having common processes, deliverables, and terminology. There is less misunderstanding and confusion within the organization if everyone uses the same language and terminology for project related work.
- Provides training (internal or outsourced) to build core project management competencies and a common set of experiences. If the training is delivered by the PMO, there is a further reduction in overall training costs paid to outside vendors.
- Delivers project management coaching services to keep projects from getting into trouble.
- Projects at risk can also be coached to ensure that they do not get any worse.
- Tracks basic information on the current status of all projects in the organization, and provides project visibility to management in a common and consistent manner.
- Tracks organization-wide metrics on the state of project management, project delivery and the value being provided to the business. The PMO also assesses the general project

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delivery environment on an ongoing basis to determine the improvements that have been made over time.

- Acts as the overall advocate for project management to the organization. This includes proactively educating and selling managers and team members on the value gained through the use of consistent project management processes.

Methodology Support

There is an old adage about the deliverables produced by projects. That is, the day you begin to deploy your product is the day you need to be prepared to support it. This is true with project management methodology as well. When you provide templates and training to the first people in your organization, you must be prepared to support the people and the products from then on.

Examples of support include:

- Answering questions about the methodology and how best to apply it on individual projects.
- Helping people find things.
- Maintaining the document repository if there are hardware, software or linkage problems.
- Providing ongoing training classes for new and current employees.

Methodology Enhancement

The last category of methodology management is the enhancement of the methodology over time. This includes areas such as the following:

- Expanding and extending the current processes. For instance, you may initially deploy a basic quality management process, and then later extend and expand the processes to raise the quality bar higher.
- Creating new training classes and extending the entire project management curriculum.
- Enhancing processes and templates to make them more valuable and easier to utilize.

Enhancements don't have to imply more and more processes and templates. It is possible that you could be reducing as well. For example, you may have had two Status Report templates for two different stakeholder audiences that can later be consolidated into one. One caution for PMOs is that you don't want to over-engineer the project management process. If you do too much extending and have too many methodology requirements, you will start meeting resistance from project managers who think the methodology is getting in the way of delivering successful projects. Keep in perspective; the better the metric reporting the less time is spent on generating reports and more time to managing projects.

PMO Training and Coaching

Once the methodology has been selected, the PMO has to work to get the organization to adopt the common processes. Two of the primary ways this is done is through training and coaching services.

Training is one of the premiere services offered by PMOs. In fact, in many organizations, the primary role of the PMO is to offer project management training to the staff. Coaching refers to working with individual project managers or project teams to transfer knowledge and teach new skills. This is usually done in-person, but can also occur over the phone or through emails.

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Determine Your Training Needs

Like many of the services offered, training must be considered holistically, along with any other services that the PMO is offering. It doesn't make sense to just start teaching classes. Project management is a very broad field. There are dozens of classes that can be offered, in many different formats and delivery modes. The PMO must take a step back first to determine the subjects that most sense to teach to each audience, as well as the timeframe and dependencies of the subjects. The following steps will help.

- 1. Determine the scope of training.** An early and fundamental decision to make is the scope of your training effort. One basic assumption is that if you offer project management training, the project managers will be the primary focus. However, there are other stakeholders as well. You need to decide what, if anything, you will target to project managers, team members, functional managers, clients and external partners. You must also decide on content scope. For instance, will you just teach methodology skills, or will you teach classes in soft skills as well (such as listening, leadership, etc.)?
- 2. Determine the training needs.** The PMO should assess the skill levels of the organization within the overall scope that was determined earlier. This may have been done in an earlier organization assessment. If not, then you need to gather feedback from managers, clients and team members to find out strengths and areas for improvement.
- 3. Create your Training Strategy and Plan.** Now that you have determined what you need, you need to determine how you will do it. The Training Strategy describes how you will implement training at a high level. The Training Plan describes the details behind the strategy. The Training Plan gets down to the detailed level of determining the specific classes to offer, the order of the classes, how the classes will be developed and how they will be delivered. There are many options to consider for training. For instance, customized classes can be developed and taught by the PMO. This option is especially valuable if the class must be delivered to many people and the cost of sending everyone to outside public courses is prohibitive. You also have the option of using consultants to help build the training classes much more quickly. You can look at distance learning options such as webinars to reach your remote staff economically. You can also look at computer-based training. There are many options to look at when developing the entire training curriculum. Once you have approval on these documents, you are ready to execute the plan.
- 4. Develop and teach the training curriculum.** This is basically the execution of your Training Plan. You would buy, build or outsource various portions of your training needs, based on costs, priorities and capabilities.

Set up Coaching Services

Coaching is different from training. Training implies a formal teacher-pupil relationship, and the formal instruction of material. Coaching is less structured, and usually involves talking through situations and describing or demonstrating how project management techniques can assist. (Note that in some organizations, this type of service might be called project management consulting, or mentoring.)

If your PMO provides coaching services, you will need to be clear about what these services include. It is difficult for every Coach to have expert knowledge in all aspects of project management, especially when the deployment project is new. Instead, the coaching services should be aligned to the areas being deployed at that given time. For instance, if your PMO is initially deploying definition and planning skills to the organization, the coaching services should be

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on those same topics. The Coaches must be experts in those areas. On the other hand, if a project manager wants coaching on quality management, the Coach may have more limited knowledge. Later, when the PMO focuses on deploying quality management, all the Coaches should be knowledgeable in the subject.

You must also be clear on whether you will provide coaching in non-project management processes. For instance, if you are coaching on project management, you may get a request to help create a Test Plan. If the scope of your PMO includes project management only, this is a request you would not be able to help with. However, if your PMO also performs coaching on the development life cycle, then perhaps you would be able to help. Likewise, your PMO might receive a request to help a project team use a scheduling tool. Again, if this were not a part of the coaching service you are offering, you would need to decline the request.

PMO Audits and Assessments

The PMO can validate whether all of this work is effective through a combination of project auditing and organization assessments.

Project-Level Audits

Many of the services provided by the PMO, such as coaching and training, are designed to build capability and increase skill levels. The auditing service, however, serves two functions.

- You audit to check compliance. It is used to ensure that project managers are using the new project management processes. The results of the project audits will be used as input into the periodic organization assessments.
- Auditing can also be an opportunity for coaching. During the audit, you can help the project manager understand how the methodology is applicable to their project. If project managers are open minded, a project audit could be an opportunity to learn new things about how the project management processes apply to them.

Project audits are one way for the PMO to validate that the project teams are utilizing the appropriate project management processes. It is one thing to provide training and coaching and have all the appropriate processes and templates defined. It is another thing for the new processes to actually be adopted and utilized by the project teams. If you want to change the culture and make sure that the new processes are sticking, you must make sure that the project teams are utilizing them correctly. The purpose of the auditing session is to determine how well the project manager and project team are utilizing the project management methodology. During the project audit, a member of the PMO asks a series of questions to ensure compliance with the required processes and procedures.

Some companies could utilize consultants in some (or all) of this project management deployment. Project auditing is another service that consultants can execute effectively. Although the internal PMO will handle this service in most companies, project auditing is a stand-alone service that outside parties can also handle effectively. In fact, there are companies that have special expertise in auditing. In some cases, having an outside party perform the audits gives the process an extra air of legitimacy that will cause senior management to pay attention.

If your organization is set up with the project managers reporting directly into the PMO, then the adoption of project management processes is within the control of the PMO. However, in most organizations, the project managers continue to report into their functional organizations. In any

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culture change initiative middle management plays a key role in overall success or failure. Middle managers can be a huge asset if they are behind the culture change. Unfortunately, they can also be the biggest obstacles to overcome if they are not totally on board. (Unfortunately this is more typical of the general role that middle managers play.)

To help reinforce the responsibilities of the managers, the results of the project audit should be documented and sent back to the project manager, as well as the manager of the project manager. In addition, the results are summarized and sent to the project sponsor, Steering Committee and other management stakeholders. If a team is not using the standard processes, the senior managers and the sponsor ultimately need to ask questions. These questions to the managers are designed to make sure that the middle managers understand the important of pushing the changes within their organization.

Don't Audit All Projects

The auditing process can be time consuming. Just as it is not possible to provide coaching for all projects, it is also not practical to audit all projects. Actually, you don't need to. As was discussed previously, much of the push to implement standard project management processes is going to come from senior and middle managers. If you audit a project in a certain department and they come out pretty well, it is likely that the other projects in that same area will come out well also since the functional manager is probably helping with the push. On the other hand, if you audit a project and they are not following the standard procedures, it is likely a sign that the manager from that area is not being supportive of the methodology, and other projects in that area will probably have problems as well. Raising visibility of the problem projects should bring organizational pressure to bear to make the proper changes.

Organization Assessments

Audits are done on a project-by-project basis. However, on a periodic basis (yearly or semi-annually) the PMO should look at the entire organization and assess how well the project management processes are being integrated into the work routine. This is a similar process to what was done at the beginning of the initiative in the Current State Assessment, although the follow-up assessments are not nearly as detailed or rigorous. The assessments can consist of feedback from project audits, interviews with key managers and stakeholders, antidotal feedback and any metrics that are available. These assessments are compared to the prior assessments to gain a sense for the progress being made. This information is especially interesting to the sponsor and other management stakeholders who need to understand how the implementation is going and whether it is successful or not.

If you are implementing to a large organization, you will probably find that some areas are implementing the processes more effectively than others. For that reason, the assessment needs to be sure to cover all major departments or divisions.

By performing a number of assessments over time, the PMO can gain a sense of the whether project management processes are being successfully integrated into the organization. Assessments also offer the opportunity to take corrective actions if the new processes are not being successfully integrated into the organization.

PMO Service Offerings

It is difficult to address all the potential services having to do with PMOs, but here is an attempt to summarize some of them. Keep in mind that probably no single PMO will undertake responsibility for all of the services mentioned below. However, understanding the nature of the many services that can be offered will help you determine the most important areas that will be offered by your PMO.

PMO Document Repository

One of the value propositions to deploying common project management processes is the ability to reuse processes, procedures, templates, prior examples, etc. However, the ability to reuse documentation does not come about like magic. If project managers want to see whether there might be pre-existing material that would help them, they are not going to be expected to contact every other project manager. To facilitate process and document reuse, the PMO needs to establish and manage a Document Repository. This could be as easy as setting up a directory structure that everyone in the organization can access. It might also be more elaborate and multi-functional, like a tool specifically designed for document management. Depending on how you implement this facility, you need to properly set up a classification structure, make sure that only approved information is posted there, make sure the information stays current and relevant and make sure that the facility is actively marketed and utilized by the organization.

Establishing Best Practices

At the end of every project, the project manager, team, client and major stakeholders should get together in an end-of-project meeting to discuss what was planned and what actually happened. At some point in the meeting, you should turn your attention to lessons-learned. The lessons should be collected and consolidated in the Document Repository. One problem, however, with lessons-learned is that they typically only apply to that one project.

As the PMO collects more and more key learning's, they may start to see patterns emerge in the lessons-learned. At some point, lessons-learned from projects can be raised from the level of a best practice. A best practice statement implies that the benefit can be gained for all projects, not just the few that reported it.

PMO Resource Pool

All companies need to have a process to staff projects. In some companies, the resources are allocated per business units. In other companies, all of the project people are assigned to one central staff. Since the PMO is a focal point for all project management related activity, it is the right place to manage these common resource pools. The resource pool could be for project managers only, or it could be for all potential project team members. Creating a common resource pool involves taking a skills inventory of all shared resources and keeping track of when each person will become available from their current project. The PMO can then have the information available as

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new project are ready to start, or the PMO can, in fact, have certain projects started based on the availability of skill sets.

PMO Document Review Service

Document reviews can be offered on a stand-alone basis to help ensure that project managers are utilizing the standard templates as they were intended and that they are being completed clearly and consistently. This service basically just involves project managers sending in project deliverables to receive a quick review and feedback. The PMO is not “approving” the document, but they are providing feedback on the content, format and readability of the specified document.

Contractor Project Roles

Most companies utilize contractors for some portion of their workload. The question that your company must answer is how best to utilize contractors and how best to utilize employees. There is not one answer that fits all companies. Each company and each organization must determine the things that are most important to them, and create an overall policy for utilizing contractors within that context. For instance, one company might decide that their business runs on their legacy systems, and they are not going to trust contractors to keep these applications running. Another company may decide that the legacy systems represent the past, and that new projects represent the future. In that company, they may decide to rely on contractors for support, but they may prefer to utilize employees for new projects. Likewise, some companies insist that all senior positions be staffed with employees. Other companies do not have a problem placing contractors in any position where they are short of employees or do not have the right employee available. The PMO can help determine the right policies for your company.

External Benchmarking

As your company becomes more sophisticated utilizing metrics, you might realize that collecting internal data on internal projects is valuable, but can only take you so far. You don't really know how efficient and effective your project delivery is unless you can compare how you deliver projects against other companies. Benchmarking studies (one-time) and benchmarking programs (longer-term) are a way to compare your organization against others. Benchmarking requires that you gather a set of predefined metrics that describe the result of very well defined processes.

The resulting metrics that are captured from other companies, using the same set of processes and definitions, can be used to create benchmarking statistics that allow you to compare your organization against others. This information can be evaluated to determine if there are similar changes that can be applied to your organization to achieve similar results.

Benchmarking is an area that few companies want to try to start on their own. It requires a lot of work, and the processes you define need to be applicable to a range of outside companies. If you are going to benchmark, you are generally going to need to utilize an outside firm that specializes in benchmarking. This company may already have the core set of processes, metrics and benchmarks defined. They can also spend the time to get other companies involved, they can conduct the study and they can help interpret the results.

Managing Projects

Status Meetings

Developing Status Meeting Agendas

- Status Meetings and other meetings is a core tool for managing a project.
- Example Status Meeting Agenda:
 1. Progress against the Project Schedule.
 - a. Review major accomplishments for past week.
 - b. Identify goals for next week.
 2. Issues/Action Items Log management.
 - a. Review current issues to update and/or close as appropriate.
 - b. Identify and record new issues, including owner and due date.
 3. Provide information on future project meeting dates.

Managing Status Meetings

Project status meetings allow project team members and customers to stay informed of project performance, problems, issues and expectations. The project manager is able to gather the information during the status meeting and communicate the information to project stakeholders in Status Reports.

- Weekly or bi-weekly Status Meetings can be conducted in person, via conference call, or a “net” meeting.
- Facilitation tips:
 1. Adhere to the agenda.
 2. Begin & end the meeting on time.
 3. Encourage discussion, but drive for decisions and issue resolution.
 4. Identify issue/action item takeaways, including owner and due date.
 5. Hold the project team accountable for their deliverables! Ensure them that the project is highly visible and its success depends on their effort
 6. Escalate any issue to the sponsor or key stakeholders that can't be resolved in a status meeting.
 7. Thank meeting participants for their contributions.
 8. As soon as the meeting is complete, publish meeting minutes and distribute along with the updated project schedule, **weekly/monthly progress report** with issues/action item matrix, and any other documents as appropriate.
- Help the project by helping those who are presenting or reporting on a deliverable. Remind them in advance of the meeting about their responsibility, and help with logistics as appropriate.

Cost Estimating and Plan Development

Estimating is a critical component of a Project Management Process or methodology. Estimates are used for budgeting, planning, forecasting, resource planning, and staffing. Customers also use estimates to make decisions for changing their business and systems. Cost estimates are quantitative assessments of the likely costs of the resources required to complete project activities. They may be presented in summary or in detail. Costs must be estimated for all resources that will be charged to the project. This includes, but is not limited to, labor, materials, supplies, and special categories such as an inflation allowance or cost reserve.

Cost estimates are generally expressed in units of currency (dollars) in order to facilitate comparisons both within and across projects. Other units such as hours or days may be used when making estimates. In some cases, estimates will have to be provided using multiple units of measure in order to facilitate appropriate management control.

When a project is performed under contract, care should be taken to distinguish cost estimating from pricing. Pricing is a business decision—how much will the performing organization charge for the product or service.

Cost estimating includes identifying and considering various costing alternatives. For example, in most application areas, additional work during the planning phase may have the potential for reducing the cost of the implementing phase. The cost estimating process must consider whether the cost of the additional design work will offset the expected savings.

Some of the tools the project manager can employ for cost estimating are:

Resource Rates

The individual or group preparing the estimates must know the unit rates (e.g., staff cost per hour, bulk material cost per cubic yard) for each resource in order to calculate project costs. If actual rates are not known, the rates themselves may have to be estimated.

Activity Duration Estimates

Activity duration estimates will affect cost estimates on any project where the project budget includes an allowance for the cost of financing (i.e., interest charges).

Historical Information

Information on the cost of many categories of resources is often available from one or more of the following sources:

- Project files—one or more of the organizations involved in the project may maintain records of previous project results that are detailed enough to aid in developing cost estimates. In some application areas, individual team members may maintain such records.
- Commercial cost estimating databases—historical information is often available commercially and can be purchased to increase estimate accuracies.
- Project team knowledge—the individual members of the project team may remember previous actuals or estimates. While such recollections may be useful, they are generally far less reliable than documented results.

Analogous Estimating

Analogous estimating, also called top-down estimating, means using the actual cost of a previous, similar project as the basis for estimating the cost of the current project. It is frequently used to estimate total project costs when there is a limited amount of detailed information about the project (e.g., in the early phases). Analogous estimating is a form of expert judgment. Analogous estimating is generally less costly than other techniques, but it is also generally less accurate. It is most reliable when the previous projects are similar in fact and not just in appearance, and the individuals or groups preparing the estimates have the needed expertise.

Parametric Modeling

Parametric modeling involves using project characteristics (parameters) in a mathematical model to predict project costs. Models may be simple (residential home construction will cost a certain amount per square foot of living space) or complex (one model of software development costs uses 13 separate adjustment factors each of which has 5-7 points on it). Both the cost and accuracy of parametric models varies widely. They are most likely to be reliable when the historical information used to develop the model was accurate, the parameters used in the model are readily quantifiable, and the model is scalable (i.e., it works as well for a very large project as for a very small one).

Bottom-up Estimating

This technique involves estimating the cost of individual work items, then summarizing or rolling-up the individual estimates to get a project total. The cost and accuracy of bottom-up estimating is driven by the size of the individual work items: smaller work items increase both cost and accuracy. The project management team must weigh the additional accuracy against the additional cost.

Computerized Tools

Computerized tools such as project management software and spreadsheets are widely used to assist with cost estimating. Such products can simplify the use of the tools described above and thereby facilitate rapid consideration of many costing alternatives.

The following estimating procedure is designed to help formalize and standardize the estimating process and is intended to allow for future process improvement. The procedure consists of the following tools:

- Estimation Process Flow
- Project Estimation Form

Incremental Estimating

Anyone involved with estimating knows the estimates have more certainty as you approach the end of a project. Sizing and detailed estimating can be combined to produce *incremental estimates* – high level or rough estimates at the start of the project (or phase), and detailed, task-based estimates as the project become more clearly defined.

