

# PM.01

## How to Create a World Class Project Management Organization

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A company that consistently selects the right projects and executes them with excellence can improve return on capital employed (ROCE) and ultimately total shareholder return (TSR). In today's competitive capital intensive business environment companies need to implement project management best practices in order to survive and flourish long-term.

This practical paper focuses on how to create a world class project management organization. Five key steps to success are: common language, structured project development and execution process, application of value improving and best practices, and total cost management and training and certification.

The formula for creating a world class project management organization is simple. However, implementation of these concepts is a big challenge.

### BUSINESS CASE FOR IMPROVEMENT

Effective project management improves ROCE by increasing revenues, decreasing expenses and reducing capital employed. ROCE is a common metric in the industry to measure capital efficiency.

Projects are the vehicle by which we turn business opportunities into valued business assets. Successful projects are defined as the ones that are delivered on time, within budget and meet established business objectives. If a company selects and executes good projects, it can increase revenues, decrease life cycle costs, operating and maintenance costs, and use less capital to achieve its business goals.

### STEPS IN CREATING WORLD CLASS PROJECT MANAGEMENT ORGANIZATION

The five steps in creating a world class project management organization are common language, structured project development and execution process, application of value improving and best practices, total cost management and training and certification.

#### Step 1: Common Language

Project Management Institute (PMI) has developed a guide to the project management body of knowledge (PMBOK) that focuses on nine knowledge areas: integration, scope, time, cost, quality, human resource, communications, risk and procurement [1]. The PMBOK includes knowledge of proven practices and provides a common language in the field of project management.

The PMBOK guide is also used by PMI to provide a consistent structure for development of its project management professional (PMP) certification program.

#### Step 2: Structured Project Development & Execution Process (PDEP)

In order for any project management system to be successful, it needs to follow a structured process. PDEP is a process that facilitates the optimal use of resources (people, money, and technology) over the life of a project to maximize value. The desired outcomes of this process are to select the right projects by improving decision-making and to improve project outcomes through excellence in execution. Figure 1 summarizes the deliverables of a structured five-phase process. The five phases of PDEP are:

- Phase 1—Identify and assess business opportunity;
- Phase 2—Select from alternatives;
- Phase 3—Develop preferred alternative for full funding;
- Phase 4—Execute (detail design, procurement and construction);
- Phase 5—Operate and evaluate.

The first three phases of PDEP prior to full funding step are referred to as front end loading (FEL) and are crucial in determining project success. Industry benchmarking data from Independent Project Analysis (IPA) Inc. has statistically validated the correlation of FEL to project outcomes for cost, schedule and performance [2].

The five-phase gated process provides a mechanism for effective communication between decision-makers, multifunctional project team members, business, technical, operations, maintenance, etc., and stakeholders to achieve business success.

**Step 3: Application of Value Improving / Best Practices**

Value improving and best practices in conjunction with a structured process can help achieve world class performance. Effective application of these practices can optimize cost, schedule, performance and safety aspects of any project. Figure 2 shows the timing of these value improving and best practices on a PDEP roadmap.

D&RA is a process to compare and decide among various alternatives by quantifying risks and uncertainties inherent in financial outcomes of the alternatives. Tools such as strengths, weaknesses, opportunities and threats (SWOT) analysis, decision hierarchy, strategy table, influence diagram, tornado diagram, decision tree and S-curve are used to communicate most likely, optimistic and pessimistic outcomes of any decision.

**Decision and Risk Analysis (D&RA)**—Building wrong projects less expensively is not much help! We want to select the right projects and execute them with excellence.

**Project Execution Planning (PEP)**—PEP is a tool for strategic planning whose purpose is to maximize the probability of project success. Once a good quality decision is made using the D&RA