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Estimating Tools & Techniques

<p>Overview</p>	<p>An estimate is the assessment of the likely quantitative result. It is intended to be an approximate judgment or opinion regarding the value, amount, size, weight, and timing. It is always based on assumptions which must be documented to form the basis of the estimate. The techniques addressed in this document are intended to be the primary estimating techniques used by the Office of Information Systems.</p>
<p>Type of Estimate</p>	<p>Due to the differing need for and use of estimates it is important to clearly distinguish estimate types that imply particular accuracy ranges. The three types of estimates that may be used on an project are:</p> <ul style="list-style-type: none"> • Rough-Order-of-Magnitude (ROM) Estimates (note + - 50%) • Intermediate Estimates (+ or – 30%) • Definitive Estimates (+ or – 20%) <p>Some or all of these estimate types may be used on a project.</p>
<p>When to use the ROM Estimate</p>	<p>A ROM estimate is used for strategic decisions, long range planning, or simply to respond to the questions of “How big is the bread box?” or “Approximately, just for grins, how much are we talking about?”</p> <p>The first step is to determine if a ROM estimate is appropriate. Study the initiating documents for a description of what needs to be resolved and the initial complexity assessment, to answer the following questions.</p> <p>Is the purpose of the estimate for strategic decisions, long range planning, or sizing?</p> <p>Is a less precise estimate acceptable or useful to make a current decision, for example “Can we afford something in this cost range?”</p> <p>Will an estimate that is + or – 50% be satisfactory at this point in time? Is the estimate needed with less than a week’s notice?</p> <p>The ROM estimating technique should not be used to develop precise or high level of confidence estimates. It is usually the first estimate that is developed or requested, sometimes needed to get through initiating, other times it is requested as a result of initiation.</p>
<p>When to use the Intermediate Estimate</p>	<p>The Intermediate Estimate is used in support of a preliminary plan, a partial plan, or a plan that does not require precise estimating. The preliminary plan is used to estimate the work to be performed from initiation through planning and the early execution work that is required to form the basis for the definitive estimates. This typically is work such as planning activities, assessment, requirement definition, analysis, and sometimes design. Construction, test, and implementation phases may be included at a high level in a preliminary plan, but are generally estimated using a ROM method until earlier information is finalized.</p> <p>The preliminary plan, with intermediate estimates ensures that work being performed immediately after initiation is quickly planned and estimated. This avoids the desire to skip planning and estimating until further information can be determined, i.e., “How can we estimate a task for writing specifications when we</p>

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	<p>haven't determined the requirements or design yet?"</p> <p>The intermediate estimate is used directly after a project has been approved to move into the planning process. Study the initiating documents for a description of what needs to be resolved and answer the following questions to determine when to use an Intermediate Estimating Approach.</p> <p>Is the purpose of the estimate to provide an overall estimate for the project that represents a fair level of estimating confidence?</p> <p>Is an estimate needed for the project in less than a 3-week time frame?</p> <p>Will an estimate projected to be within + or – 30% be acceptable to those who must make decisions based on the estimate?</p> <p>Is an estimate needed for budgeting or other exercise that is more accurate than a ROM, but not intended to be definitive?</p> <p>Is the estimate intended to cover work to be performed by the project until a definitive estimate can be developed which will be used to make a go/no-go decision on the project?</p> <p>Note, low complexity projects or phases that do not require definitive estimates may use the intermediate estimating technique to plan the whole project or phase.</p>
<p>When to use the Definitive Estimate</p>	<p>The Definitive Estimate is used to develop the precise estimates needed to tactically manage and complete a project. It provides more precision, but requires much more effort. Definitive estimates can be used from the start of a project, but usually an intermediate approach is utilized until the project has agreement on scope and has performed the requirements analysis. This enables the project create a useable plan before requirements analysis and to more accurately estimate the amount of work and resources needed to complete the project.</p> <p>The definitive estimates are the estimates that the organization will commit to as a project baseline. This baseline is the data the project will use to report the project performance. The following questions help to determine if a definitive estimate is appropriate:</p> <p>Does the project need to commit to an estimate that is likely to be within + or – 20%?</p> <p>Has enough information been obtained by the project to accurately estimate what it will take to complete the project?</p> <p>Can the organization wait for a precise estimate to be formed? For example if the project is likely to take over a year, the creation of a detailed work breakdown structure and estimates can take 6-8 weeks or 15-20% of the expected length of the project. Some of this time can be mitigated by definitively estimating each phase of the project just before it is reached.</p>
<p>ROM Estimating Techniques</p>	<p>Two techniques are recommended for developing a ROM Estimate, Parametric or Analogous estimating. Either technique can be used when there is a limited amount of detailed information available about the project.</p>
<p>ROM Parametric</p>	<p>Parametric Estimating. An estimating technique that uses a statistical relationship</p>

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<p>Estimating</p>	<p>between data and other variables to calculate an estimate. Put simply it is a mathematical model.</p> <p>The business and technical complexity assessment (see Initiating- tools and techniques) trend scores are used in a mathematical model to calculate the standard ROM estimate for the project.</p> <p>Prerequisites:</p> <ol style="list-style-type: none"> a) Initial business and technical complexity score b) ROM Parametric Estimating Spreadsheet (see Planning-Tools and Techniques) <p>Steps:</p> <ol style="list-style-type: none"> 1. Enter the business and technical complexity score into the spreadsheet, i.e., “2,3 or 3,2”. The order entry does not matter. 2. If the range estimate results for cost, duration, full-time equivalents (FTE) are reasonable skip to step 5. 3. Review the following assumptions for the mathematical model: <ul style="list-style-type: none"> • The business and technical complexity score include the primary factors influencing the cost of the project or phase. • Complexities of a project progressively increase the cost, duration, and FTE estimates. • Cost estimates include all resources (staff, procurements) • The number of FTEs is an average per month and does not account for high and low work effort periods. The number represents the full-time effort required. For example 1 FTE can be accomplished by two people working half time. • FTE numbers represent all work estimated whether it is intended to be performed by OIS, contracted or business staff. 4. Apply expert judgment and decide if assumptions and estimates apply. Revise assumptions and revise estimates. 5. Document estimates.
<p>ROM Analogous Estimating</p>	<p>Analogous estimating means using the actual or historical data of a similar activity of project as the basis for the estimate. Analogous estimating is a form of expert judgment. In other words, those individuals with the most experience are the best source for the estimates.</p> <p>The SMEs (Subject Matter Experts) submit their estimates and assumptions to the project manager or an estimating facilitator.</p> <p>Prerequisites:</p> <ol style="list-style-type: none"> a) Recognized group of experts b) Product Description and Project Charter <p>Steps:</p> <ol style="list-style-type: none"> 1. Identify similar projects or activities. 2. Obtain actuals or historical data. How much did the similar project or activities cost? 3. Re-evaluate and document the similarities and differences. 4. Apply expert judgment and decide on estimate. 5. Document the estimate and estimating assumptions.

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Intermediate Estimating Techniques	Two techniques are recommended for developing the Intermediate Estimate, Parametric or Delphi estimating. Both techniques require a lower level of detail about the project be defined.																														
Intermediate Parametric Estimating	<p>Parametric Estimating. An estimating technique that uses a statistical relationship between data and other variables to calculate an estimate. Put simply it is a mathematical model.</p> <p>The estimate of latter phases or sub-phases can be projected from the detailed estimate (or actuals) of an early phase by applying historically based percentages. This involves developing detailed estimates of the early phase and projecting the estimates of latter phases based on percentages.</p> <p>Prerequisites:</p> <ol style="list-style-type: none"> Intermediate Parametric Estimating Spreadsheet (see Planning-Tools and Techniques) Detailed estimates (or actuals) of an early phase. See Definitive-Estimating Techniques to obtain detailed estimates. <p>Steps:</p> <ol style="list-style-type: none"> Revise the sample model below, to reflect the sub-phases of the execution phase. You may rename, delete or add to the standard sub-phases. Adjust if appropriate, the recommended work effort percentages making sure that the total equals 100%. See sample model following the steps. Enter the total known dollar, duration, and FTE estimates for the early sub-phase. Review and document calculated estimates for each phase, and total for entire project. 																														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center; background-color: #d9ead3;">Parametric Estimating - Sample Project Percentages</th> </tr> </thead> <tbody> <tr> <td style="background-color: #d9ead3;">Planning</td> <td></td> <td style="text-align: right;">10%</td> </tr> <tr> <td style="background-color: #d9ead3;">Execution</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Requirements Definition</td> <td style="text-align: center;">10%</td> <td rowspan="5" style="font-size: 3em; vertical-align: middle;">}</td> </tr> <tr> <td style="text-align: center;">Design</td> <td style="text-align: center;">16%</td> </tr> <tr> <td style="text-align: center;">Construction</td> <td style="text-align: center;">22%</td> </tr> <tr> <td style="text-align: center;">Test</td> <td style="text-align: center;">16%</td> </tr> <tr> <td style="text-align: center;">Implementation</td> <td style="text-align: center;">15%</td> </tr> <tr> <td style="text-align: center;">Controlling</td> <td></td> <td style="text-align: right;">8%</td> </tr> <tr> <td style="background-color: #d9ead3;">Closing</td> <td></td> <td style="text-align: right;">3%</td> </tr> <tr> <td></td> <td style="text-align: right;">Total</td> <td style="text-align: right;">100%</td> </tr> </tbody> </table>		Parametric Estimating - Sample Project Percentages			Planning		10%	Execution			Requirements Definition	10%	}	Design	16%	Construction	22%	Test	16%	Implementation	15%	Controlling		8%	Closing		3%		Total	100%
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Controlling		8%																													
Closing		3%																													
	Total	100%																													
Intermediate Delphi Estimating	<p>The Delphi techniques uses a group of SMEs who develop estimates independently, discuss differences and assumptions, and go through one or more revision cycles.</p> <p>Prerequisites:</p> <ol style="list-style-type: none"> Group of SMEs Product Description and work breakdown structure (WBS). Estimating facilitator <p>Steps:</p> <ol style="list-style-type: none"> For each item needing estimated in the WBS, ask each person to write down his or her estimate. This can be done during the meeting or prior to the meeting. 																														

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	<ol style="list-style-type: none"> 2. Poll group and write estimate on a flipchart or whiteboard (no discussion). If estimates are the same, go to next item estimated and repeat this step. 3. Discuss differences and assumptions. This step usually reveals additional information that causes estimators to rethink their estimate. 4. Ask each person to review/revise his or her estimates. 5. Continue step 2-4 until consensus is reached. <i>Consensus means either each estimator strongly agrees with the estimate or can live with it. Consensus is not reached if an estimator <u>strongly</u> disagrees with the estimate.</i> 6. Document estimates and assumptions.
Definitive Estimating Techniques	<p>There are a few methods regularly used for developing the definitive or tactical estimates. They are Forecasting, Triangulation, PERT and Range Estimates. Forecasting requires a strong historical base. The other three are variations on use of three estimates, most optimistic, most likely, and most pessimistic to determine a single estimate. Our recommended approach for definitive estimating is the PERT technique.</p>
Definitive PERT Estimating	<p>PERT Estimating. One single estimate is not always accurate. By using three estimates, risk factors can be incorporated into estimates.</p> <p>Using identified risks, estimate the most optimistic (few risks will occur), most likely (average number of risks will occur) and most pessimistic (many risk will occur) for the lowest level item of the WBS to calculate a single, most accurate estimate.</p> <p>Prerequisites:</p> <ol style="list-style-type: none"> a) WBS b) PERT Analysis formula $\text{Estimate} = \text{Pessimistic} + (4 * \text{Likely}) + \text{Optimistic} / 6$ c) Sources for estimates (project team, SME's, other project data, consultants, price sheets) <p>Steps:</p> <ol style="list-style-type: none"> 1. Ascertain the most optimistic, most likely and most pessimistic estimates. 2. Use the PERT formula to calculate a single estimate. 3. Apply the single estimate to each item in the WBS.

Cost Estimating Strategy

In order to ensure accurate estimates, this cost estimating strategy is developed based on a three-step process. These steps lead to a more accurate cost estimate by incorporating the knowledge gained during the design phase of the project combined with knowledge from previous projects. With the adoption of this strategy, a strategy explanation should be included in the Project Management Plan.

- **Step 1, Rough Initial Estimates** – The Initial Rough Estimate is developed during the Initiating Phase and is based on the information provided in the high-level scope along with information from previous projects the project manager has been involved with or from similar projects they have heard about. This Initial Rough Estimate will be presented as a part of the Concept Proposal.
- **Step 2, Intermediate Estimates** – During the Planning Phase, the project requirements will be developed by the analyst and the project manager for the customer's review and approval and will further clarify and define the project estimates. More details are provided to the project team to allow them to help the project manager with project estimates. A

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detailed project schedule is created by the project manager to provide duration and effort for each task, the assignment of resources for each task, and a complete and detailed cost estimate of the project effort.

- **Step3, Final Detailed Project Estimate** – The detailed project designs are created allowing the project manager to refine some of the project tasks and add the estimation of costs such as hardware, software, and items such as test equipment or additional space for the project team. At this point, the initial estimates created for the Concept Proposal can be updated or replaced to reconcile the more accurate total project cost information. The new estimate is communicated to the project stakeholders.

Cost Estimating Process

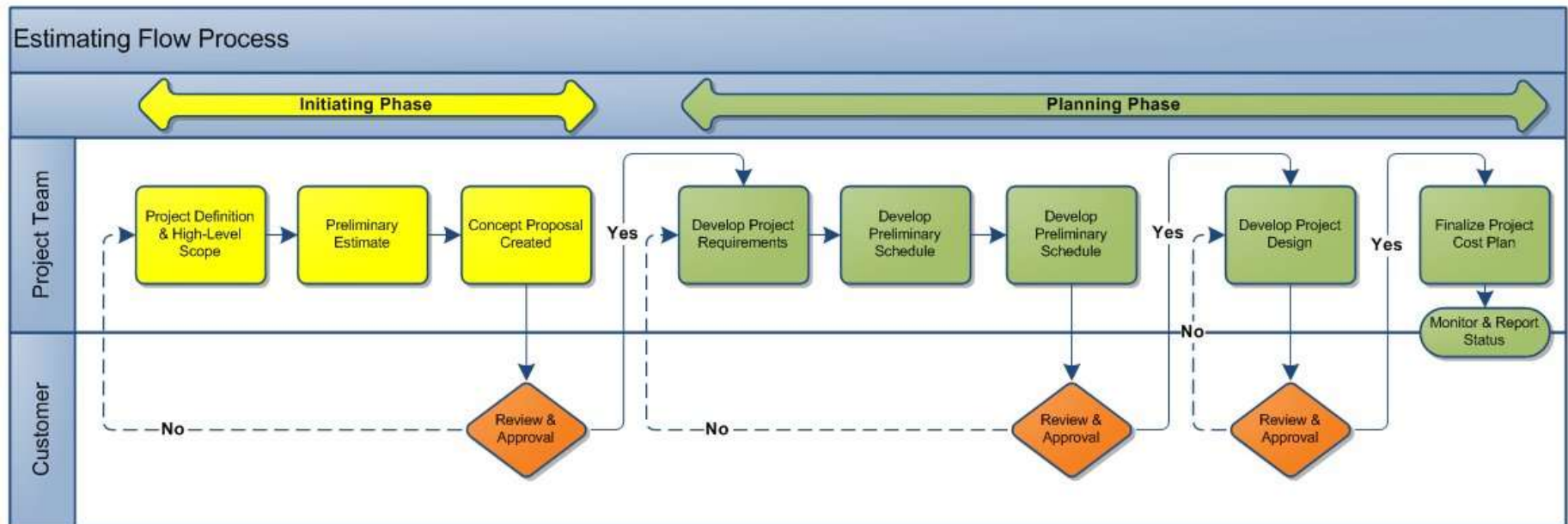
Referring to the **Cost Estimating Process flowchart** on the next page, the individual processes are linked by their inputs and outputs. This Flowchart also indicates the key points at which the Customer review and approval is necessary for quality assurance purposes. The input, outputs and the supporting basis for the outputs on the key cost estimating processes are as follows:

Inputs	Supporting Basis	Outputs
<p>Start:</p> <ul style="list-style-type: none"> • The Concept Proposal • Project Definition • High Level Scope • Initial Rough Estimate 	<p>Initial meeting with Customer to gather information on current business needs and project goals. Based on the Project definition and high-level understanding of the scope, a preliminary estimate will be developed as part of the Concept Proposal for customer, Stakeholder, and Governance review.</p>	<ul style="list-style-type: none"> • Project Definition • High Level Scope • Initial Rough Estimate • Concept Proposal
<ul style="list-style-type: none"> • Project Definition • High Level Scope • Initial Rough Estimate • Concept Proposal 	<p>Project Requirements and Project Schedule will be developed for customer's approval and will provide the basis for a more complete estimate. The requirements will also provide a baseline for validation and verification of scope during testing.</p>	<ul style="list-style-type: none"> • Detailed Project Cost Estimate • Requirements Document • Project Schedule
<ul style="list-style-type: none"> • Detailed Project Cost Estimate • Requirements Document • Project Schedule 	<p>The more accurate total project cost estimate is based on the knowledge gained with the creation of the Project Design. The updated Concept Proposal or Project Cost Plan will reflect the adjusted total cost. The project cost plan and expenses to date will be communicated in the Monthly Status Report.</p>	<ul style="list-style-type: none"> • Final Project Cost Estimate • Final Project Design

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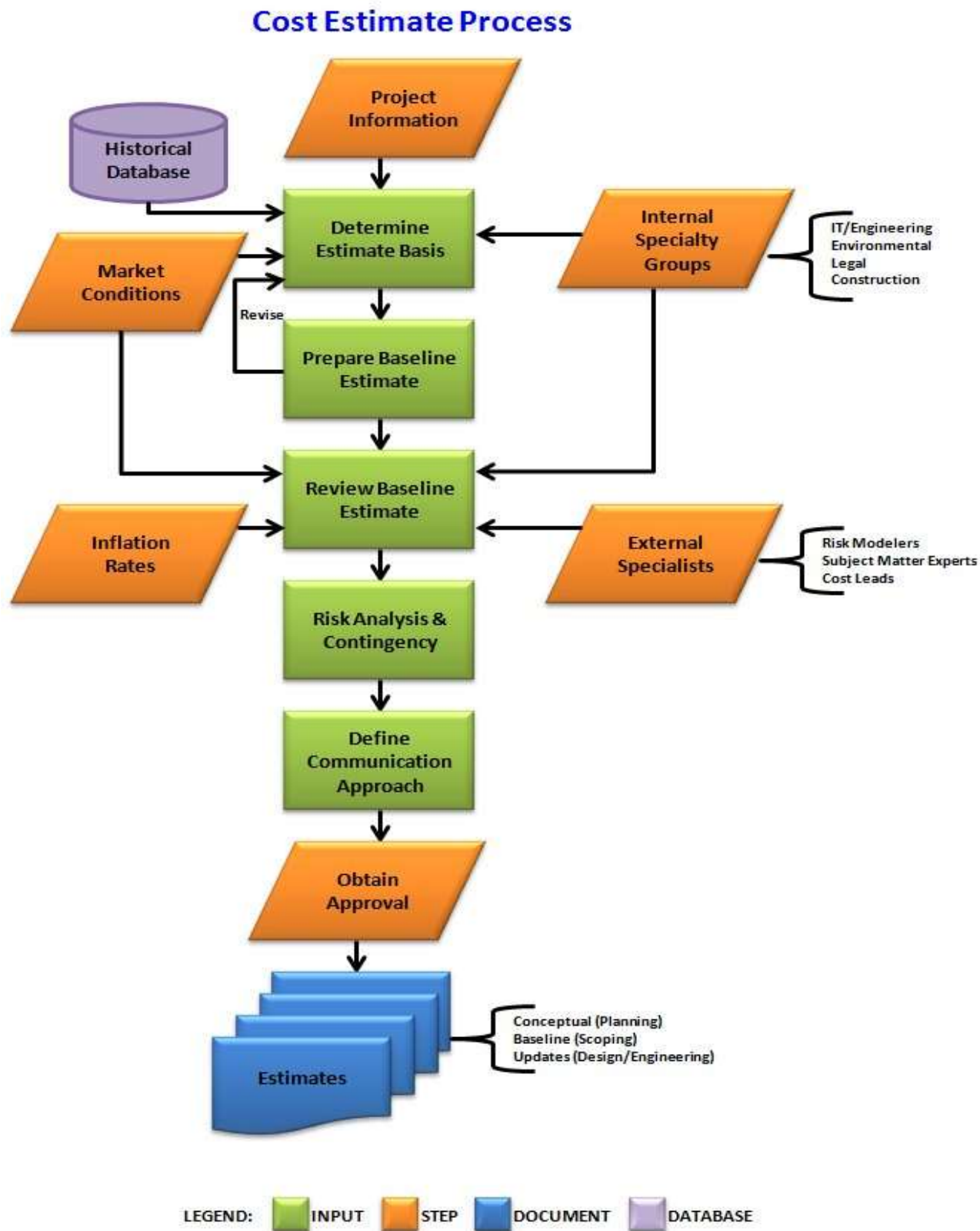
Estimating Flow Process Chart

The Chart below demonstrates each Step of the process through each Phase of the project lifecycle.



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Construction Cost Estimating Process (Example)



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Project Estimating Example

Cost Benefit Analysis						
Project:		Project #:				
Project Manager:		Sponsor:				
Project Artifacts:		Last Update:				
Accounting Code:		Version #:				
Project Development and Maintenance Costs						
Description	2015	2016	2017	2018	2020	Total
Cost of Project Development						
Salaries						
Other internal expenses						
Consulting costs						
Capital expenditures						
Total Project Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Support						
Operational Costs						
Nonrecurring Costs						
Recurring Costs						
Total Support Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Benefits/Savings						
Current Process	2015	2016	2017	2018	2020	Total
Total Annual Price						
New Process						
Total Annual Price						
Annual savings	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cumulative savings	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cumulative costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cumulative Total Net Savings	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Future Value						
Present Value	Interest Rate	# Periods			Future Value	
						\$0.00
Present Value						
Future Value	Interest Rate	# Periods			Present Value	
\$0.00						\$0.00
Net Present Value						
Period	Cash Flow					Present Value
1						
2						
3						
Totals				\$0.00		\$0.00
				Project Development Cost		\$0.00
				Net Present Value (NPV)		\$0.00

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Parametric Estimating Example

Task Parametric Estimate - Labor Cost Forecast

Estimate ID #: 10 Project: ENOVIA Integration Assessment

Title: Security Model Cost Estimate Request Date: 12/8/2012 Prepared By: Michael McCormick

Task: IBM Project Management Task Due Date: 12/11/2012 Prepared Date: 12/10/2012

Process: 2 Days Estimate Type: Task Low % Factor: 0.70 High % Factor: 1.30

Project Phase	Percent Duration	Estimate Hours	Average Rate	Estimate Cost	Forecasted Hours	Forecasted Hours (Low)	Forecasted Hours (High)	Forecasted Cost	Forecasted Cost (Low)	Forecasted Cost (High)
Initiate	50	100	\$50	5,000	100	70	130	5,000	3,500	6,500
Planning	0	0	\$0	0	0	0	0	0	0	0
Execution										
Requirements	0	0	\$0	0	0	0	0	0	0	0
Design	0	0	\$0	0	0	0	0	0	0	0
Development	0	0	\$0	0	0	0	0	0	0	0
Test	0	0	\$0	0	0	0	0	0	0	0
Implementation	0	0	\$0	0	0	0	0	0	0	0
Controlling	0	0	\$0	0	0	0	0	0	0	0
Closing	0	0	\$0	0	0	0	0	0	0	0
Total	50	0	0		200	70	130	\$10,000	\$3,500	\$6,500

Estimating Notes:
Preliminary cost estimate to conduct budget analysis.

This is a Parametric Estimating worksheet designed to give an intermediate level estimate of costs and hours, plus or minus 70% for Low and 130% for High factors. Follow the instructions below to learn how to use this estimating tool.

STEPS:

1. Enter estimates of duration for each phase of the project in the 'Percent Duration' column. Total for estimates must equal 100%. The 'Execution' phase has been broken down to generally accepted categories which may be more or less than is needed for your project. Since this worksheet is designed to give an intermediate estimate, additional categories are not necessary at this level.
2. In the column labeled 'Estimate Hours' choose one row/cell that you can estimate with reasonable certainty. This technique assumes that based on history you can estimate one phase or sub-phase with reasonable certainty.
3. In the same row that you entered 'Estimate Hours', enter an average salary rate for your project in the 'Average Rate' column. All remaining values are forecasted automatically based on the estimated hours and average salary rate entered.

ePMO Tracker v1.2 - www.mccormickpcs.com

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WBS Estimating Example

eDashboard ePortfolio eProjects pTracker WBS Cost Estimate

WBS Cost Estimate Worksheet

Worksheet #: 2 Project: ENOVIA Integration Assessment

Estimate Type: Task Task Title: IBM Emergency Ad-Hoc Support Version #: v1

Estimate Days: 2 Estimate Date: 12/5/2012 Due Date: 12/7/2012 Date Submitted: 12/7/2012 Estimate: \$24,336

Total Hours: 416 Total Labor: \$23,200 Total Material: \$511 Total Travel: \$125 Total Other: \$500 Estimate Total: \$24,336

Labor Cost Estimate

WBS 1	WBS 2	WBS 3	WBS 4	WBS 5	Phase	Cycle	Function	Subtotal:	Labor Hours	Labor Cost	
1	1.1				Pre-Initiate	Systems Concept Development	Acquisition Planning		416	\$23,200	
Task: Prepare BC draft											
S	Employee		Ashley Abbott		Information Technology Manager				400	\$55	\$22,000
RASCI Resource Personnel Team Member Role Labor Hours Labor Rate Labor Cost											
1	1.1	1.1.1			Pre-Initiate	Initiation Phase	Business Case				
Task: Review, finalize and submit for approval											
R	Employee		Harry Abernathy		Information Technology Project Manager				8	\$65	\$520
RASCI Resource Personnel Team Member Role Labor Hours Labor Rate Labor Cost											
1	1.1	1.1.1	1.1.1.1		Pre-Initiate	Initiation Phase	Business Case				
Task: Review and approve BC											
A	Employee		Terry Ackman		Accounting Supervisor				8	\$85	\$680
RASCI Resource Personnel Team Member Role Labor Hours Labor Rate Labor Cost											

Material Cost Estimate

Tax Rate: 0.065 Subtotal: Qty 40 Material Cost \$480 Total Tax \$31 Total Cost \$511

WBS 1	WBS 2	WBS 3	WBS 4	WBS 5	Phase	Cycle	Function	Qty	Unit Price	Material Cost	Sales Tax	Total Cost
1	1.1	1.1.1	1.1.1.1	1.1.1.1.1	Pre-Initiate	Initiation Phase	Business Case	40	\$12	\$480	\$31	\$511
Category: Consumables Type: Non-IT Supplies Asset Owner: Ashley Abbott Owner Type: Contractor Description: 4-3 ring binders												
								0	\$0	\$0	\$0	\$0
Category: Description:												

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Budget – WBS Format Estimating Example

eDashboard ePortfolio eProjects pTracker Budget

Budget #: Z **ePMO Budget**

Project: ENOVIA Integration Assessment Budget Title:

Budget Type: Task Task Title: IBM Emergency Ad-Hoc Support Risk Status: 0 Budget Status: Approved

Phase: Initiate Cycle: System Concept Development Cycle Subset: Project Budget

Project Manager: Priority: Medium Version #: v1 Version Date: 2/22/2013 Wks

Draft Date: 2/18/2013 4 Days Due Date: 2/22/2013 4 Days Budget Start: 3/4/2013 Budget End: 7/31/2013 21

Total Estimate: \$89,055 Total Hours: 1,250 Contingency: 0.03% Budget Request: \$91,727 Approved Budget: \$92,000

To Approver: 2/21/2013 Approver: Ashley Abbott Approved: Yes Approval Date: 2/22/2013

	WBS 1	WBS 2	WBS 3	WBS 4	WBS 5	WBS 6	WBS 7	WBS 8	WBS 9	WBS 10	WBS 11	WBS 12
Cost:	\$69,000	\$15,000	\$5,000	\$55	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hours:	700	300	100	150	0	0	0	0	0	0	0	0

WBS 1 | WBS 2 | WBS 3 | WBS 4 | WBS 5 | WBS 6 | WBS 7 | WBS 8 | WBS 9 | WBS 10 | WBS 11 | WBS 12 | Budget Notes

Phase	Labor Hours	Labor Cost	Material Cost	Travel Cost	Other Cost	Task Total	Actual Total	Total Variance																																																																																																		
WBS 1: Pre-Initiate	700	\$35,000	\$8,500	\$12,000	\$13,500	\$69,000	\$0	\$0																																																																																																		
<table border="1"> <thead> <tr> <th>WBS 1</th> <th>WBS 2</th> <th>WBS 3</th> <th>WBS 4</th> <th>Cycle</th> <th>Function</th> <th>Labor Hours</th> <th>Labor Cost</th> <th>Material Cost</th> <th>Travel Cost</th> <th>Other Cost</th> <th>Task Total</th> <th>Actual Cost</th> <th>Task Variance</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.1</td> <td></td> <td></td> <td>Systems Concept Development</td> <td>Acquisition Planning</td> <td>500</td> <td>\$25,000</td> <td>\$5,000</td> <td>\$12,000</td> <td>\$5,500</td> <td>\$47,500</td> <td>\$0</td> <td>\$0</td> </tr> <tr> <td colspan="14">Task</td> </tr> <tr> <td>2</td> <td>2.1</td> <td></td> <td></td> <td>Systems Concept Development</td> <td>Acquisition Planning</td> <td>200</td> <td>\$10,000</td> <td>\$3,500</td> <td>\$0</td> <td>\$8,000</td> <td>\$21,500</td> <td>\$0</td> <td>\$0</td> </tr> <tr> <td colspan="14">Task</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> </tr> <tr> <td colspan="14">Task</td> </tr> </tbody> </table>									WBS 1	WBS 2	WBS 3	WBS 4	Cycle	Function	Labor Hours	Labor Cost	Material Cost	Travel Cost	Other Cost	Task Total	Actual Cost	Task Variance	1	1.1			Systems Concept Development	Acquisition Planning	500	\$25,000	\$5,000	\$12,000	\$5,500	\$47,500	\$0	\$0	Task														2	2.1			Systems Concept Development	Acquisition Planning	200	\$10,000	\$3,500	\$0	\$8,000	\$21,500	\$0	\$0	Task																				0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Task													
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						0	\$0	\$0	\$0	\$0	\$0	\$0	\$0																																																																																													
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Cost Plan Development

Cost budgeting involves allocating the overall cost estimates to individual work items in order to establish a cost baseline for measuring project performance. The project schedule identifies the project elements and includes planned start and expected finish dates for the project elements that costs will be allocated to. This information is needed in order to assign costs to the time period when the cost will be incurred.

Cost Baseline

The cost baseline is a time-phased budget that will be used to measure and monitor cost performance on the project and is developed by summing estimated costs by period. Many projects, especially larger ones, may have multiple cost baselines to measure different aspects of cost performance. For example, a spending plan or cash flow forecast is a cost baseline for measuring disbursements.

Developing the Cost Management Plan

The Cost Management Plan should clearly define how the costs on a project will be managed throughout the project's lifecycle. It sets the format and standards by which the project costs are measured, reported and controlled. The Cost Management Plan:

- Identifies who is responsible for managing costs
- Identifies who has the authority to approve changes to the project or its budget
- How cost performance is quantitatively measured and reported upon
- Report formats, frequency and to whom they are presented

The Project Manager will be responsible for managing and reporting on the project's cost throughout the duration of the project. During a typical monthly project status meeting, the Project Manager will meet with management to present and review the project's cost performance for the preceding month. Performance should be measured using earned value management techniques. The Project Manager is responsible for accounting for cost deviations and presenting the Project Sponsor with options for getting the project back on budget or supporting justification for increasing the budget. The Project Sponsor typically has the authority to make changes to the project to bring it back within budget guidelines.

Cost Management Approach

If you are using a Project Management Information System then you can, and should, manage costs down to the work package level. For those who don't have a Project Management Information System you'll want to determine which level of the WBS you can most effectively manage the project's costs from. The further down in the WBS you go, the more detailed your cost management is. However, you should balance the granularity at which you want to manage costs against the amount of effort it takes to manage at that level. The more granular your cost management, the more work is necessary to manage it.

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The following examples Part A & B is where the Project Manager explains their cost management approach for the project.

Part A - Cost Management Plan Example

Costs for this project will be managed at the fourth level of the Work Breakdown Structure (WBS). Control Accounts (CA) will be created at this level to track costs. Earned Value calculations for the CA's will measure and manage the financial performance of the project. Although activity cost estimates are detailed in the work packages, the level of accuracy for cost management is at the fourth level of the WBS. Credit for work will be assigned at the work package level. Work started on work packages will grant that work package with 50% credit; whereas, the remaining 50% is credited upon completion of all work defined in that work package. Costs may be rounded to the nearest dollar and work hours rounded to the nearest whole hour.

Cost variances of +/- 0.1 in the cost and schedule performance indexes will change the status of the cost to cautionary; as such, those values will be changed to yellow in the project status reports. Cost variances of +/- 0.2 in the cost and schedule performance indexes will change the status of the cost to an alert stage; as such, those values will be changed to red in the project status reports. This will require corrective action from the Project Manager in order to bring the cost and/or schedule performance indexes below the alert level. Corrective actions will require a project change request and be must approved by the Project Sponsor before it can become within the scope of the project.

Measuring Project Costs

This section defines how the project's costs will be measured. The US Federal Government requires **Earned Value Management** (EVM) techniques for measuring and controlling a project's costs. Earned Value Management is a broad and powerful tool; as such, it is recommended that all project managers take some formal courses in Earned Value Management.

In this section the Project Manager should detail how project costs will be measured. What Earned Value measurements will be captured and reported upon. Will they use any tools, such as project management software, to assist in capturing Earned Value metrics? How they forecast future project costs? How they review cost performance over time, across work packages or schedule activities?

The continued example in this section measures four Earned Value measurements; Schedule Variance (SV), Cost Variance (CV), Schedule Performance Index (SPI) and Cost Performance Index (CPI). For most typical projects these four measurements can provide enough insight for effective management without overburdening the Project Manager with Earned Value calculations and measurements.

Part B - Cost Management Plan Example

Schedule Variance (SV) is a measurement of the schedule performance for a project. It's calculated by taking the Earned Value (EV) and subtracting the Planned Value (PV). Since EV is the actual value earned in the project and the PV is the value our project plan says we should

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have earned at this point, when we subtract what we planned from the actual we have a good measurement which tells us if we are ahead or behind the baseline schedule according to our project plan. If SV is zero, then the project is perfectly on schedule. If SV is greater than zero, the project is earning more value than planned thus it's ahead of schedule. If SV is less than zero, the project is earning less value than planned thus it's behind schedule.

Cost Variance (CV) is a measurement of the budget performance for a project. CV is calculated by subtracting Actual Costs (AC) from Earned Value (EV). As we already know, EV is the actual value earned in the project. AC is the actual costs incurred to date, thus when we subtract what our actual costs from the EV we have a good measurement which tells us if we are above or below budget. If CV is zero, then the project is perfectly on budget. If CV is greater than zero, the project is earning more value than planned thus it's under budget. If CV is less than zero, the project is earning less value than planned thus it's over budget.

Schedule Performance Index (SPI) measures the progress achieved against that which was planned. SPI is calculated as EV/PV . If EV is equal to PV the value of the SPI is 1. If EV is less than the PV then the value is less than 1, which means the project is behind schedule. If EV is greater than the PV the value of the SPI is greater than one, which means the project is ahead of schedule. A well performing project should have its SPI as close to 1 as possible, or maybe even a little less than 1.

Cost Performance Index (CPI) measures the value of the work completed compared to the actual cost of the work completed. CPI is calculated as EV/AC . If CPI is equal to 1 the project is perfectly on budget. If the CPI is greater than 1 the project is under budget, if it's less than 1 the project is over budget.

Performance of the project will be measured using Earned Value Management. The following four Earned Value metrics will be used to measure to projects cost performance:

- Schedule Variance (SV)
- Cost Variance (CV)
- Schedule Performance Index (SPI)
- Cost Performance Index (CPI)

If the Schedule Performance Index or Cost Performance Index has a variance of between 0.1 and 0.2 the Project Manager must report the reason for the exception. If the SPI or CPI has a variance of greater than 0.2 the Project Manager must report the reason for the exception and provide management a detailed corrective plan to bring the projects performance back to acceptable levels.

Performance Measure	Yellow	Red
Schedule Performance Index (SPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2
Cost Performance Index (CPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2

Reporting Format

Reporting for cost management will be included in the monthly project status report. The Monthly Project Status Report will include a section labeled, "Cost Management". This section will contain the Earned Value Metrics identified in the previous section. All cost variances outside of the thresholds identified in this Cost Management Plan will be reported on including any corrective actions which are planned. Change Requests which are triggered based upon project cost overruns will be identified and tracked in this report.

Cost Variance Response Process

This section of the Cost Management Plan defines the control thresholds for the project and what actions will be taken if the project triggers a control threshold. As a part of the response process the Project Manager typically presents options for corrective action to the Project Sponsor who will then approve an appropriate action in order to bring the project back on budget. The Project Manager may propose to increase the budget for the project, reduce scope or quality, or some other corrective action.

The Control Thresholds for this project is a CPI or SPI of less than 0.8 or greater than 1.2. If the project reaches one of these Control Thresholds a Cost Variance Corrective Action Plan is required. The Project Manager will present the Project Sponsor with options for corrective actions within five business days from when the cost variance is first reported. Within three business days from when the Project Sponsor selects a corrective action option, the Project Manager will present the Project Sponsor with a formal Cost Variance Corrective Action Plan. The Cost Variance Corrective Action Plan will detail the actions necessary to bring the project back within budget and the means by which the effectiveness of the actions in the plan will be measured. Upon acceptance of the Cost Variance Corrective Action Plan it will become a part of the project plan and the project will be updated to reflect the corrective actions.

Earned Value Management (EVM)

This section will go into greater detail of EVM and examples of apply EVM techniques.

EVM is a project management technique that objectively tracks physical accomplishment of work:

- Earn Value Management (EVM) technique used to track the Progress and Status of a Project & Forecast the likely future performance of the Project.
- EVM technique integrates the scope, schedule and cost of a project.
- EVM technique answers a lot of questions to the stakeholders in a project related to the performance of the project.
- EVM technique can be used to show past performance of the project, current performance of the project and predict the future performance of the project by use of statistical techniques.
- Good planning coupled with effective use of the EVM technique will reduce a large amount of issues arising out of schedule and cost overruns.

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EVM emerged as a financial analysis specialty in United States Government programs in the 1960s, but it has since become a significant branch of project management. The current standard: ANSI/EIA Standard 748-B-2007 Edition - Earned Value Management (EVA) .

In the late 1980s and early 1990s, EVM emerged as a project management methodology to be understood and used by managers and executives, not just EVM specialists. Today EVM has become an essential part of tracking every project.

There are three basic elements of EVM:

- Planned Value (PV)
- Actual Cost (AC)
- Earned Value (EV)

All the three elements are captured on a regular basis as of a reporting date.

Planned Value (PV)

This is also referred to as Budgeted Cost of Work Scheduled (BCWS). Planned Value (PV) or BCWS is the total cost of the work scheduled /Planned as of a reporting date. This is calculated as:

$$\text{PV or BCWS} = \text{Hourly Rate} * \text{Total Hours Planned or Scheduled}$$

NOTE: Hourly Rate is the rate at which effort will be valued.