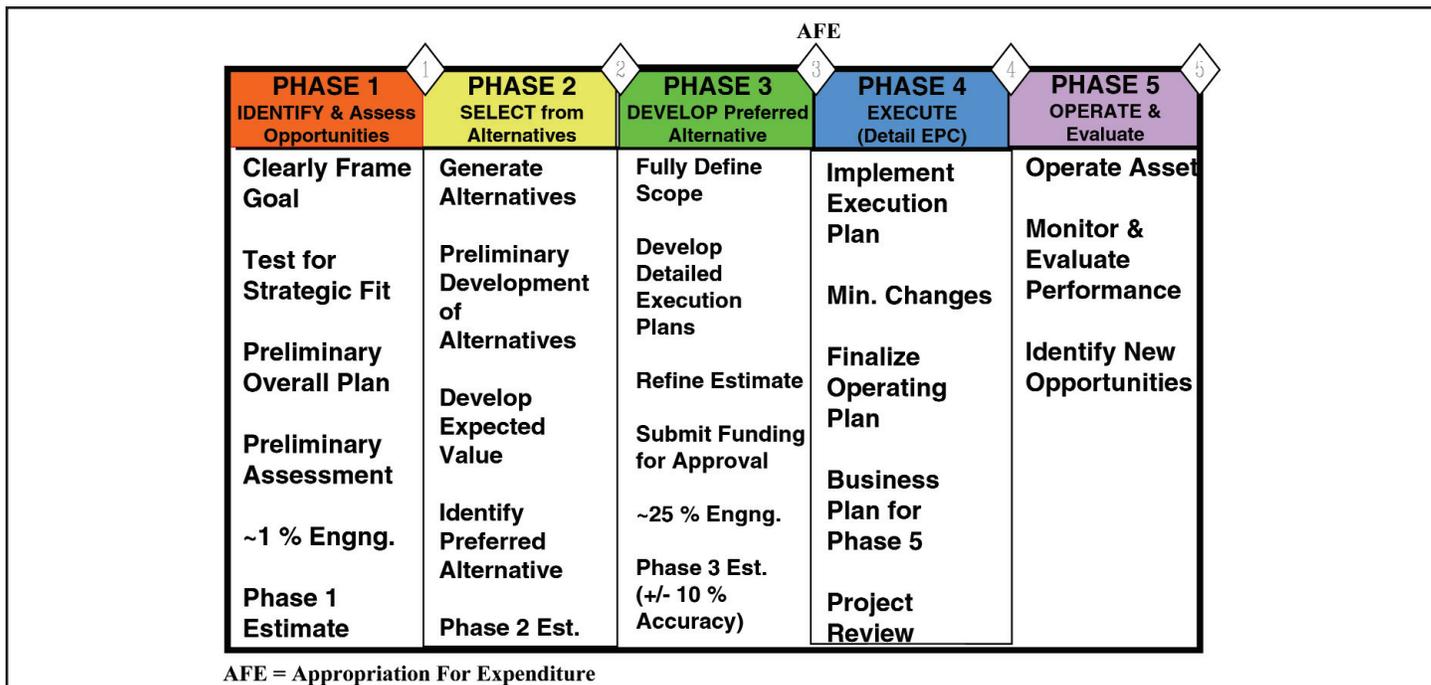


Figure 1—Project Development and Execution Process (PDEP)