Actual Cost (AC)

This is also referred to as Actual Cost of Work Performed (ACWP). Actual Cost (AC) or ACWP is the total cost taken to complete the work as of a reporting date. This is calculated as:

$$\text{AC or ACWP} = \text{Hourly Rate} * \text{Total Hours Spent}$$

Earned Value (EV)

This is also referred to as Budgeted Cost of Work Performed (BCWP). Earned Value (EV) or BCWP is the total cost of the work completed/performed as of a reporting date. This is calculated as:

$$\text{EV or BCWP} = \text{Baselined Cost} * \% \text{ Complete Actual} \quad \text{BAC} * \% \text{ Complete}$$

All these three elements can be derived from Work Breakdown Structure by associating the costs to each of the tasks. For a big project it will be a tedious task to calculate these elements manually. Scheduling Software like Microsoft Project is used to calculate these three elements.

NOTE: % Completed Planned and % Completed Actual are defined below

% Completed Planned

The percentage of work which was planned to be completed by the Reporting Date and is calculated using the following formula:

$$\% \text{ Completed Planned} = \text{PV} / \text{BAC}$$

% Completed Actual

The percentage of work which was actually completed by the Reporting Date and is calculated using the following formula:

$$\% \text{ Completed Actual} = \text{AC} / \text{EAC}$$

Cost Variance (CV)

CV is very important factor to measure project performance. Cost Variance (CV) indicates how much over or under budget the project is and Cost Variance can be calculated as using the following formula:

$$\text{Cost Variance (CV)} = \text{Earned Value (EV)} - \text{Actual Cost (AC)}$$

OR

$$\text{Cost Variance (CV)} = \text{BCWP} - \text{ACWP}$$

- The formula mentioned above gives the variance in terms of cost which will indicate how less or more cost has been to complete the work as of date.
- Positive Cost Variance Indicates the project is under budget.
- Negative Cost Variance Indicates the project is over budget.

Cost Variance %

Cost Variance % indicates how much over or under budget the project is in terms of percentage. Cost Variance % can be calculated as using the following formula:

$$\text{CV \%} = \text{Cost Variance (CV)} / \text{Earned Value (EV)}$$

OR

$$\text{CV \%} = \text{CV} / \text{BCWP}$$

- The formula mentioned above gives the variance in terms of percentage which will indicate how much less or more money has been used to complete the work as planned in terms of percentage.
- Positive Variance % indicates % under Budget.
- Negative Variance % indicates % over Budget.

Cost Performance Indicator (CPI)

Cost Performance Indicator is an index showing the efficiency of the utilization of the resources on the project. Cost Performance Indicator can be calculated using the following formula:

$$\text{CPI} = \text{Earned Value (EV)} / \text{Actual Cost (AC)}$$

OR

$$\text{CPI} = \text{BCWP} / \text{ACWP}$$

- The formula mentioned above gives the efficiency of the utilization of the resources allocated to the project.
- CPI value above 1 indicates efficiency in utilizing the resources allocated to the project is good.
- CPI value below 1 indicates efficiency in utilizing the resources allocated to the project is not good.

To Complete Cost Performance Indicator (TCPI)

To complete Cost Performance Indicator is an index showing the efficiency at which the resources on the project should be utilized for the remainder of the project. This can be calculated using the following formula:

TCPI using “Budget at Completion” (BAC)

$$\text{TCPI (BAC)} = \text{Work Remaining (BAC - EV)} / \text{Funds Remaining (BAC - AC)}$$

OR

TCPI using the Project Manager’s “Estimate at Completion” (EAC)

$$\text{TCPI (EAC)} = \text{Work Remaining (BAC - EV)} / \text{(EAC - AC)}$$

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- The formula mentioned above gives the efficiency at which the project team should be utilized for the remainder of the project.
- TCPI value above 1 indicates utilization of the project team for the remainder of the project can be stringent.
- TCPI value below 1 indicates utilization of the project team for the remainder of the project should be lenient.

Schedule Variance (SV)

Schedule Variance indicates how much ahead or behind schedule the project is and can be calculated as using the following formula:

$$\text{Schedule Variance (SV)} = \text{Earned Value (EV)} - \text{Planned Value (PV)}$$

OR

$$\text{Schedule Variance (SV)} = \text{BCWP} - \text{BCWS}$$

- The formula mentioned above gives the variance in terms of cost which will indicate how much cost of the work is yet to be completed as per schedule or how much cost of work has been completed over and above the scheduled cost.
- Positive Schedule Variance Indicates we are ahead of schedule.
- Negative Schedule Variance Indicates we are behind of schedule.

Schedule Variance %

Schedule Variance % indicates how much ahead or behind schedule the project is in terms of percentage and can be calculated as using the following formula:

$$\text{SV \%} = \text{Schedule Variance (SV)} / \text{Planned Value (PV)}$$

OR

$$\text{SV \%} = \text{SV} / \text{BCWS}$$

- The formula mentioned above gives the variance in terms of percentage which will indicate how much percentage of work is yet to be completed as per schedule or how much percentage of work has been completed over and above the scheduled cost.
- Positive Variance % indicates % ahead of schedule.
- Negative Variance % indicates % behind of schedule.

Schedule Performance Indicator (SPI)

Schedule Performance Indicator is an index showing the efficiency of the time utilized on the project and can be calculated using the following formula:

$$\text{SPI} = \text{Earned Value (EV)} / \text{Planned Value (PV)}$$

OR

$$\text{SPI} = \text{BCWP} / \text{BCWS}$$

- The formula mentioned above gives the efficiency of the project team in utilizing the time allocated for the project.
- SPI value above 1 indicates project team is very efficient in utilizing the time allocated to the project.
- SPI value below 1 indicates project team is less efficient in utilizing the time allocated to the project.

To Complete Schedule Performance Indicator (TSPI)

To Complete Schedule Performance Indicator is an index showing the efficiency at which the remaining time on the project should be utilized. This can be calculated using the following formula:

$$\text{TSPI} = (\text{Total Budget} - \text{EV}) / (\text{Total Budget} - \text{PV})$$

OR

$$\text{TSPI} = (\text{Total Budget} - \text{BCWP}) / (\text{Total Budget} - \text{BCWS})$$

- The formula mentioned above gives the efficiency at which the project team should utilize the remaining time allocated for the project.
- TSPI value below 1 indicates project team can be lenient in utilizing the remaining time allocated to the project.
- TSPI value above 1 indicates project team needs to work harder in utilizing the remaining time allocated to the project.

Budget at Completion (BAC)

- Budget at Completion (BAC) is the total budget allocated to the project.
- Budget at Completion (BAC) is generally plotted over time. Say like periods of reporting (Monthly, Weekly etc.)
- BAC is used to compute the Estimate at Completion (EAC), explained in next section.
- BAC is also used to compute the TCPI and TSPI

BAC is calculated using the following formula:

$$\text{BAC} = \text{Baselined Effort-hours} * \text{Hourly Rate}$$

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Estimate To Complete (ETC)

- Estimate to Complete (ETC) is the estimated cost required to complete the remainder of the project.
- Estimate to Complete (ETC) is calculated and applied when the past estimating assumptions become invalid and a need for fresh estimates arises.
- ETC is used to compute the Estimation at Completion (EAC).

Estimate at Completion (EAC)

- Estimate at Completion (EAC) is the estimated cost of the project at the end of the project.
- There are three methods to calculate EAC
 - **Variations are Typical** - This method is used when the variations at the current stage are typical and are not expected to occur in the future.
 - **Past Estimating Assumptions are not valid** - This method is used when the past estimating assumptions are not valid and fresh estimates are applied to the project.
 - **Variations will be present in the future** - This method is used when the assumption is that the current variations will be continued to be present in the future.
- The formula for calculation of the three methods are as given below:

$$AC + (BAC - EV)$$

$$AC + ETC \text{ (Estimate to complete)}$$

$$AC + (BAC - EV) / CPI$$

Variance at Completion (VAC)

Variance at Completion (VAC) is the variance on the total budget at the end of the project. This is the difference between what the project was originally expected (baselined) to cost, versus what it is now expected to cost. VAC is calculated using the following formula:

$$VAC = BAC - EAC$$

% Completed Planned

The percentage of work which was planned to be completed by the Reporting Date and is calculated using the following formula:

$$\% \text{ Completed Planned} = PV / BAC$$

% Completed Actual

The percentage of work which was actually completed by the Reporting Date and is calculated using the following formula:

$$\% \text{ Completed Actual} = AC / EAC$$

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To illustrate the concept of EVM and all the formulas, assume a project that has exactly one task. The task was baselined at 8 hours, but 11 hours have been spent and the estimate to complete is 1 additional hour. The task was to have been completed already. Assume an Hourly Rate of \$100 per hour. Using this information:

Calculating EV

Hourly Rate = \$100

PV or BCWS = Hourly Rate * Total Hours Planned or Scheduled

PV = \$800 (\$100 * 8 hours)

AC or ACWP = Hourly Rate * Total Hours Spent

AC = \$1100 (\$100 * 11 hours)

EV or BCWP = Baselined Cost * % Complete Actual

EV = \$734 (baseline of \$800 * 91.7% complete)

(NOTE % Complete Actual (below) to get the 91.7%)

BAC = Baselined Effort-hours * Hourly Rate

BAC = \$800 (8 hours * \$100)

EAC = AC + ETC

EAC = \$1200 (1100 + 100)

VAC = BAC - EAC

VAC = -\$400 (\$800 - \$1200)

% Completed Planned = PV / BAC

% Complete Planned = 100% (\$800 PV / \$800 BAC)

% Completed Actual = AC / EAC

% Complete Actual = 91.7% (\$1100 AC / \$1200 EAC)

SV = Earned Value (EV) - Planned Value (PV)

SV = -\$66 (\$734 EV - \$800 PV)

SPI = Earned Value (EV) /Planned Value (PV)

SPI = 0.91 (\$734 EV / \$800 PV)

CV = Earned Value (EV) - Actual Cost (AC)

CV = -\$366 (\$734 EV - \$1100 AC) indicating a cost overrun

CPI = Earned Value (EV) /Actual Cost (AC)

CPI = 0.66 (\$734 EV / \$1100 AC) indicating over budget

TCPI Example

You have a project to be completed in 12 months and the total cost of the project is \$100,000 USD. Six months have passed and \$60,000 USD has been spent, but on closer examination you find that only 40% of the work is completed so far.

Find the To Complete Performance Index (TCPI) for this project.

Solution:

Given in question:

Budget at Completion (BAC) = \$100,000 USD

Actual Cost (AC) = \$60,000 USD

Planned Value (PV) = 50% of \$100,000 = \$50,000 USD

Earned Value (EV) = 40% of \$100,000 = \$40,000 USD

Cost Performance Index (CPI) = $EV / AC = \$40,000 / \$60,000 = 0.67$

Hence, Cost Performance Index (CPI) = 0.67

Now, Estimate at Completion (EAC) = $BAC / CPI = \$100,000 / 0.67 = \$149,253.73$ USD

Hence, Estimate at Completion (EAC) = \$149,253.73 USD

From the calculation, we can see that since the CPI is less than one, you're over budget. Therefore, to calculate the To Complete Performance Index (TCPI), you will use the formula based on EAC.

$TCPI = (BAC - EV) / (EAC - AC) = (100,000 - 40,000) / (149,253.73 - 60,000) = 60,000 / 89,253.73 = 0.67$

TCPI = 0.67

This means that you can continue with a Cost Performance Index of 0.67 to complete the project.

Before I conclude this example, let's revisit some key points regarding the To Complete Performance Index (TCPI):

- Cost Performance Index (CPI) is the past performance of the project; on the other hand TCPI is the future performance of the project.
- If you are under budget, you will calculate the TCPI based on the BAC.
- If you are over budget, you will calculate the TCPI based on the EAC.
- If the To Complete Performance Index is less than one, you are in a comfortable position.
- If the To Complete Performance Index is greater than one, you have to perform with better cost performance than the past cost performance.
- And finally, if the To Complete Performance Index is equal to one, you can continue with the same cost performance.

Managing Issues/Action Items

In spite of your best efforts at risk management, all projects of any size and complexity will have issues arise that need to be dealt with and resolved. If you haven't done a good job managing risks, chances are you will have more issues to deal with than you might otherwise have. Use the following information to manage issues:

1. Issues/Action Items Matrix or Log is used to help clarify, track, communicate and resolve issues. Some meeting reports include Issues/Action Items in the form.
2. Customize an Issues/Action Item Matrix to meet the project's needs, i.e., include columns for issue priority, type, complexity, source, key contact for resolution, etc.—whatever makes sense
3. Visit and update the Issues/Action Item Matrix weekly, or at least bi-weekly, but always prior to and during a status meeting
4. Leverage the Issues/Action Item Matrix for use as a key communication tool—distribute it per the Communication Plan
5. Work from the Issues/Action Item Matrix to identify critical issues, and get updates from issue owners on these between meetings
6. Remember, if you assign an issue to more than one person, you will get finger pointing, not resolution
7. Help facilitate issue resolution as appropriate, which may include motivating, providing logistical support, coordinating and/or facilitating a meeting, developing a plan for escalation, etc.

Best Practice: Resolve issues as quickly as possible.

Issues are big problems. For instance, your servers you ordered are not ready and configured on time. Or perhaps the new network backbone is not set up correctly and needs to be redesigned. The project manager should manage open issues diligently to ensure they are being resolved. If there is no urgency to resolve the issue, or if the issue has been active for some time, then it may not really be an issue. It may be a potential problem (risk), or it may be an action item that needs to be resolved at some later point. Issues by their nature must be resolved with a sense of urgency.

Track Issues (Log)

Most projects are destined to hit a few snags along the way, making it essential to document the issues that arise so they don't derail your goals. Using a log will enable you to summarize all the problems that occur during a project. You can then view open issues, determine who is handling which problems, and make sure that a resolution is forthcoming.

- Document an issue, including any pertinent details such as the date and who reported it.
- Determine a priority for the issue. Label it as high, medium, or low.
- Assign the issue to a project team member. The issue can be scheduled for resolution to better manage the team member's time and effort.
- Track the status of the resolution. Label it as open, in progress, or closed.
- Document the process by which the issue was resolved. This will help the team note any lessons that can be learned from the problem's solution.

Risk Management

Risks refer to potential events or circumstances outside the project team's control that will have an adverse impact on the project. This is a very broad topic and the following is a general overview of risk management (RM) at the project level. The PMO should align RM with the organizational RM framework (if applicable) but if not, the PMO should incorporate industry best practices from organizations like, COSO and ISO. Refer to my Integrated Strategic Maturity Model (ISMM), which aligns the PMO and Risk Management maturity levels. Download the [ISMM \(PDF\)](#).

The Basics

There are four steps to assessing and managing risks, and effective risk management requires all four of them.

1. Identify the risks
2. Qualify the risks
3. Assess each risk for impact to the project if it does occur
4. Assess the likelihood of the risk occurrence
5. Plan for risks by creating a list of risk triggers and how to handle the risk if it does occur
6. Monitor and manage risks

To adequately analyze risk, you'll need a detailed plan. The best time to perform an initial risk analysis is during the Planning Phase. Don't make the mistake of thinking that risk analysis is a one-time task. You'll want to reevaluate the risk management plan and your risk analysis from time to time throughout the project and whenever major deviations from the plan occur.

Identify Risks

There are numerous ways to identify risks. If you have a limited amount of time, the best ways to identify risks are to:

- If you have access to a Risk Assessment list...use it.
- Review the Project Schedule looking for:
 - Tasks for which your team has no expertise. The duration and cost estimates for these tasks are more likely to be inaccurate.
 - Duration and cost estimates that are aggressive. Ask the estimators how confident they are in their estimates, especially for critical path tasks.
 - Situations where you have a limited number of resources that can do particular tasks and where those resources are fully allocated, over allocated, or may become unavailable. A resource can become unavailable when they leave your organization or because of other commitments within the organization.
 - Tasks with several predecessors. The more dependencies a task has, the greater the likelihood of a delay.

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- Tasks with long durations or a lot of resources. The estimates for these larger tasks are more likely to be inaccurate
- Brainstorm and talk with the experts.
- All of your project risks may not be apparent from analyzing the project schedule. It's worth your time to brainstorm with key project resources and ask where they see the most risk to the project. You may be surprised at what you uncover.
- If you have some experienced project managers available, have them review your project schedule and risk assessment.
- Talk with people who have expertise in particular areas of the project. For example, if you're planning to use an outside contractor, talk to people who have used that contractor or other contractors.

Qualify Risks

As you go through the following risk analysis, you will be asked to qualify the risk probability and impact in terms of Low, Medium, and High. Qualifying risks is a discipline unto itself and the accuracy of your results is commensurate with the techniques you use and your historical experience with risk analysis.

Before you begin any qualification analysis, you will want to determine your organization's tolerance to risk (risk appetite). By defining risk appetite, an organization can arrive at an appropriate balance between uncontrolled innovation and excessive caution. It can guide people on the level of risk permitted and encourage consistency of approach across an organization.

Can organizations operate in a high-risk environment or are they conservative and want only low-risk projects? If you work for a small company, an additional project cost of \$250,000 or a delay of two 2 months may put your entire company at risk. If you work for a large organization, these overruns may be acceptable for a project. How much cost and delay is acceptable? Remember we are not asking for your preference; it's just the bottom-line numbers your company can tolerate.

Next, you will want to qualify each risk item by asking:

- What is the impact to the project if the risk item occurs (Low, Medium, and High)?
- What is the probability or likelihood of the risk item occurring (Low, Medium, High)?
 - Review archived projects to see if similar tasks from the past have taken longer than your estimates or have cost more.
 - Find out your team's confidence level. If the resources that will do the work aren't comfortable with your cost or duration estimates, then the risk is more likely to occur.

Once the impact and probability has been determined, you will want to prioritize which risks are going to be actively managed focusing on the following order in priority (you might want to modify this priority table according to your organization's sensitivities):

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Risk Analysis Tools

There are numerous Commercial Off-the-Shelf (COTS) Risk Management products on the market and or you can use Excel with many useful Risk Tool Add-ons to support this function for your project risk management efforts.

The screenshot displays the eRisk Model interface, which consists of four risk heat maps and their associated parameters:

- 1 - Cost eRisk:** Probability: 4.0, Impact: 0.5, Risk Score: 2.25. The heat map shows a high-risk area (red) in the top-right quadrant, with an 'X' marked at (1, 4).
- 2 - Schedule eRisk:** Probability: 2.0, Impact: 3.0, Risk Score: 2.50. The heat map shows a high-risk area (red) in the top-right quadrant, with an 'X' marked at (3, 2).
- 3 - Technical eRisk:** Probability: 1.5, Impact: 2.0, Risk Score: 1.75. The heat map shows a high-risk area (red) in the top-right quadrant, with an 'X' marked at (2, 1).
- 4 - Time eRisk:** Probability: 2.0, Impact: 1.0, Risk Score: 1.50. The heat map shows a high-risk area (red) in the top-right quadrant, with an 'X' marked at (1, 2).

Each heat map is a 4x4 grid with Impact on the x-axis (0-4) and Probability on the y-axis (0-4). The colors range from green (low risk) to red (high risk).

Below the heat maps is the **eRisk Mitigation** section, which includes a navigation bar with tabs: Comments, Mitigation Plan, Mitigation Steps, Contingency Plan, and eRisk Overview. The current view is the Mitigation Steps tab, showing a list of mitigation steps. The selected step is:

- Step #:** 5
- Title:** Data validation
- Description:** testing new folder page
- Assigned To:** Michael McCormick
- Start Date:** 3/24/2011
- Due Date:** 3/25/2011
- Estimated Cost Impact:** \$1,000.00
- Milestone:** Complete

Additional fields for the selected step include:

- Probability Impact:** Probability: 1.5, RAV: 3, Max Impact: 2.0
- Projected eRisk Area Variable (RAV):** Cost: 2.0, Schedule: 2.5, Technical: 3.0, Other: 0.0

Total Cost Impact: \$1,500.00

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ePMO software (Risk Heat Maps) - [Download VoR 3D Model \(PDF\)](#)

Tracking Risks

Once you've identified and qualified the risks, you need to plan to manage them. Because risk planning can take a lot of time and energy, you may want to plan for only the high-priority risks

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(priority 1) or the medium to high-priority risks (priorities 1 to 3). Planning entails:

- Identifying triggers for each risk
- Identifying the plan for each risk if it does occur

Identify Triggers

Triggers are indicators that a risk has occurred or is about to occur. The best triggers tell you well in advance that a problem will occur.

To identify triggers, talk with the people who are most likely to cause the risk to occur and those who are most likely to feel its impact. Ask them how they would know that the problem is occurring. Start with how they would know that the problem has already occurred, and then work backward to determine how they would know before the problem actually occurred. As the project manager, consider how the risk would be reflected in the project schedule. Would the project schedule show overtime for a specific resource on earlier tasks? Would the project schedule show delays in specific tasks?

For each risk you're addressing, create a list that shows the possible triggers, when they are likely to occur, and who should watch for the trigger.

Identify Plans

Once you've identified triggers and created your list, you need to create action plans to manage your risks. You can choose to manage risks in one of four basic ways:

- **Avoidance** – You can change the project plan and project schedule to eliminate the risk or to protect the project objectives from its impact. More in-depth planning or requirements gathering may be one way to avoid a risk later in a project. Reducing scope to avoid high-risk activities, adding resources, or adding time may be other ways to avoid risk. For example, if you're dependent on a single resource with specific expertise, consider training another resource in that expertise.
- **Transference** – Risk transference is seeking to shift the consequence of a risk to a third party together with the ownership of the response. It does not eliminate the risk. You can buy insurance to cover the cost of a risk item occurring. Another transference technique is to enter into a fixed price contract, which transfers the risk to the performing party.
- **Mitigation** – Mitigation seeks to reduce the probably and/or consequences of an adverse risk event to an acceptable threshold by taking actions ahead of time, thereby decreasing the likelihood of the problem occurring. Many times, it is much more effective to reduce the probability of a risk even occurring than trying to repair the consequences after it has occurred. For example, if you're dependent on an outside vendor making its delivery dates, your contract with the vendor might include penalties for late delivery, in order to offset your potential losses. Risks that seem large enough to threaten the project should lead to an “early prototype or pilot” effort being before full implementation.

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- **Acceptance** – The final technique of dealing with risk is to respond to the risk item with a contingency plan should the problem occur. For example, if a task is at risk of being delayed, your plan may be to add additional resources to the task. Your contingency plan should include any work that must be done ahead of time to make the contingency successful. For example, you'll want to make sure that the additional resources are available in case you need them.

Keep in mind that risk management plans can have unexpected ramifications. The prudent project manager might want to model each plan in their project-scheduling tool to see the plan's impact on the project. Look for new risks that occur as a result of the project schedule and address them.

Monitor and Manage Risks

Your risk management plan is in place. Now your job is to make sure you and others on the project team act on it. Take any actions necessary according to the risk response you have chosen. Monitor your watchlist to see if triggers are occurring, and implement contingency plans as needed. Be sure to reassess your risks regularly. You might find the following ideas useful for monitoring your risks:

- Move your High Risk items into your Issues Matrix to be visited during each project status meeting
- Include a Risks section in status reports and request that resources identify any assumptions they are making, as well as any new risks they see
- Set up regular meetings with team members to reevaluate the risk management plan and to identify new risks to the project
- Each time your project's actual progress varies significantly from the project schedule, reassess the risks and reevaluate your risk management plan

Best Practice: Lifecycle Risk Practice

Through the project lifecycle, the project team should continuously perform an updated risk assessment to determine if other risks have surfaced that need to be managed. For each risk, they should also determine the probability that the risk event will occur as well as its potential impact to the project. Those events identified as high-risk should have specific plans put into place to mitigate them or to ensure that they do not occur. Medium-level risks should be evaluated as well to see if they should be proactively managed. (Low-level risks may be identified as assumptions. That is, there is potential risk involved, but you are “assuming” that the positive outcome is much more probable.) Some risks are inherent in a project like this that can impact every person in the company. Other risks may include not having the right level of expertise, unfamiliarity with the technology, and problems integrating smoothly with other corporate initiatives.

Project Schedule Management

Creating a Project Schedule

1. Identify major tasks and milestones to complete the project.

2. Identify detail tasks, in chronological order, that are required to achieve each major task.
3. Work collaboratively with the planning project team to estimate each task's duration and start & end dates.
4. Identify tasks that are dependent on the completion of other tasks.
5. Assign resources to each task.
6. Build a complete project schedule using a scheduling tool.
7. Estimate overall project budget.
8. Document any assumptions in the schedule.
9. Facilitate the approval of the schedule by the sponsor & other key stakeholders.
10. Remember when distributing a schedule in Microsoft Project or Primavera P6, not everyone has the software, so converting it to Excel or printing with Adobe Acrobat may be necessary is a best practice for "version control".

Manage the Project Schedule

Review the project schedule on a regular basis to determine how you are progressing in terms of schedule and budget. If your migration effort is small, this may need to be weekly. For larger migration projects, the frequency might be every two weeks.

- **Monitor the Schedule:** Identify activities that have been completed during the previous time period and update the project schedule to show they are finished. Determine whether there are any other activities that should be completed but are not. After the project schedule has been updated, determine if the project will be completed within the original estimation of effort, cost, and duration. If not, determine the critical path and look for ways to accelerate activities to get you back on track.
- **Monitor the Budget:** Look at the amount of money your project has actually consumed and determine whether your actual spend rate is more than estimated based on the work that has been completed. If so, be proactive. Either work with the team to determine how the remaining work will be completed to hit your original budget or else raise a risk that you may exceed your allocated budget.

Look for Warning Signs!

Look for other signs that the project may be in trouble. These could include:

- A small variance in schedule, or a budget that starts to get bigger, especially early in the project. There is a tendency to think you can make it up, but this is a warning. If the tendencies are not corrected quickly, the impact will be unrecoverable.
- You discover that activities you think have already been completed are still being worked on. Users whom you think have been migrated have not.

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- You need to rely on unscheduled overtime to hit the deadlines, especially early in the project.
- Team morale starts to decline.
- Deliverable quality or service quality starts to deteriorate. For instance, users start to complain that their converted e-mail folders are not working correctly if your project entails implementing an e-mail solution for the company.
- Quality control steps, testing activities, and project management time starts to be cut back from the original schedule. Don't cut back on the activities that ensure the work is done correctly.
- If these situations occur, raise visibility through risk management, and put together a plan to proactively ensure that the project stays on track. If you cannot successfully manage through the problems, ask for help from your project sponsor. Be sure to log the issue and include it in the monthly status report to ensure all stakeholders stay informed of potential problems.

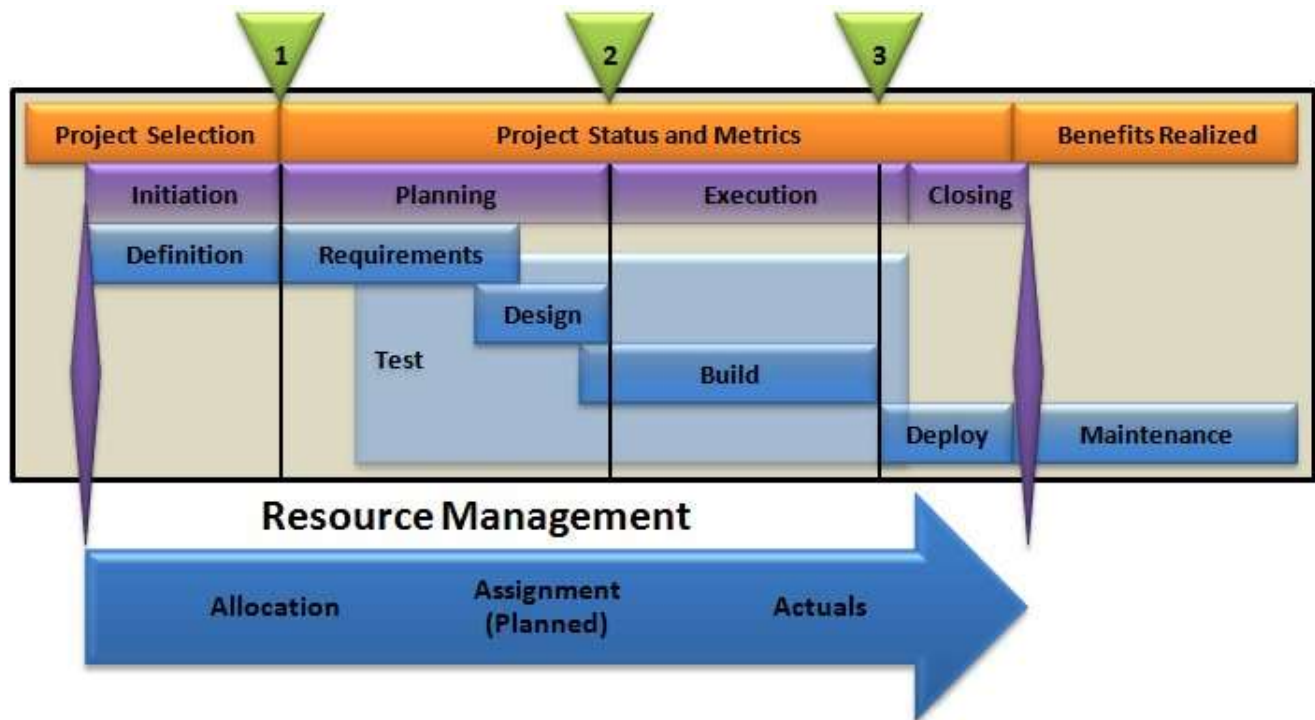
Managing Scope

After the basics of managing the schedule, managing scope is the most important activity required to control a project. Many project failures are not caused by problems with estimating or team skill sets, but by the project team working on major and minor deliverables that were not part of the original project definition or business requirements. Even if you have good scope management procedures in place, there are still two major areas of scope change management that must be understood to be successful—understanding who the customer is and scope creep.

Best Practice: Sponsor Approvals: In general, the project sponsor on the customer side is the person funding the project. While there is usually just one sponsor, a large project could have many stakeholders, or people who are impacted by the project. Requests for scope changes will most often come from stakeholders—many of whom may be managers in their own right. One manager might want one set of features for their area. Another might want an exception to the features already created. It doesn't matter how important a change is to a stakeholder, they cannot make scope change decisions and they cannot give your team the approval to make the change. In proper scope change management, the sponsor (or their designate) must give the approval after the change has gone through the change request process; since they are the only ones who can approve additional funding to cover the changes and know if the project impact is acceptable.

Best Practices: Scope Creep: Most project managers know to invoke scope change management procedures if they are asked to add a major new function or a major new deliverable to their project. However, sometimes the project manager doesn't recognize the small scope changes that get added over time. Scope creep is a term used to define a series of small scope changes that are made to the project without scope change management procedures being used. With scope creep, a series of small changes—none of which appear to affect the project individually—can accumulate to have a significant overall impact on the project. Many projects fail because of scope creep and the project manager needs to be diligent in guarding against it.

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PMO Resource Management

In my opinion it is a sign of maturity in the organization to grow into a matrix structure. As this evolution occurs, it is time to review the processes to manage resources. Typically, in a PMO there are three key management activities.

- *Forecasting resource requirements* – There are some tools which forecast resource needs for you, however some tools do not. I find a 3 month planning horizon is a good time frame for predictive resource needs, have a process where project manager submit project plans with resource needs on the first of the month. Combine all of these plans, and report to the management team the project resource needs for the next month.
- *Managing Resources* - Establishing a resource management process streamlines and clarifies how to select and acquire new resources, on boarding resources to the project, performance management, and finally transitioning resources from the project.
- *Ascertaining Resource Utilization* – The final component is to report on current resource utilization, which yields an understanding of where your resources spend their time and how time is spent.

As your PMO evolves, it will be good to review these three processes and determine how to best improve them for the organization. The outcome will be a good clean process for all to assure the right resources are doing the right things at the right time.

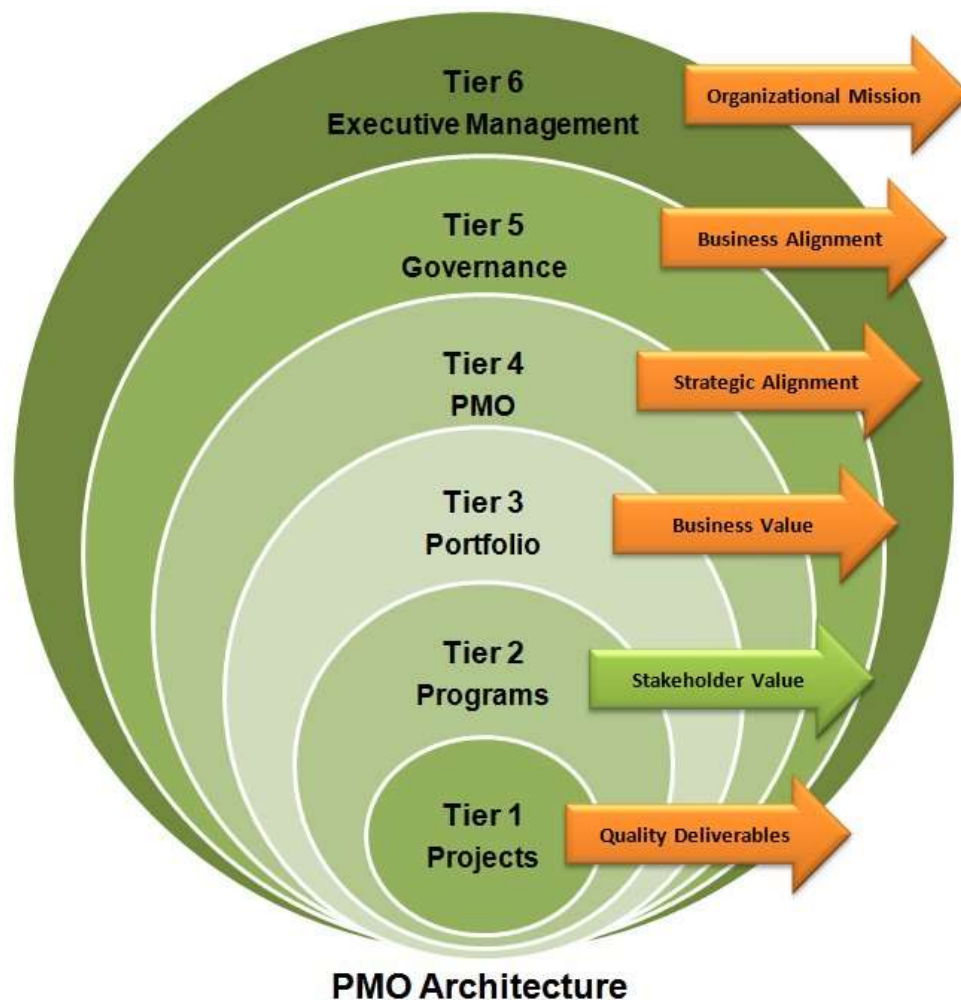
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Program Management Operations

Many organizations still struggle to answer this question. While the roles of the project and product manager vary from company to company, there are some unique characteristics that characterize the two.

A lot of project managers look up to program managers and aspire to be in their shoes one day. In order to be able to get to that level, project managers, as well as their organizations, must clearly understand the general responsibilities that are expected from each role. Organizations can then communicate them to their employees, allowing them to train themselves and set goals accordingly.

What is Program Management?



The Project Management Institute (PMI) defines program as “A group of related projects, subprograms, and program activities that are managed in a coordinated way to obtain benefits not available from managing them individually.” PMI - The Standard for Program Management, 3rd Edition, page 4.

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Programs include:

1. **Better Efficiency in Delivering Services:** Project management provides a “roadmap” that is easily followed and leads to project completion. Once you know where to avoid the bumps and potholes, it stands to reason that you’re going to be working smarter and not harder and longer.
2. **Improved / Increased / Enhanced Customer Satisfaction:** Whenever you get a project done on time and under budget, the client walks away happy. And a happy client is one you’ll see again. Smart project management provides the tools that enable this client/manager relationship to continue.
3. **Enhanced Effectiveness in Delivering Services:** The same strategies that allowed you to successfully complete one project will serve you many times over.
4. **Improved Growth and Development Within your Team:** Positive results not only command respect but more often than not inspire your team to continue to look for ways to perform more efficiently.
5. **Greater Standing and Competitive Edge:** This is not only a good benefit of project management within the workplace but outside of it as well; word travels fast and there is nothing like superior performance to secure your place in the marketplace.
6. **Opportunities to Expand your Services:** A by-product of greater standing. Great performance leads to more opportunities to succeed.
7. **Better Flexibility:** Perhaps one of the greatest benefits of project management is that it allows for flexibility. Sure project management allows you to map out the strategy you want to take see your project completed. But the beauty of such organization is that if you discover a smarter direction to take, you can take it. For many small-to-midsize companies, this alone is worth the price of admission.
8. **Increased Risk Assessment:** When all the players are lined up and your strategy is in place potential risks will jump out and slap you in the face. And that’s the way it should be. Project management provides a red flag at the right time: before you start working on project completion.
9. **Increase in Quality:** Goes hand-in-hand with enhanced effectiveness.
10. **Increase in Quantity:** I saved the best for last. An increase in quantity is often the result of better efficiency, a simple reminder regarding the benefits of project management.

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By implementing fundamental project management strategies, you will narrow your focus, reach desired goals and achieve those goals within specific time and cost perimeters. The final result is that everyone comes out a winner - which just may be project management's best benefit of all.

Program Manager's Role

Program managers serve a strategic role within an organization's project management group. They do not manage individual projects, but instead coordinate teams working on related projects. In a technology company, for example, program managers might oversee efforts to develop a new suite of accounting software. In this capacity the program manager might coordinate the work of project managers who lead teams focused on delivering the individual products that make up the suite.



Program Manager Functions (example):

- Manage a team in planning and executing business programs.
- Oversee daily activities of team and provide assistance whenever needed.
- Work with management, financial, and IT teams to support business program execution.
- Work with management to analyze program proposals and program objectives.
- Develop program plan, budget, schedule, and scope.
- Develop program management standards and methodologies to achieve program goals.
- Monitor and control expenses within allotted budgets.

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- Perform resource allocation and workload assignment for timely deliveries.
- Perform business contract negotiations with clients as needed.
- Assist in employee recruitment, performance evaluation, promotion, retention and termination activities.
- Ensure that program deliverables meet quality standards and project requirements.
- Develop best practices to improve program performance.
- Develop and maintain program documentations.
- Organize job trainings and maintain training materials.
- Follow and enforce company policies and regulations.
- Mine and coordinate resource sharing between constituent projects to overall benefit of program.
- Utilize rigorous risk identification and mitigation process on an ongoing basis and convey effectively to internal management.

Strategy

Program managers work with members of an organization's senior management team to set the overall strategy and objectives for a group of projects. They aim to align the outcome of the projects with the organization's overall business goals. Accounting software projects, for example, might be part of a company's goal of entering a new market sector. Program managers communicate the strategy to the project managers and ensure that individual project goals align with the strategy.

Resource Allocation

To ensure project teams have the resources they need, program managers establish budgets and allocate people and technical resources to individual teams. They establish priorities within the overall program and allocate resources in line with those priorities. To minimize waste and reduce costs, they identify tasks that are common to a number of projects and ensure that teams do not duplicate work. Program managers review the skills available within the project teams and arrange any necessary training to improve performance.