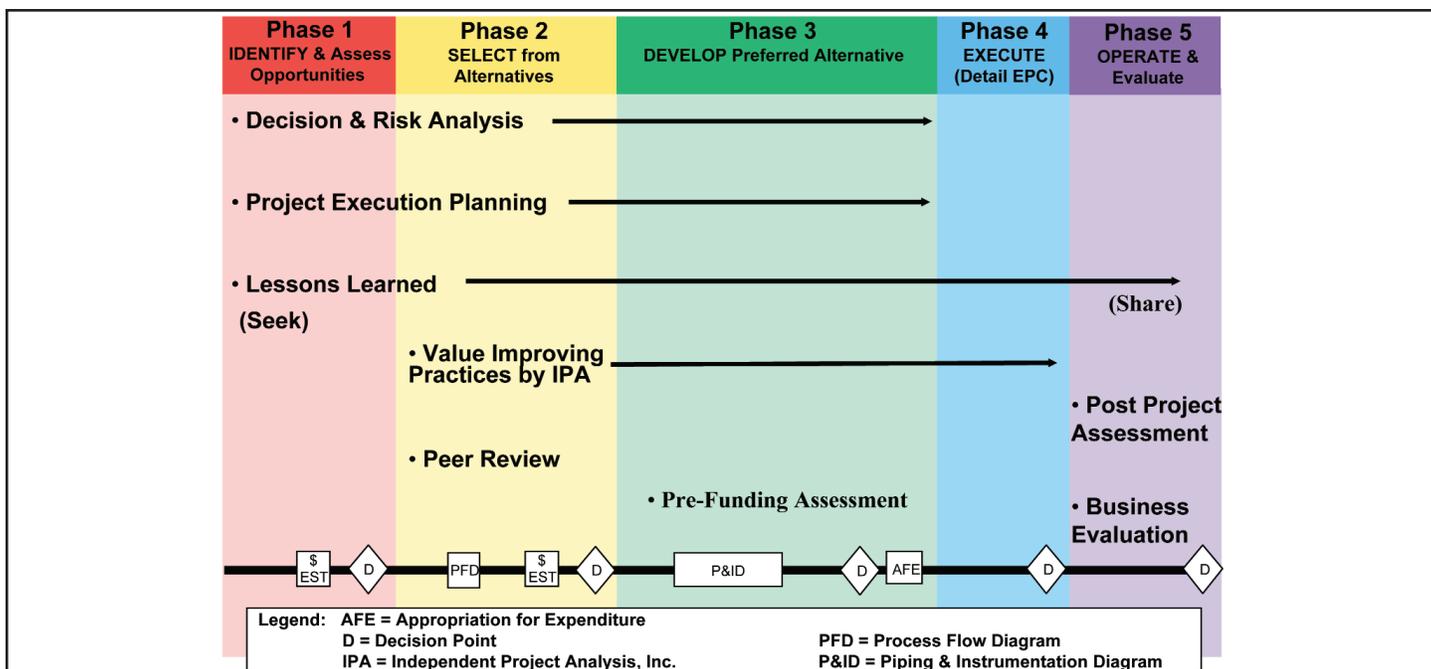


Figure 2—Value Improving/Best Practices

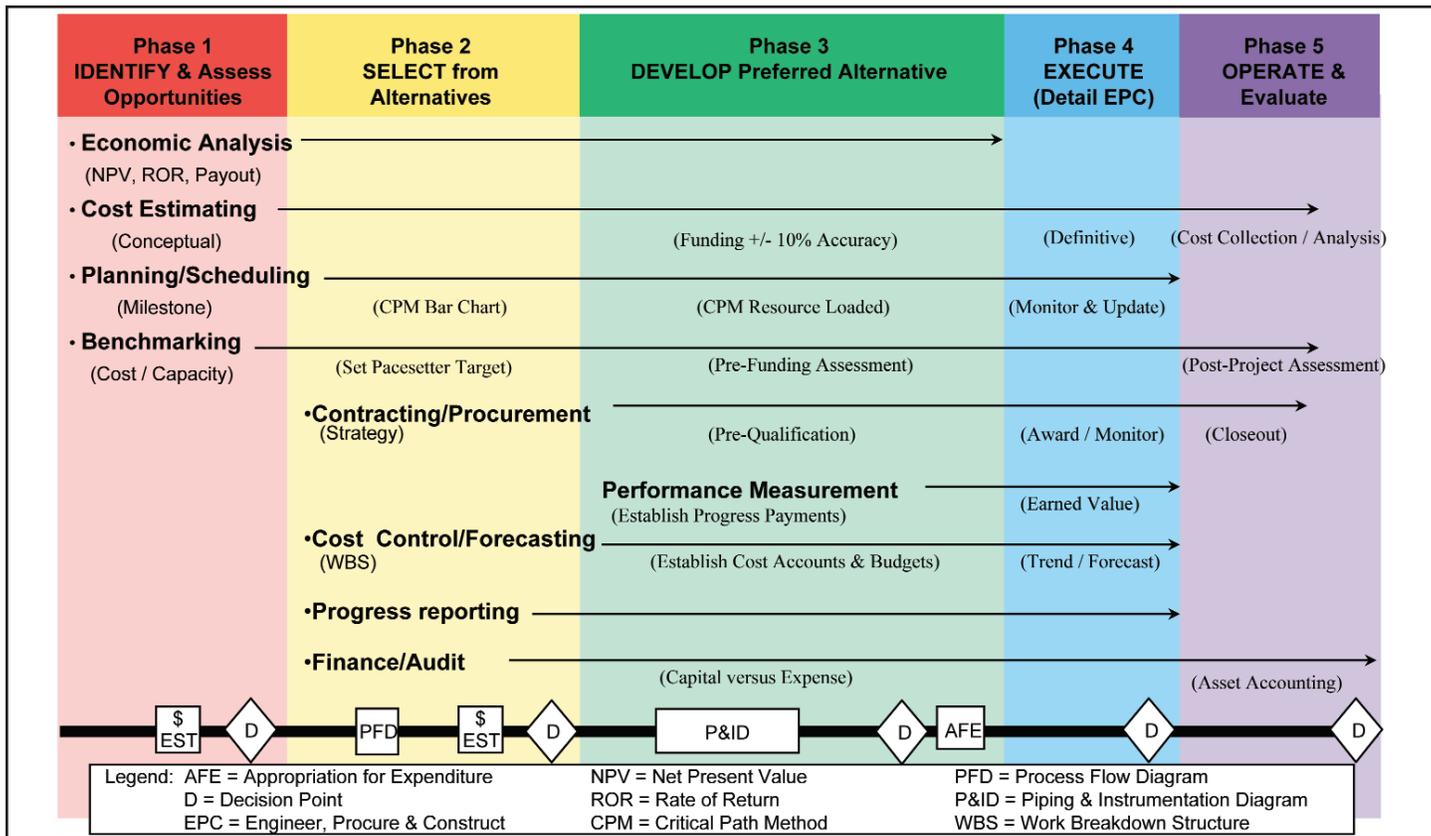


Figure 3—Total Cost Management

process, the multifunctional project team should kick off the project with a PEP workshop. The topics covered in PEP workshops are (3):

Part A: Defining the Vision of Success

- Business goals
- Project objectives and drivers
- Scope of work

Part B: Defining the Strategy for Success

- Management level plan
- Risk Management plan
- Organization plan
- Contract plan
- Best practices implementation plan
- Team performance management plan

Part C: Defining the Tools for Success

- Time management plan
- Cost management plan
- Quality management plan
- Safety and environmental management plan
- Materials management plan
- Communications management plan

PEP is a living document that is kept current throughout the life of the project. It serves as an excellent source for communication between the project team, decision-makers and stakeholders.

**Lessons Learned**—Project teams starting a new project should actively search for applicable lessons from past projects and then proactively apply those lessons. At the end of the project, they should capture lessons learned from their project including things that went well and opportunities for improvement, and then share those lessons with other projects.

**Value Improving Practices (VIPs)**—IPA has statistically shown the benefits of implementing VIPs based on their vast database of past completed projects in the industry. The optimum time for implementing these VIPs is during FEL prior to full funding of the project.

The VIPs that add value are classes of facility quality, constructability reviews, customizing standards and specifications, design-to-capacity, energy optimization, predictive Maintenance, process simplification, reliability simulation modeling, technology selection, value engineering, waste minimization and 3-D computer aided design.

**Peer Review**—The goal of a peer review conducted by an independent team is to constructively challenge the project team's assumptions, alternatives considered, decision logic and path forward. Peer reviews are also an excellent mechanism to share lessons learned across the corporation.

**Pre-Funding Assessment**—An assessment of project progress and quality performed at the end of phase 3 of PDEP. It rates the project against database of similar projects and recommends cost contingency and schedule.

**Post Project Assessment**—This assessment compares end of project data to the appropriation for expenditure (AFE) data that was approved at full funding at the end of phase 3 of PDEP. This information is used to update the database, which in turn will help improve cost estimates and schedules for future projects.

**Business Evaluation**—Business evaluation should be conducted 1 to two years after project completion to validate volumes, prices, margins, operating costs and economic indicators. The project sponsor is responsible for this review. This practice brings accountability into the overall process.

#### Step 4: Total Cost management (TCM)

TCM converts the optimized scope into cost and schedule. TCM not only helps us in planning, scheduling and estimating a well defined project before full funding, it also helps us monitor progress through the execution phase of the project. Figure 3 shows the timing of these TCM tools on a PDEP Roadmap.