Planning

Program managers work with individual project managers to establish plans and goals for each project. They set objectives, assign tasks, allocate budgets and agree to timetables for achieving intermediate and overall goals. They also set review dates to ensure that projects remain on target. To obtain the information they need to coordinate and monitor progress across all projects, program managers establish a formal reporting structure.

Communication

Communication is a key responsibility for program managers. They work closely with project managers to track progress and provide updates on any changes in strategy or priorities. Program

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managers also report to senior executives on the progress of individual projects and the overall program. If necessary, they might contact specialists within the organization to obtain information or request support to help project teams with difficult problems.

Requirements

Program managers must have a strong background in project management. They require strong leadership skills to coordinate and motivate project teams. They must be adept at financial management to administer budgets across multiple projects and ensure the program meets its requirements for return on investment.

Project Manager vs. Program Manager

Even though there are many similarities between the project manager and program manager roles, being able to tell what sets them apart can help companies be more productive and deliver better results.

The common threads include:

- **Multiple Projects:** A program consists of a series of related and possibly interdependent projects that meet an overarching objective.
- **Planning:** Any program or project requires planning. A project has its own schedule, its own milestones. A program may entail coordination and between and scheduling of a subset of the projects that make up the program.
- **Monitoring:** Management must monitor progress, issues, and risks ... regardless of whether at the project level, or the program level. Program management entails monitoring at a higher level.
- **Reporting:** As with monitoring, there must be reporting at both the project and the program level. Program management consolidates the reports from component projects comprising the program for its reporting to higher level management.
- **Budget:** In some organizations, projects are responsible for their own budgets but often, the project manager is working against tasks and deadlines, with budgets that were set at higher levels. Programs are more often, but not always, inclusive of budget management.

So, what are the differences between project management and program management? There are two key characteristic differences that distinguish program management from project management:

Programs encompass a series of projects that in aggregate achieve an overarching set of objectives, where projects have specific and more singular objectives. In this sense, the difference is driven by scope and scale.

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Program management involves more than oversight of a set of projects. It includes application of common standards and processes to the execution of projects. I have seen organizations that chartered the Program Management Office (PMO) to report to technology, with responsibility for process definition for the software development organization. This doesn't work well, as processes must extend beyond the technology organization, and should not be dictated by technology to business units. That said, Program Management should work to support and enforce process adherence across all functional areas of the business. If Program Management is to be charged with overall process definition and / or improvement, the PMO should not be reporting exclusively into Technology.

Program Management extends beyond technology practices. Program Management includes:

- Oversight of related projects.
- Establishment of business and technical processes.
- Audit and enforcement of established processes.
- Acceptance, analysis, and implementation of process improvements.
- Measurement of existing processes against established metrics.

Project Management, on the other hand, focuses on a deliverable within the framework of established project management processes as established by the Project Management Office (PMO). This is true, whether the project is a business or a technical project, and whether the project is related to one or more other projects, or is a stand-alone project.

In summary, Program Management addresses the management of project management, setting up processes, monitoring and measuring project results, and coordinating related projects.

Program Management Success

For program management to be effective, project schedules “must” be resource loaded otherwise there is no opportunity for “integrated program management” which is essential to obtain and track true project earned value (Earned Value Management techniques and little success of achieving business objectives. Resource management in my experience is the primary cause for most projects failing to meet project schedules and program managers cannot effectively manage resources without a program master schedule to monitor resource allocations.

The program manager should obtain integrated cost and schedule performance data at an appropriate level of summarization to monitor program execution. The program manager should require contractors and organizational activities to use internal management control systems to accomplish the following:

- Relate time-phased budgets to specific tasks identified in the statement of work;
- Produce data that indicate work progress;
- Properly relate cost, schedule, and technical accomplishment; and
- Produce data that is valid, timely, and auditable.

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Program Management & Portfolio Management

A leader of a strategic initiative must have an expert understanding of program management and be knowledgeable in the principles and application of portfolio management. He or she needs to be able to intelligently discuss this question:

“What are the differences between program management and portfolio management?”

The following PMI table shows the differences of PMO P3 (Project, Program & Portfolio). PMI - The Standard for Program Management, Fifth Edition, page 8.

Table 1-1. Comparative Overview of Project, Program, and Portfolio Management

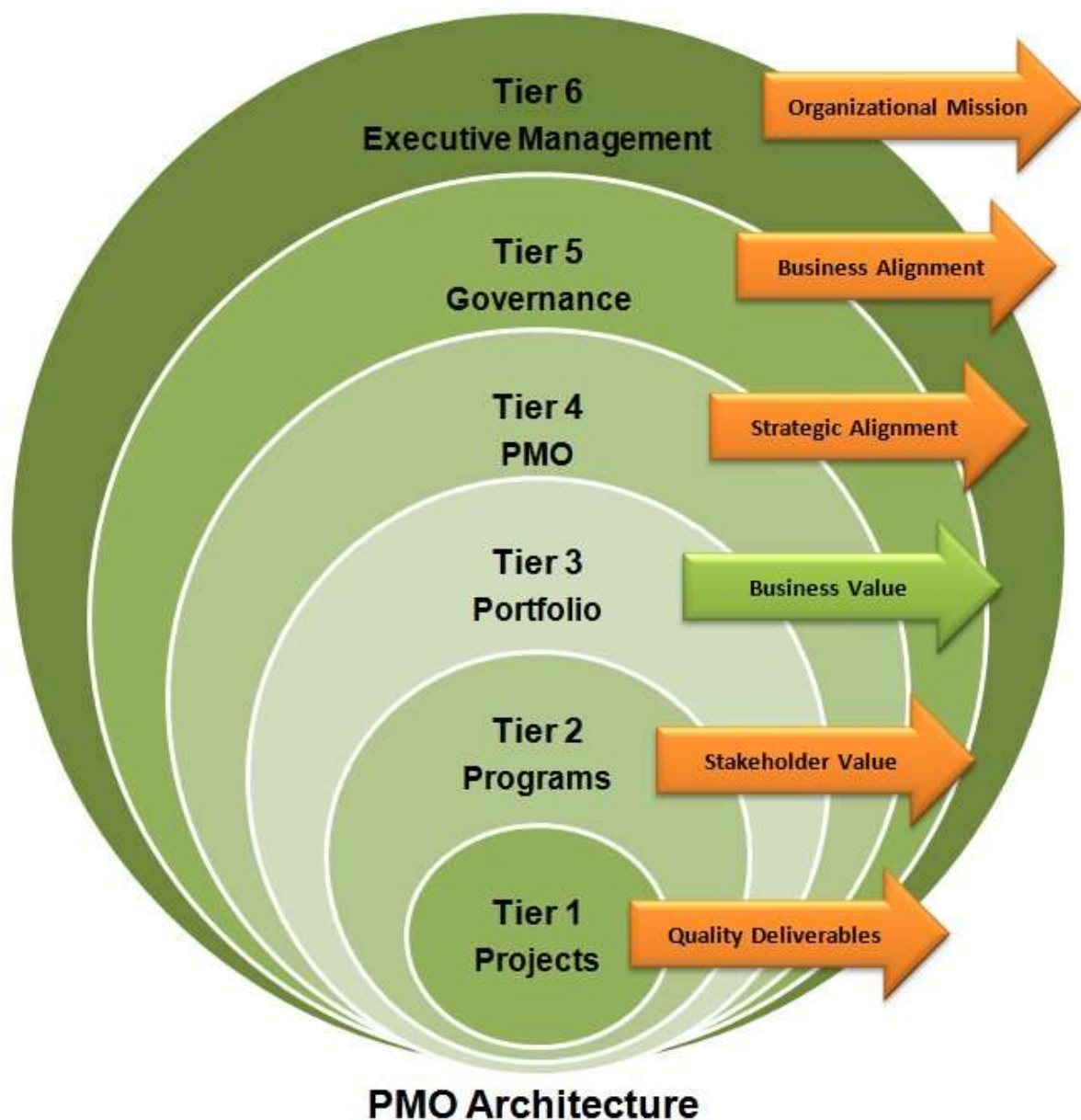
Organizational Project Management			
	PROJECTS	PROGRAMS	PORTFOLIOS
Scope	Projects have defined objectives. Scope is progressively elaborated throughout the project life cycle.	Programs have a larger scope and provide more significant benefits.	Portfolios have an organizational scope that changes with the strategic objectives of the organization.
Change	Project managers expect change and implement processes to keep change managed and controlled.	Program managers expect change from both inside and outside the program and are prepared to manage it.	Portfolio managers continuously monitor changes in the broader internal and external environment.
Planning	Project managers progressively elaborate high-level information into detailed plans throughout the project life cycle.	Program managers develop the overall program plan and create high-level plans to guide detailed planning at the component level.	Portfolio managers create and maintain necessary processes and communication relative to the aggregate portfolio.
Management	Project managers manage the project team to meet the project objectives.	Program managers manage the program staff and the project managers; they provide vision and overall leadership.	Portfolio managers may manage or coordinate portfolio management staff, or program and project staff that may have reporting responsibilities into the aggregate portfolio.
Success	Success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction.	Success is measured by the degree to which the program satisfies the needs and benefits for which it was undertaken.	Success is measured in terms of the aggregate investment performance and benefit realization of the portfolio.
Monitoring	Project managers monitor and control the work of producing the products, services, or results that the project was undertaken to produce.	Program managers monitor the progress of program components to ensure the overall goals, schedules, budget, and benefits of the program will be met.	Portfolio managers monitor strategic changes and aggregate resource allocation, performance results, and risk of the portfolio.

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Project Portfolio Management

Project portfolio management is used to select a portfolio of new product development projects to achieve the following goals:

- Maximize the profitability or value of the portfolio
- Provide balance
- Support the strategy of the organization



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Project portfolio management is a blend of management disciplines that combines:

- A **business management** focus is to ensure that all projects and programs align with the portfolio strategy.
- A **general management** focus is for managing an organization's resources and risks.
- A **project management** focus is for reviewing, assessing, and managing projects and programs to ensure they are meeting or exceeding their planned contribution to the portfolio.

Project portfolio management answers the question: What projects are correct, i.e. have the maximum value for the company. It allows reaching project goals without being beyond the project restrictions.

PPM Lifecycle Phases

There are four phases of project portfolio lifecycle:

Phase 1 - Portfolio Project Creation: The main goal of this phase is to provide formation of projects pool which then potentially can be initiated and accepted to implementation. On the given phase gathering design initiatives and requirements without financial and other restrictions of the company are carried out. In different companies this phase can be organized differently depending on scale of the company and volume of design requirements. Basically, all it is reduced to the following steps:

- *Aggregative Assessment:* The goal is to estimate how much the project concept corresponds to strategic objectives of the company.
- *Business Plan:* After the project concept is verified technical and economic estimations are carried out in a business plan form. The aim is to define whether effects of implementation correspond to the investments.

After coordination and statement of the Business plan, project gets to the pool of projects which are potentially attractive to be implemented in project portfolio.

Phase 2 - Portfolio Project Selection: The aim of this phase is a selection of project to portfolio in accordance with financial and other portfolio restrictions. From the pool of potential projects obtained in previous phase, new portfolio is created. On this phase typical process includes two steps that can be modified according to business specificity and organizational structure. The steps are:

- *Prioritizing projects.* In the conditions of limited financial resources, for the company it is extremely important to implement the most effective and strategically significant projects at first. Prioritization can be applied by various criteria. Basically prioritization is based on economic and investment indicators (NPV, compensation period, etc.).

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- *Project Selection:* After the projects are prioritized, the selection stage is launched. The most priority projects are selected first of all.

Phase 3 - Portfolio Project Planning: In this phase the following processes are carried out:

- **Project launching** (appointment of project managers, release of project documentation's, creation of project structure, etc.)
- **Planning** (detailed elaboration of all kinds of plans listed in the business plan)
- **Resources providing** (human resources, production capacity, etc.)

Specificity of the phase is that at planning of project portfolio, all shared resources (i.e. those resources which will be involved in multiple projects) should be considered and resource conflicts should be resolved beforehand.

Phase 4 - Implementation Management: In this phase the following problems are considered:

- Monitoring of project portfolio performance, the analysis of deviations at implementation of projects and their influences on the related projects and on the portfolio as a whole.
- During implementation some projects can be stopped or frozen, and their resources are to be transferred to other, more prioritized projects.

PPM Objectives

Project Portfolio Management (PPM) is about more than running multiple projects. Each portfolio of projects needs to be assessed by its business value and adherence to strategy. The portfolio should be designed to achieve a defined business objective or benefit. Directing 'all the projects' successfully will ensure we are doing the right projects.

Project portfolio management organizes a series of projects into a single portfolio of reports that capture project objectives and other critical factors.

While at individual project level it is important to know how each project is performing, the impact of each project on the portfolio is just as important. The following questions should be asked:

- Does each project contribute to the overall achievement of the portfolio?
- How well is each project performing?
- Will any project have a negative impact on other projects to come?
- What projects in the portfolio are dependent on others?
- Will the successful delivery of all projects deliver the desired objective or benefit?

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Working at portfolio level is about working with summary or key data. It is important to avoid information overload. The detail of each project should be kept at the project team level, managed by the individual project managers. Key information should be rolled up and presented at each level within the organization as appropriate. At executive VP level you are likely to be providing a summary of performance, progress and a measurement of estimates against actuals and costs.

Within most project portfolio management systems there is a project evaluation process. This process is used to evaluate the projects at various points during their life cycle. At the beginning of each stage (often called a "gate") the responsible party evaluates the business case, asking whether it is still relevant and able to deliver the organizations' objectives. If the answer is no, then the project should be stopped. This way the organization can ensure they stay focused on delivering a strategy, goal or other benefit, and that resources are used where they will offer the best return.

Project portfolio management asks the following questions:

- Are we doing the right things?
- Are we doing them the right way?
- Are we doing them well?
- Are we getting the benefits?

If the answer to any of these questions is no, immediate action is needed to bring the portfolio back on track.

The objective of project portfolio management is to optimize the results of the project portfolio to get benefits the organization wants.

Principle # 1: Educate the C-level – No project portfolio management deployment can be successful without the buy-in from the senior executive management and very few people understand what project portfolio management is, so the most important step is to educate the executives about PPM.

Principle # 2: Conduct a PPM Workshop – Conduct a one or two-day workshop in order to educate the executives about the finer details of portfolio management and to develop a scoring model, desired portfolio balance and strategic alignment approach. A strategic resourcing model should also be developed during the workshop.

Principle # 3: Develop a process through which the project proposals will flow from the project initiators to the Portfolio Committee.

Principle # 4: Develop a "Business Case" template based on the industry's best practices but fine-tuned to company's realities.

Principle # 5: Document all the findings in the "Project Portfolio Governance Charter".

Principle # 6: Communicate, communicate, and communicate. All of the organization's employees must be aware of the new portfolio processes.

Principle # 7: Apply the model to the first group of project proposals. Fine-tune the processes as necessary. Repeat.

PPM Critical Success Factors

The application of Project Portfolio Management can be daunting—but not impossible. Ten critical success factors will help your organization derive the most value from this strategic management process. These factors all contribute to the effective selection, control and evaluation of projects under a Portfolio Management doctrine.

1. Senior Management Commitment

Senior management's commitment to the Project Portfolio Management process is paramount to success. Because the Project Portfolio Management process introduces a strategic decision-making approach, it must start at the top in order to extend throughout the organization. Leaders must understand the entire process and commit to decision-making based upon that process. As this decision-making process is pushed down to the lower levels of an organization, it begins to change the culture and impact the way of doing business. Without senior management commitment and consensus, the process will not work. Actions, such as data collection, that contributes to the success of Project Portfolio

Management will not be enacted if not required by senior management.

Another critical argument for senior management's commitment is their over-arching knowledge of the organization—where it is going and how it works. This group of people needs to understand how decisions impact the enterprise. The data collected during the Project Portfolio Management process enables senior management to be more effective because they are able to make fact-based decisions. Data-driven decisions empower senior management with their stakeholders – governance boards or shareholders. If decisions are not made according to data, they are vulnerable to questions and review by outsiders. However, senior management need not be a slave to the data. The data may indicate that goals are not properly aligned or balanced. Wherever the data point, it is still up to senior management to analyze and interpret according to their knowledge of the company and industry. This is the true value of senior management's participation in the Project Portfolio Management process

2. Strategic Objective Communication

Communication is at the heart of successful Project Portfolio Management. Strategic objectives must be defined and communicated so that everyone across the organization understands the corporate goals and decision-making process. Understanding the strategy at all levels of the organization is essential because even simple and seemingly non-strategic decisions are

affected. For example, the decision to purchase an Oracle-based database competes with the organizational strategy to standardize on Sybase. Or, the implementation of an overtime-heavy work week competes with the organizational strategy to streamline costs.

Managers at all levels of the organization need to use strategic objectives as a guide for ongoing operational decisions. Clear communication of strategic objectives helps define the expected outcomes and answers.

- What will strategy drive you to do?
- What changes do you want within your organization?

Answers to these questions will drive new initiatives that align with the strategy.

3. Strategically Aligned Investments:

Whereas the communication of strategic objectives builds an operating framework, the alignment of investment selection puts the framework to use. Every decision in the organization needs to be measured against the stated strategy. Alignment will occur naturally as new initiatives are evaluated within the strategic context. For example, if an organization standardizes on Sybase, an informed manager will not approve the purchase of non-Sybase applications. Or, overtime will be closely scrutinized in an organization trying to streamline costs. In effect, strategy determines investments and actions across the organization. Strategy-friendly projects will gain easy approval and those that are not aligned will receive increased scrutiny—either of the project or (in rare cases where the project is especially compelling) of the strategy.

4. Institutionalized Investment Management Process

Organizational cultures determine who makes decisions and how they make them. However, this informal authority channel is not always easily understood or navigated within an enterprise. An institutionalized: The application of Project Portfolio Management can be daunting –but not impossible.

There are ten critical success factors that will help your organization derive the most value from this strategic management process. Better IT investment decisions begin with a good model. Strong leaders who delegate decisions to their staff or other parties force the organization to operate on its own. An institutionalized management process is a sophisticated way in which an organization learns and refines itself through constant evaluation of strategic investments.

5. Enterprise Governance Aligned

The investment process evolves into a governance framework whereby all strategic decisions throughout the organization are made in the same manner. Each level within the organization will have its own threshold that limits its authority (such as budget approval, resource commitments, and the ability to impact other business units within the organization). A common

governance framework ensures that decisions are made the same way up and down the organization and that there is an appropriate mix of people making decisions. For example, the marketing department makes decisions regarding marketing activities; the Comptroller makes decisions regarding daily financial management; and, Human Resources makes decisions for how to administer employee benefits.

A governance framework naturally follows from the implementation of an institutionalized investment management process. Whereas the investment management process is formally created and organized, the governance framework will evolve within the existing operating culture.

6. Integrated program/project management discipline

All organizations can benefit from the adoption of basic program/project management discipline to constantly evaluate project health, such as cost and schedule. However, the implementation of an integrated discipline takes the basic project management skills one step further. This operating principle provides visibility into the health of ongoing projects and the potential impact of planned projects—and ensures that all projects are evaluated in the same manner. Without this enterprise-wide visibility, managers are hindered in their ability to make necessary decisions. For example, a healthy project may need to be cancelled or delayed/deferred because it is utilizing resources that are required for a more strategic project that affects organizational viability. The key concept is the requirement that all projects be monitored. Milestones and costs need to be consistently reviewed and controlled to ensure the organization is getting value out of its investments.

7. Consistent risk & performance measurement

Building upon the implementation of an integrated program/project management discipline, an organization needs to measure the risk and performance of projects across the enterprise. As a project progresses and more money is invested, an organization learns more about its overall risk. As risk changes, the project's potential return may change. Throughout the project life cycle, risks should be mitigated and avoided. If, for example, a high risk project remains high risk, and its probability of return is not compelling, the project may need to be cancelled. This data needs to be constantly fed back into the evaluation process to ensure the project continues to fall within strategic guidelines. The goal is to monitor and mitigate “risks” in order to validate continued financial and resource investment.

8. Portfolio reviews to support investment priority realignment

A formal review board needs to be established to review all enterprise projects—IT and non-IT, strategic and non-strategic. This review board should be composed of senior leaders and strategic line managers who meet on a regular basis to evaluate major investments and their strategic role in the ongoing success of the organization. The role of this group is to re-align projects as priorities change. These boards are the realization of a governance framework. As

the environment (technology, market, culture) changes, investments need to be re-prioritized. A review board allows the organization to institute change as external and internal factors change.

9. Investment Balance

Once the Project Portfolio Management process has been established, senior management must ensure that the organization has an effective balance of investments. Projects should no longer be assessed according to their bottom-line financial impact. Each project needs to be evaluated according to its health, cost and strategic contribution to the organization over the short and long term. The ability to determine the appropriate balance is specific to each organization and is made by the review board. A technology start-up has different requirements than an established retail clothing manufacturer. A start-up will need more projects that demonstrate short term return whereas an established company is more likely able to tolerate more high risk, long term investments.

Data analytics from Project Portfolio Management should determine how investments should be made throughout the enterprise:

- Are there enough short term, low risk projects that promote organizational Visibility?
- Are there long-term, high risk projects that foster organizational innovation?
- Are projects spread across the organization?

10. Achieving Operational Excellence (Maturity Level 5)

The business impact of Portfolio Management is measurable. Effective Project Portfolio Management needs to be a living process within an organization. This process requires the formal and informal culture to be committed to organizational goals and objectives. This commitment will breed a strategic focus within daily operations. The culmination of Project Portfolio Management is the ability to infuse strategy into all investment decisions across the enterprise.

In fact, there are probably very few organizations that have the ability to adhere to all ten factors. But this does not mean that the process will fail. Project Portfolio Management can still be achieved as long as senior management commits to the process.

Portfolio Decision Analysis (PDA)

PDA is the special case of decision analysis (DA) as applied to the problem of selecting a portfolio of projects.

Being a form of DA, PDA is founded on decision theory and makes use of DA's well-structured, step-by-step process for building decision models, analyzing alternatives, and making decisions. PDA's focus, however, is different from most early applications of DA, which were designed to help

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decision makers make a single decision, such as choosing a site to drill for oil. Unlike "single-choice" DA, PDA is intended to help decision makers make multiple choices, specifically what investment alternatives to include within a portfolio. In other words, PDA is focused on project selection and resource allocation. When choosing a portfolio, project choices are interconnected. Even if the projects are independent of one another (i.e., neither the costs nor benefits of any project depend on which other projects are conducted), they are interconnected because they consume or compete to consume shared resources.

DA's major strength for project selection is the ability to quantify the value of projects, taking into account risk and organizational risk tolerance. Traditional "single-choice" DA can be used to support the selection of multiple projects for a portfolio. For example, separate and independent DA's could be conducted for each candidate project, and some rule (e.g., maximize the ratio of project value-to-cost) used to select the projects to include within the portfolio. However, if the project DA's are conducted independently of one another, inconsistencies in assumptions may result, opportunities for analytic efficiencies may be missed, and interdependencies among projects will not be captured.

If, on the other hand, DA is applied with the problem framed as choosing a portfolio, a consistent, efficient logic can be defined and used to evaluate every project. In addition, the portfolio approach allows dependencies among projects to be included within the analysis. Thus, PDA allows for a more complete and consistent form of portfolio analysis which improves the quality of decision making because it accounts for more considerations while ensuring that all options are treated equally. With PDA, for example, a marginal project won't be selected merely because it happens to be evaluated early in the year before the budget is depleted.

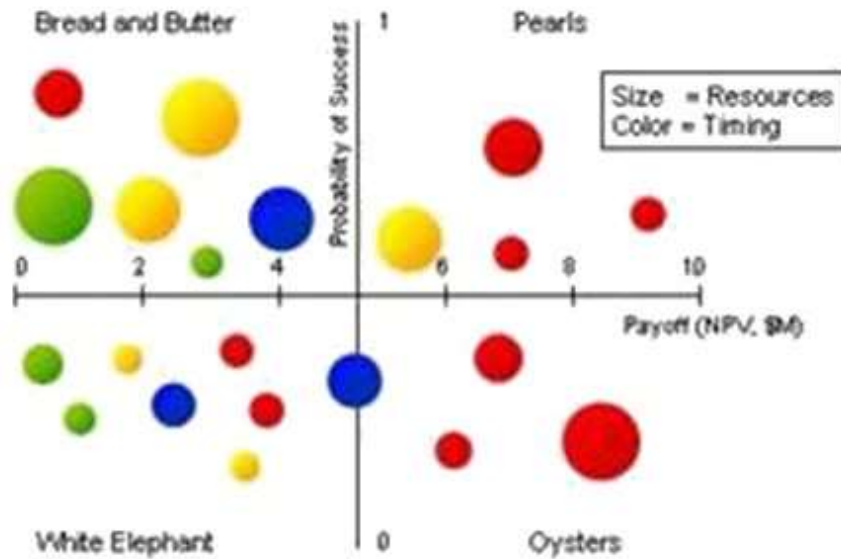
PDA is a particularly cost-effective form of DA since, compared to single-choice decisions, choosing portfolios is more difficult and organizations typically spend more to fund portfolios than single projects. As a consequence, a large portion of recent, professional DA applications are PDA's.

Portfolio Mapping

Various graphing and charting techniques generally used to portray the "balance" of a portfolio of projects by displaying how the various projects perform on two or more dimensions or criteria. The most popular portfolio mapping diagram displays project risk and reward—the y-axis is labeled probability of success and the x-axis is labeled payoff or reward. Projects are plotted on the diagram according to their estimated success probabilities and payoffs (if successful).

A bubble diagram is a popular variant of portfolio mapping that uses a circle or ellipse to identify each project instead of a single point. The size, shape, color or shading of the circle is varied to provide additional information about the corresponding project. For example, the size of the circle may represent the initial cost of the project.

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A portfolio mapping

In one popular version of the risk-reward portfolio mapping (shown above), projects are categorized according to the quadrant that they fall into. The 4 quadrants of the diagram are labeled "pearls," "oysters," "bread & butter," and "white elephants." Pearls have a high probability of success and yield high payoffs. Oysters are long shots, but with high payoffs. Bread & butter are low-risk projects with low reward. White elephants are low probability and low payoff projects.

Numerous, versions of portfolio mappings and bubble diagrams are in use and project portfolio management software often provides such displays. The chosen axes represent characteristics relevant to the specific application area. For example, for new-product-development projects, popular variations of the risk-reward plot include ease-attractiveness (plots showing the trade-offs between technical feasibility versus some measure of market attractiveness, such as growth potential), cost-timing (cost to complete versus time to benefits), and focus-benefit (consistency with organizational strengths versus some measure of project benefit, such as expected net present value (ENPV)).

Portfolio Planning Matrix

Portfolio mapping tools are useful devices for displaying project characteristics, but they do not provide a basis for deciding either how to tradeoff those characteristics nor what balance or distribution among the various characteristics is best for the project portfolio.

A graphical tool sometimes used by large companies to help analyze and manage their portfolios of strategic business units (SBU's). The tool involves locating the company's SBU's within the cells of a matrix. The results, it is claimed, assist the company in deciding which businesses should receive more or less investment and help to identify businesses that should be abandoned and new businesses that should be added to the portfolio.

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The original version of the portfolio planning matrix (sometimes called the **BCG Growth-Share Matrix**, was developed in the 1970's by the Boston Consulting Group (BCG). In this version, the matrix has four quadrants representing low versus high levels of market share and low versus high opportunities for growth. The company's SBU's are identified and placed in the matrix as follows: Mature SBU's that generate excess cash because of their dominant market shares in slow-growth markets are placed in the lower left quadrant and labeled cash cows. SBU's that consume cash but that have potential because of their high shares of high-growth markets are placed in the upper right quadrant and labeled stars. SBU's that must consume cash to remain viable and that have low shares of high-growth markets are placed in the upper right cell and labeled question marks. Finally, SBU's that simply generate enough cash to break even, but that hold little further promise because of their low shares of low-growth markets are placed in the lower right quadrant and labeled dogs.



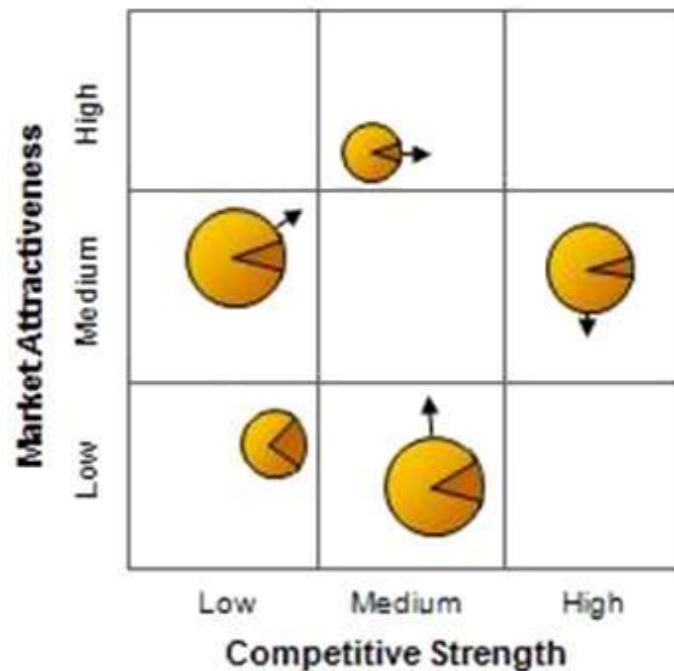
BCG portfolio planning matrix

The location of SBU's within the BCG matrix can help suggest portfolio strategies. If the company can increase the market share for a question mark, it may turn it into a star. If investment needs to be decreased, the company could phase out or sell dogs or question marks. Cash might be increased by reducing the investments in star that have established good market share, thereby turning them into cash cows.

A somewhat more sophisticated version of the portfolio planning matrix, referred to as the **McKinsey/General Electric Matrix**, uses market attractiveness rather than market growth as the y axis and competitive strength rather than market share as the x axis. Multiple indicators are used to assess market attractiveness, including market profitability, pricing trends, and entry barriers. Likewise, multiple factors are used to assess competitive strength, such as relative brand strength, market share, customer loyalty, and record of technological or other innovation. In this version,

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business units are portrayed on the matrix as pie charts, where the size of the pie represents the total market size and the slice size indicates the market share captured by the SBU. Arrows are added to indicate the projected direction of movement of the SBU's over time. The process for locating the SBU's within the matrix involves identifying drivers for each dimension, scoring the SBU's against the drivers, weighting the drivers, and multiplying weights times the scores. As with the BCG version of the planning matrix, the pattern of results may help to suggest strategies for improving the business portfolio.



McKinsey/GE portfolio planning matrix

The main advantage of a portfolio planning matrix is its simplicity. The main limitations include the inability to compute or account for the contribution of the various SBU's to total portfolio value, failure to account for risk, and lack of consideration of the interdependencies that, in practice, often exist among SBUs. Although the portfolio planning matrix was once widely popular, its use has largely been replaced by more sophisticated project portfolio management methods, including those described throughout this website.

PPM Software Criteria

When selecting a project portfolio management software system, organizations should use criteria based on identified needs and organizational objectives. It is advisable to start small, introducing aspects of portfolio management one element at a time. Many commercial tools can seem overwhelming at first, simply because of the large amount of functionality they offer.

These are the key features of a project portfolio management system:

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- Project evaluation process or methodology.
- Cost and benefits measurement.
- Progress reporting.
- Communication of key project data, for example executive dashboard.
- Resource and capacity planning.
- Cost and benefits tracking.

Project portfolio management software enables the user, usually management or executives within the organization, to review the portfolio, which will help in making key financial and business decisions for the projects.

Here's an example of Integration of Enterprise Architecture and Application Portfolio Management by Microsoft Corporation: <https://msdn.microsoft.com/en-us/library/bb896054.aspx>

Portfolio Funding Decision Example

The Traditional Approach to R&D Funding

The traditional funding process for research and development projects tends to result in the funding of less-risky projects. The reason is that there is usually not enough cash available to fund all proposed projects, so a ranking system must be imposed to determine which projects will receive funding.

The ranking is driven by a discounted cash flows analysis, for which a higher discount rate is imposed on the riskier projects. Since this analysis tends to reduce the cash flows associated with riskier projects, only safer R&D projects are funded. The typical result is that a business pours more cash into the extension of its existing product lines, which are considered safe investments, and little cash into real innovation. The result of this approach is a concentration of products in current areas, and little chance of new product development elsewhere, which leads to stagnation.

R&D Funding Categories

One way to break through this safety-driven selection process is to deliberately allocate cash to several classifications of R&D projects, of which one is for high-risk endeavors. The amount allocated to each classification will vary, depending on management's willingness to lose money on high-risk projects. In general, this concept will increase the probability that a business will come up with a breakthrough product that can lead to an entirely new product line.

Results of R&D Funding Categories

When cash is deliberately invested in high-risk R&D projects, there will inevitably be a number of project failures, either because the results will not be commercially viable or because the project is an outright failure. The real problem is when there are few failures, because it indicates that the company is not investing in sufficiently risky projects, with their attendant high returns.

To determine the amount of project failure being experienced, summarize the total expense related to projects that have been cancelled (known as *R&D waste*). While this metric can be deliberately

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altered by delaying the date on which a project is cancelled, it can still provide relevant input into the amount of project risk being incurred over multiple periods.

Expected Commercial Value

Even when the allocation of funding into different classifications increases the odds of funding a riskier R&D project, it is still necessary to allocate funds *within* each classification. A possible approach for deciding between projects is to use expected commercial value (ECV), which amalgamates the probabilities of success into a more standard net present value calculation. The formula is:

$$\frac{(((\text{Project net present value} \times \text{probability of commercial success}) - (\text{commercialization cost})) \times (\text{probability of technical success}) - \text{product development cost}}{\text{or}}$$

or

$$\text{ECV} = [(\text{NPV} \times P_{cs} - C) \times P_{ts}] - D$$

Example of Expected Commercial Value

As an example of how ECV can be used, XYZ Utility is considering an investment in a tiny battery for cell phone applications. There is some risk that the battery cannot be developed in the necessary size. Facts pertaining to the project are:

ECV	Facts
Project net present value (NPV)	\$8,000,000
Probability of commercial success (P_{cs})	90%
Commercialization cost (C)	\$1,500,000
Probability of technical success (P_{ts})	75%
Product development cost (D)	\$3,500,000

XYZ Utility's financial analyst derives the following ECV for the project from the preceding information:

$$(\$8,000,000 \text{ Project NPV} \times 90\% \text{ probability of commercial success}) - (\$1,500,000 \text{ commercialization cost} \times 75\% \text{ probability of technical success}) - \$3,500,000 \text{ product development cost}$$

$$\text{Expected commercial value} = \$775,000$$

Subsequent R&D Project Analysis

An ECV analysis will inevitably result in some projects not being funded. However, not being funded does not necessarily equate to being permanently cancelled. These projects might become more tempting prospects for funding at a later date, depending on changes in such areas as:

- Competitor actions
- Legal liability
- Price points for adjacent products
- Raw materials availability
- Technical advances

Because of these issues, it may make more sense to schedule an occasional review of projects that have failed the ECV test, to see if circumstances now make them worthy of an investment.

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CHAPTER 7 – PMO METRICS

PROJECT MANAGEMENT OFFICE DASHBOARD



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The Project Level KPI's

It is important to gather and analyze critical data points that are needed to determine the PMO effectiveness. KPIs are key elements in driving business performance, but they are often overlooked when measuring accountability and business maturity levels. Besides on-time, on-budget, what KPIs do you think best measure the effectiveness of project portfolio management and project management processes to deliver business value?

A more sensible approach would be to actually measure project results or benefits and establish what value was delivered. The goal of KPIs is to optimize project management processes and improve PM ability to deliver value to the organization. Therefore, there are two broad KPI areas need to be measured:

1. **Project performance:** It may include project cost, time, and quality indicators
2. **Project value delivery:** This should include a measure of portfolio alignment to strategic objectives and actual value delivered.

Some possible measurements can be related to topic such as Strategic Contribution (For example: **Time to market** - How long do you take to start a project from initial idea); **Portfolio Management success rate** (% of projects in portfolio delivered successfully / the total number of projects in portfolio), Stakeholder Management (Customer or user satisfaction survey averages - Aim for a % above previous quarter or year average), etc. Usually, if a PMO is in place, standard metrics can be established and those would usually not be based on processes (**the HOW**) but on the deliverables (**the WHAT**).

The KPIs depend on the maturity level of the PMO in the organization. Even if you'll try to implement the right KPIs, if the maturity level is too low, it's bound to fail. First of all, understand the current level of maturity and that will provide you the framework for the optimal measurement. Generally, the PMO KPI metrics should be mapped to four core business drivers of PMO: (1) Strategic Alignment, (2) Operational Efficiency, (3) Execution and (4) Business Value Delivered:

- **Portfolio Investment- Strategic Objective Alignment:** The # and financial investment of the projects that are aligned with at least one strategic objective over the total portfolio. The objective is to provide visibility of the projects that are supporting the company strategic objectives and assess opportunities to realign resources and investments as appropriate.
- **Run, Grow and Transform the business:** The objective is to provide visibility of the planned investment for each of the organization's targets for Run, Grow, and Transform the business. This will prepare management with the information it needs to align their investments to support the company strategy. An alternative is to report the percent of effort/cost going toward 'Keeping the Lights On' (KLO) activities.
- **Line of Business Unit:** The objective is to highlight the investment for each of the organization's business units and how they are aligned to support the company's strategic objectives. Establish investments targets for cost and level of effort allocated to each of the organizations business unit and analyze the investment spend.

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- **Business Value Realized:** Provide visibility of overall investment in projects portfolio and the expected or realized value to be achieved. This can be measured in cost savings, additional revenue, increased customer satisfaction etc. A standard scoring model can be used to normalize across different benefits, and business value points used to demonstrate value delivered.
- **Business Satisfaction %:** Whether for internal or external customer, there is a customer sponsoring the project. They are providing the budget and expecting to realize the business benefits of implementing the project. A measure of stakeholder/customer satisfaction of business value delivered based on surveys/ post-delivery. The survey will assess the business user's satisfaction with the delivery and the quality of the project that was delivered.
- **Return on Investment:** The ROI on the investment managed by the PMO for the project that have a financial return. Some projects, such as regulatory or risk mitigation may not have a clearly defined financial return.
- **Risk Assessment:** The # and % of projects that are assessed High, Medium and Low risks. The objective is to provide visibility of portfolio risk assessment. High risk project should be reviewed by the PMO and management regardless if the project Green, Yellow or Red status. Although a project could be in Green Status and High risk, it is prudent to carefully monitor the projects since there is a high probability that the high risk project will turn to Yellow or Red status in the future

Here are more specific metrics being used such as project on margin/cost, time to customer, improved margin, process adherence, change management control, add-on-sales., deliverable hit rate, milestone hit rate and issues vs. deliverable ratio, continuous budget burnout vs. functionality completion KPI, etc. No one wants to spend their valuable time to gather unnecessary data. But it is important to gather and analyze critical data points that are needed to determine the PMO effectiveness. Each organization will have different data points that should be collected based upon the organizations goals, strategic objectives for the PMO and overall organizational maturity as well.