**Economic Analysis**—Economic analysis compares net present value (NPV), rate of return (ROR), discounted profitability index (DPI) and payout of projects and helps us determine the portfolio of projects that will maximize value for the corporation.

**Cost Estimating**—A cost estimate should reflect the best numbers based on the scope definition at any stage of project development. It should address the risks involved by clearly articulating the contingency and accuracy of the estimate. Estimates should be presented with the most likely number, the median (P50), the optimistic number (P10) and the pessimistic number (P90). These numbers capture 80 percent confidence interval for the estimate. The only time we will know the final exact number is at the end of the project.

Contingency by far is the most misunderstood term in the industry. Projects are funded at P50 level to maximize capital utilization for the corporation. Contingency or float is added to estimates to reduce the risk of cost overrun or schedule delay.

**Planning/Scheduling**—Planning defines all the project activities, links the activities into a network structure to show interdependencies and then assigns duration and resources to the activities. Scheduling takes the plan and assigns dates on which each activity will be performed. Critical path method (CPM) technique uses a network schedule to determine the activities that combine to make a "critical path" such that if one activity on the critical path slips, the project end date will slip. A resource loaded critical path schedule should be developed prior to full funding of a project. The actual schedule during the execution phase of the project should be compared to the target schedule and corrective actions should be taken on an ongoing basis. The required corrective actions may include changing resources or logic between the activities.

**Benchmarking**—Benchmarking is a forward-looking quantitative approach based on the experience of past projects in the industry. This information should help in determining what the competition would spend on a similar project and how long they would take to execute. It also should assist the project team in setting challenging pacesetter project performance targets.

**Contracting/Procurement**—Contracting and procurement comprise a significant portion of many projects. Contracting and procurement plans include process required to acquire goods and services from outside the performing organization.

Typical steps in the contracting and procurement process are pre-qualification, bidding and negotiating, evaluation and agreement, execution and administration. The contracting strategy for lump sum, reimbursable, unit price or Incentive contracts depends on several factors such as scope definition, market conditions and risk tolerance.

**Performance Measurement**—Performance measurement uses the earned-value concept to track physical progress based on pre-determined milestones. A plot of budget, earned and actual cost is used to measure performance versus the plan. This information is proactively used to take corrective action on cost and schedule.

**Cost Control/Forecasting**—Cost control and forecasting uses tools and procedures to track budgets and report expenditures and commitments against a work breakdown structure (WBS). It uses a trending process to forecast final project cost.

**Progress Reporting**—A good progress report should include current and accurate information on the status of the project-plan versus actual data on scope, cost, schedule and safety incidents.

**Finance/Audit**—All of the project cost data has ultimately got to be converted into asset accounting. Project costs are typically divided into two categories, namely capital and expense. Capital money has to be depreciated over the life of the asset whereas expense money can be written off in the year it is spent. The project team has to keep accurate cost data in order to support Finance Audit.

#### Step 5: Training / Certification

In today's fast paced world, learning is an ongoing process. In order to achieve world class project performance, the decision-makers and project professionals need training and certification in decision and risk analysis and leadership roles and behaviors. Additionally, the project professionals need training and certification in all the PMBOK knowledge areas.

**W**ith the implementation of common language, structured project development and execution process, application of value improving and best practices, total cost management and training and certification, a company can achieve world-class perform-

ance-better, cheaper, faster and safer projects than the competition.

### ACRONYMS

- AFE = Appropriation for Expenditures
- CPM = Critical Path Method
- D&RA = Decision and Risk Analysis
- DPI = Discounted Profitability Index
- FEL = Front End Loading
- IPA = Independent Project Analysis, Inc.
- NPV = Net Present value
- PDEP = Project Development and Execution Process
- PEP = Project Execution Planning
- PMP = Project Management Professional
- ROCE = Return on Capital Employed
- ROR = Rate of Return
- SWOT = Strengths, Weaknesses, Opportunities and Threats
- TSR = Total Shareholder Return
- VIP = Value Improving Practices
- WBS = Work Breakdown Structure

### REFERENCES

1. Project Management Institute (PMI).
2. Independent Project Analysis (IPA) Inc., Ashburn, Virginia.
3. Westney, Richard E., The Strategic Project Planner, Marcel Dekker, Inc. (2000).



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