Remember to breakdown your PMO structure (architecture) Tiers or Levels when establishing overall PMO metrics/KPI's and make certain that you start at the bottom "Projects" and roll up your metrics to each upper Tier/Level.



Metrics in Project Management

Metrics may not be the sexiest subject in project management, but the success of the project management office (PMO) you work in, and perhaps your bonus as a project manager, may be dependent on whether you have a metrics program in place. In tough economic times, there are even more amazing opportunities for a PMO to prove its real worth to the organization. The information in this guide can help you to create your metrics program or assess if your existing program is doing enough to justify your existence.

A metric, by definition, is any type of measurement used to gauge some quantifiable component of performance. A metric can be *directly collected* through observation, such as number of days late, or number of software defects found; or the metric can be *derived* from directly observable quantities, such as defects per thousand lines of code, or a cost performance index (CPI). When used in a monitoring system to assess project or program health, a metric is called an indicator, or a key performance indicator (KPI).

Metrics Management Defined

Management is a Science

“The best management is a true science, resting upon clearly defined laws, rules, and principles, as a foundation.” — Frederick Winslow Taylor

Business Metrics first emerged as a valuable management tool with the early 20th century advent of Taylor's "Scientific Management" and the science of industrial engineering. Using little more than a stop watch, Frederick Winslow Taylor measured the time it took for each person to in a steel plant to complete their tasks. He was thus able to better economize their motion and increase their productivity.

Taylor's work highlights the importance of using metrics in all areas of business: Only through measuring both the costs and especially the results of each activity involved in your business, can you effectively manage them.

Project metrics can be categorized into three main categories:

1. Pure project management measurements (Example: Estimation accuracy)
2. Indicators of project success (Example: Stakeholder satisfaction)
3. Indicators of business success (Example: ROI).

At the *macro* level, metrics management means identifying and tracking *strategic* objectives. This is often done by the PMO, if one exists. The PMO is responsible for metrics collection and analysis, and for communicating those metrics to management for strategic decision making. Again, this practice is dependent on which type of PMO is established.

When reporting metrics to management, it is important to keep the time factor in mind. True success or true failure may not be apparent until long after a project is formally closed. For example, a new software application may turn out to be a colossal failure six months after it is put into production, when it finally reaches its planned usage targets.

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Examples of macro-level metrics include: number of successful projects, percentage of failed projects, and number of hours spent per project or program.

At the micro level, metrics management means identifying and tracking tactical objectives. It is only by looking at the task level metrics that status of higher-level work packages can be ascertained, which can then be reported to project stakeholders and customers. Different types of projects will require different types of metrics—a software development project will call for different measurements than, say, a construction or new Network servers project.

The following criteria are the most common tactical measures people want to be updated about:

Tactical Measure	Question Answered	Sample Indicator
Time	How are we doing against the schedule?	Schedule Performance Index (SPI) = Earned Value ÷ Planned Value
Cost	How are we doing against the budget?	Cost Performance Index (CPI) = Earned Value ÷ Actual Cost
Resources	Are we within anticipated limits of staff-hours spent?	Amount of hours overspent per software iteration
Scope	Have the scope changes been more than expected?	Number of Change Requests
Quality	Are the quality problems being fixed?	Number of defects fixed per user acceptance test
Action Items	Are we keeping up with our action item list?	Number of action items behind schedule for resolution

Putting a Metrics Program into Place

A common saying you may hear about metrics is: “If it cannot be measured, it cannot be managed.” Clearly the lack of metrics can make it harder for a project manager to do the best job possible.

At the same time, metrics are useful only if they are just that – useful. Tracking metrics just to have something to put on your status report is not effective use of your time, or your team’s time.

- If you want to put an effective metrics program in place, set aside time to plan the following items in the following order:
- What information are you going to collect? (Hint: Keep it simple).
- How are you going to collect the information? (Hint: Keep it easy. Use information already being collected for other purposes.)
- What methods will you use to process and analyze the information? (Hint: The more actionable the analysis the better.)
- How and when will you report on the results

A special word on reporting: The way you present your metrics depends on who is asking. The executive usually just wants to know the general health of the project and get a “warm and fuzzy,”

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while the PMO auditor wants to know that you are “two days behind, due to the approved scope change, but that you are crashing the schedule in order to make it up.”

The best way to showcase your information is usually the simplest. Some project management software packages include an automated dashboard feature, which may or may not fit your needs. Visual displays, such as a simple graph to illustrate trends, or the classic “traffic light,” are effective ways to show the status of key metrics indicators. A simple traffic light chart can be built in Excel, using colors to show status. Typically (see example below):

- Green means “So far so good.”
- Yellow means “Warning – keep an eye on me.”
- Red means “Urgent attention needed.”

Project Performance Scorecard					
PM	FPN	Budget	Schedule	Reporting	Score
PM 1	0055	●	●	●	●
PM 2	0188	●	●	●	●
PM 1	0195	●	●	●	●
PM 2	0010	●	●	●	●

If using a traffic light format, be sure to set rules for when to change colors on the lights; work with the project sponsor or PMO to get this done if not already standardized. For example, for a schedule-based indicator, the rule can be “Turn the indicator yellow when the number of overdue tasks is greater than two.” Indicators can also be split into monthly target ranges so that trends in progress can be gradually visualized. It is better to turn the traffic light yellow when the overall schedule is five days late during Month 1, than to turn it yellow when you are 15 days late during Month 3, when it is too late to react.

Take Metrics Management to the Next Level

As you continue to accumulate metrics about the projects in your company’s portfolio, you are building a valuable database of internal benchmarking data. Compare your metrics to other projects in your portfolio to see where process improvements can be made, or where you might introduce compliance requirements. You can also compare your metrics to benchmarked project data from other companies in the same industry.

The challenge is to make sure that the project status includes metrics that demonstrate the value of project management. As you have seen, there are many tools and techniques available to communicate and manage metrics at a project (tactical) or PMO (strategic) level. Take this opportunity to think about how people around you perceive the value of your project management services, and see if you can think of ways to promote and protect your position as a champion of project management in your organization.

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PMO KPI examples for measuring success

Often PMO's do provide value to the organization, but they are not measuring or advertising it effectively or at all. This often leads to the perception that the PMO is not adding value.

An important step to overcome this perception is to define a set of metrics, so called: PMO KPI's to show how the PMO can increase project performance, actively drive change and support organizational goals and targets.

Definition: PMO KPI

A key performance indicator (KPI) is a type of performance measure (e.g. metrics), which an organization can use to evaluate the success of a particular activity. The PMO needs to define and agree on a certain set of metrics (with its stakeholders) to demonstrate that it provides value to the organization. Only then, the PMO can be successful. Otherwise the PMO will struggle with its existence.

Possible PMO Metrics

Below you will find some possible metrics. You still need to tweak them to make them fit to your project portfolio and to your organization. But it is a good starting point and it will give you an idea on what to measure:

Topic	Area	Possible Metric
Strategic Contribution	Strategic Project Delivery	Increase the success rate of % of strategic projects delivered / the total number of strategic projects
Strategic Contribution	Improve Time to Market	Improve Time to Market Delivery = Elapsed Time from Idea Conception to Project Start (How long do we need to start a project)
Strategic Contribution	Improve Time to Market	Improve Time to Market Delivery = Elapsed Time from Idea Conception to Project Delivery (How long do we need to deliver a project)
Strategic Contribution	Improved Time to Market	The improvement of estimated time versus actual time of project delivery = (comparison between the estimated and the actual time of projects delivered) (How good are we in estimating our project delivery)
Governance Process	Improved Governance Process	Methodology compliance (required deliverables vs. actual deliverables)
Portfolio Management	Overall Project Portfolio successful delivered	% of projects in portfolio delivered / the total number of projects in portfolio
Portfolio Management	Dealing with Change	% of projects remain at same status for x reporting periods
Project Management	Improved Project Management Process	Increase the success rates of the projects = (within

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		a certain time period, the number of success projects/the total of projects)
Project Management	Improved Project Management Process	Improve training rate of project staff members
Project Management	Improved Project Forecasting & Costing	The improvement of estimated cost versus actual cost for the projects = (comparison between the estimated and the actual cost of the projects)
Resource Management	Increased Resource Utilization on Projects	Increased productive resource utilization on project time (i.e.: Business Analyst >31.5 hrs p/week = Exceeds)
Resource Management	Increased Resource Utilization on Projects	Increased resource utilization on projects = Billable Hours/Total Hours
Stakeholder Management	Improved Customer or User Satisfaction	Customer or user satisfaction survey averages (aim for a % above previous quarter or year average)
Stakeholder Management	Improved Customer Satisfaction	Over-delivered items within budget
ROI	Business Benefits achieved	Post-project ROI review to determine if project ROI is being realized
ROI	Business Benefits achieved	Benefits realized against Benefit forecast for year
ROI	ROI for the year	Simple Return on Investment (ROI) for all of the projects the PMO has oversight for
Staff Members	Improve Staff Retention	Improve project member satisfaction survey averages (aim for a % above previous quarter or year average)
Staff Members	Improve Staff Retention	Improve career path for project members

Setting up your PMO for success: Your PMO KPI's

Review the above metrics and work out which metric(s) might be meaningful for your PMO. The next steps would be to discuss and to agree with your stakeholders (typically this would be your manager and the organization) on the selected metrics. This should also include how often you would report on them. This step is important as it will help clarify the purpose of your PMO.

Once you've agreed on these metrics, document the 'as it is' state, which will act as your baseline. You would need to have a baseline, in order to demonstrate your improvements later on. Historical data might be able to help you to get a baseline.

The next step will be to design a report or a dashboard, where you can track and report your success on a regular basis.

Collect, validate and assess the data you need in order to compile your report. Monitor your performance. If the performance drops in comparison to your previous reporting time-frame, take corrective action early onwards to get back on track.

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Finally, make sure you promote your success. You can use your Intranet, your company's newsletter, or you can compile a case study to promote Project, Program and PMO success. All these activities will help you to promote the value and the success of your PMO.

Measuring Project Success Using Business KPIs

Delivering a project "on-time and on-budget" is no longer an adequate measure of project success. In today's environment, the key question should be: "Did the project deliver value to the business?" For example, a project could be delivered on time and on budget, but does not guarantee:

- Benefits outlined in business case were achieved
- User adoption
- Expected ROI was achieved
- A satisfied customer
- The solution addresses the customer need
- Sales were in line with forecasts
- There will be market demand for the product

As a project manager, you may think that delivering business results isn't your concern and that it is the customer's problem to solve. However in today's environment, project managers are expected to partner with the customer, understand the business drivers, and ensure that the project delivers the business results that were specified in the business case. That is how many organizations are beginning to view project success.

Delivering business value can be a tall order. Delivering business value requires gaining an understanding of the business drivers: the problem or opportunity that precipitated the project and defining a clear set of business objectives to address the problem. Measuring business value is best done through defining Key Performance Indicators (KPIs) and measuring actual performance using the KPIs. Key Performance Indicators are quantifiable measurements that are agreed to by stakeholders to reflect the critical success factors of an organization. KPIs are:

- Established by the customer at the beginning of the project and listed in order of priority.
- Directly related to and supported by business goals and objectives.
- The basis for critical decision-making throughout the project.
- The basis for acceptance of the solution by the customer at the end of the project.

Defining KPIs can be challenging. Good KPIs must have a target value and a way to be accurately measured and reported on. Ideally, it would be best if the project sponsor simply handed you a list of project objectives, success criteria, and KPIs when you were brought on board as the project manager. However this rarely happens; you will usually need to work with the customer or project sponsor to define them. Many sponsors are not trained on how to define good KPIs. This is a skill that you will want to have and to provide as a project manager. Good KPIs are:

- Aligned — agree with the specific organization's vision, strategy, and objectives.

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- Optimized — the KPIs should be focused on providing organization-wide strategic value rather than on non-critical local business outcomes. Selection of the wrong KPI can result in counterproductive behavior and sub-optimized results.
- Measurable — can be quantified/measured.
- Realistic — must be cost effective and fit into the organization's culture and constraints and achievable within the given timeframe.
- Attainable — requires targets to be set that are observable, achievable, reasonable, and credible under expected conditions as well as independently validated.
- Clear — clear and focused to avoid misinterpretation or ambiguity.
- Understood — individuals and groups know how their behaviors and activities contribute to achieving the KPI.
- Predictive — the KPI may be compared to historical data over a reasonably long time so that trends can be identified.
- Agreed — all stakeholders should agree and share responsibility for achieving the KPI target.
- Reported — regular reports are made available to all stakeholders and contributors so they know the current status and take corrective action if needed.

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PMO Software Tools

There are numerous products on the market designed from the top (PMO) down to the Project level that provide a snap shot of the Portfolio(s) with KPI status and allow drilling down to the project level like the example below.

The screenshot displays an ePortfolio dashboard with three main sections: Expense Projects, Capital Projects, and Clearing and Other Projects. Each section includes a table of projects with various KPIs and a total YTD budget.

ePMO Total \$ YTD: \$3,030,000

Expense Projects Total \$ YTD: \$1,650,000 Health: ●

Program	Health	Project Title	Status	Budget	Status	Priority	Visibility	Impact	Risk
OH Program	●	PLCF Data Relationship Validation	Active	\$150,000	●	●	●	●	●
PMO	●	PMBOK Tab Validation	Active	\$1,500,000	●	●	●	●	●
Dashboard	●	Portfolio Integration	Not Started	\$0	●	●	●	●	●

Capital Projects Total \$ YTD: \$380,000 Health: ●

Program	Health	Project Title	Status	Budget	Status	Priority	Visibility	Impact	Risk
Enovia	●	ENOVIA Integration Assessment	Active	\$380,000	●	●	●	●	●

Clearing and Other Projects Total \$ YTD: \$1,000,000 Health: ●

Program	Health	Project Title	Status	Budget	Status	Priority	Visibility	Impact	Risk
Software Consolidation	●	CVS - Agile Pilot	Pre-Initiation/Approved	\$1,000,000	●	●	●	●	●

Instructions: Click Project Title to review Project

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Building a Project Management Office (PMO)

PMO Project Level Metrics

The example below demonstrates how metrics can be applied at the project level dashboard.

The dashboard displays the following metrics and project details:

Dashboard Health Status: Health Status: Yellow, Funding: Green, Status: Green, Priority: Red, Visibility: Red, Impact: Yellow, Risk: Yellow, End Date: Orange, New End Date: Green.

Risk Scores: Business: 2.9 + Technical: 1.5 = BT Model Score: 2.2. Project Sizing: 3 + Classification Risk: 11 = PCSM: 14. PM Skill Level: 2. Organizational Risk: 10.

Project Properties:

- Program: Enovia
- Project Title: ENOVIA Integration Assessment
- Project ID: 1
- Entered Date: 6/5/2010
- Project Manager: Michael McCormick
- Start Date: 6/28/2010
- End Date: 1/28/2011
- Schedule: 30 Wks
- Schedule Risk Impact: 1 Wks
- Completion Date: 2/2/2011
- New End Date: 2/1/2011
- Schedule Delay: 1 Wks
- Actual Completion: 31 Wks
- Closed Date: 2/5/2011
- Estimate Job Years: 0.58
- Revised Schedule: 31 Wks
- Total Project Duration: 31 Wks
- Project Number: XYZ-0001
- Project Category: Information Technology Project
- Priority: High
- Project Status: Active
- Funding Category: Fiscal Budget
- Impact: Medium
- Award/Contract #:
- Expenditure Category: Capital
- High Profile: Yes
- Short Award/PO #:
- Performance Period: Operating Year
- Health Score: 2.8
- Sponsor/Owner: William McCutcheon
- Organization: IBM
- Internal Client: Yes
- Funding Approved: Yes
- Department: Information Technology Division
- External Client: No
- Project Funding: \$380,000.00
- Department #: 726F020000
- Dept. ID: 715
- Current Contract(s): \$317,128.00
- Funding Balance: \$62,872.00
- Budget in Days: 245

Current Date: 10/19/2015

Print Reports: (Icons for printing and searching reports)

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Building a Project Management Office (PMO)

PMO Project Manager Performance Metrics

Below is an example of performance metrics used to track the project manager's ability to manage projects within the PMO's KPIs. A performance score is assigned to the KPI metric establishing scorecard standard for all project managers.

Project Manager Performance KPIs

	Budget Metric	Budget Performance Points	Budget Rating
Minor	<=5%	5 Points	30
Moderate	>5% to 10%	3 Points	0
Major	>10% to 50%	0 Points	0
Catastrophic	>50%	-2 Points	0
Status	Annual Bud. \$	Var % YTD	

	Schedule Metric	Schedule Performance Points	Schedule Rating
Minor	<= 2 Wks	5 Points	26
Moderate	<= 3 Wks	3 Points	1
Major	>= 4 Wks	0 Points	3
Schedule Impact	Transferred	Weather	Engineering
Must Finish	Potential Finish	Float (Wks)	

	Variance Reporting Metric	Reporting Points	Reporting Rating by Metric
Minor	= 0 Late	5 Points	23
Moderate	= 1 Late	4 Points	1
Major	= 2 Late	3 Points	4
	= 3 Late	1 Points	1

	Project Performance Metric	Project Performance Rating	Portfolio Rating %
Good	13 to 15	23	76.7%
Fair	9 to 12	5	16.7%
Poor	0 to 8	2	6.7%
Catastrophic	-2	0	0.0%
Total Projects:		30	100%

Building a Project Management Office (PMO)

PMO Project Manager Performance Tracking

Below is an example of tracking performance metrics on a monthly basis.

2015 Monthly Performance Rating												
PM	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PM 1	● 13.3	● 12.3	● 10.2	● 8.8	● 8.2	● 12.2	● 11.3	● 10.8	● 10.8	● 9.8	● 12.3	● 10.2
PM 2	● 13.5	● 13.5	● 15.0	● 14.4	● 13.8	● 14.6	● 14.4	● 12.4	● 13.0	● 12.8	● 13.5	● 15.0
PM 3	● 12.4	● 13.2	● 15.0	● 14.3	● 14.1	● 14.8	● 14.5	● 14.4	● 15.0	● 14.4	● 13.2	● 15.0
PM 4	● 13.5	● 14.0	● 14.9	● 14.4	● 13.4	● 14.1	● 14.1	● 14.8	● 14.8	● 14.6	● 14.0	● 14.9
Portfolio A	● 13.2	● 13.3	● 13.8	● 12.9	● 12.3	● 13.9	● 13.9	● 13.9	● 13.9	● 12.9	● 13.3	● 13.8

Below demonstrates tracking PM performance scorecard status. This data changes daily as dates and activities/task are due or performed.

PM Performance Metric Scores						Portfolio Performance			
Project Manager	Projects	Budget	Schedule	Reporting	Weighted Average	Projects	Performance		
PM 1	11	5.0	4.8	4.6	14.4	23	76.7%	Good	13 to 15
PM 2	5	5.0	3.3	1.5	9.8	5	16.7%	Fair	9 to 12
PM 3	9	5.0	5.0	4.6	14.6	2	6.7%	Poor	0 to 8
PM 4	6	5.0	4.0	3.8	12.8	0	0.0%	Catastrophic	-2
Portfolio Average:		5.0	4.3	3.6	12.9	30	100%	Rating	Range
Metric:		4.5	4.0	4.5	13.0				

TEMPLATES



Building a Project Management Office (PMO)

Free Resources

Visit my website (www.mccormickpcs.com) for a variety of free templates, white papers and more to assist you with building or improving your PMO.

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