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IMPROVING PROJECT MANAGEMENT CAPABILITIES[1]

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ABSTRACT

This paper:

- Discusses the benefits and costs of using an integrated, systematic approach to project management,
- Presents a recommended approach to improving an organization's project management capabilities,
- Discusses the importance of and methods to achieve improvements in the Project Life Cycle Management System (PLCMS), and
- Describes an approach to overcome the typical barriers to effective project management that are encountered when introducing project management improvements.

1. BENEFITS AND COSTS OF SYSTEMATIC PROJECT MANAGEMENT

The Advantages of Modern Project Management: A formalized, systematic project management approach has several advantages and benefits when compared to the alternative approach of relying on the functional managers to coordinate project activities informally, using procedures and methods designed for managing their functional departments. The fundamental reason that the systematic, formalized approach is used, and that its use continues to expand, is that it produces a substantial increase in the probability that each and every project will be successful: achieving its strategic objectives by producing the specified results on time and within the approved budget. This in turn directly increases the success of the total organization.

The basic reasons for this increased success—when the principles and practices are properly applied—are:

- Projects are selected and authorized only when they clearly support the organization's growth strategies, their risks have been sufficiently evaluated and understood, they have been priority ranked with other competing projects, and the key limited resources (people, money and facilities) have been allocated to each project as required for successful execution.
- Project commitments are made only to achievable technical, cost, and schedule goals.
- Portfolio, program and project responsibilities are well defined and properly carried out.
- Every project is planned, scheduled, and controlled so that its commitments are achieved.
- Project teams work together with commitment to the project objectives, plans and schedules.

The ***project management triad*** consists of 1) integrative project responsibilities, 2) integrated planning and predictive control, and 3) project teamwork. Each of these provides distinct advantages when properly applied.

The advantages gained by defining and assigning the ***integrative project responsibilities*** as described in the literature (see Archibald 2001; 2003, Chapter 4, "Integrative Roles in Project Management," pp. 82-105), including appointing a project manager for each major project, are:

- Placing accountability on one person (the project manager) for the overall results of the project while clearly making accountable the other key persons at the executive and functional levels for their responsibilities on the project;
- Assuring that decisions are made on the basis of the overall good of both the project and the organization, rather than for the good of one or another contributing functional department;
- More effectively coordinating all functional contributors to the project; and
- Properly using integrated planning and control methods, systems and tools, and the information they produce.

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The advantages of ***integrated planning and predictive control*** of all projects include:

- Assuring that the activities of each functional area are being planned and carried out to meet the overall needs of the project in full coordination with all other projects;
- Assuring that the effects of favoring one project over another are known (in allocation of critical resources, for example); and
- Identifying problems early that may jeopardize successful project completion, to enable timely and effective corrective action to prevent or resolve the problems.

The advantages of effective ***team-working***, especially in conjunction with the other two primary concepts of project management listed above, include:

- Bringing needed multiple disciplines together from diverse organizations to collaborate creatively to achieve project objectives;
- Creating strong commitment and understanding to the project and its objectives;
- Developing as a team jointly agreed plans, schedules, and budgets for executing the project, with resulting commitment to achieving the specified results within the target schedule and cost; and
- Achieving outstanding team performance on each project.

The Cost of Project Management: The magnitude of the total cost of project management varies widely, depending on the type, size and number of the projects and the project management maturity level of the organization. Ibbs and Kwak [1997, p 20] report that a survey of 20 companies shows that "Eighty percent of the companies answered that they spend less than 10 percent of total project cost for utilizing project management services." The range of reported costs in that survey was from 0.3% to 15% of total project cost. Salaries and related costs for the various people involved are the largest single item involved. Licensing of project management and related software applications, consulting assistance, and training in project management are also usually significant costs. Ibbs and Kwak [1997, p 59] present the organizational and financial benefits of implementing project management tools, processes and practices. They look at return on investment in project management and provide a vehicle for estimating the returns to be expected from increasing an organization's project management maturity.

The Value of Project Management: Beyond ROI: Crawford and Pennybacker [2000] say that calculating the return on the investment in project management is not sufficient: "We believe that ROI calculations are not good indicators of the value of project management—that many other, more intangible (yet quantifiable) benefits will accrue but not show up in ROI calculations. We argue that today's executives have turned to a much broader view in valuing their organizations, many using a balanced scorecard approach, and that this approach should be used in studies to determine the value of project management to an organization…. Implementing project management adds significant value to organizations. This conclusion is the result of a survey of more than 100 senior-level project management practitioners by PM Solutions' research arm, the Center for Business Practices. More than 94% of the respondents stated that implementing project management added value to their organizations. Organizations cited significant improvements in financial measures, customer measures, project/process measures, and learning and growth measures. All size organizations in all industries reported improvement…. Average improvements on the order of 50% in project/process execution, 54% in financial performance, 36% in customer satisfaction, and 30% in employee satisfaction were noted by the companies surveyed. Those organizations that do not implement project management will be at a competitive disadvantage to those who do…. The survey revealed that most companies rely on multiple coordinated project management improvement initiatives rather than just one or two."

2. RECOMMENDED IMPROVEMENT APPROACH

The recommended approach to improvement consists of the following steps:

- Identify the symptoms of ineffective project management.
- Relate the symptoms to probable causes through (1) review of project management literature, (2) performance audits of on-going projects, and (3) post-completion analysis of completed projects.
- Identify and rank the opportunities for improvement.
- Define an improvement program or set of projects to correct the probable causes.
- Execute the improvement program, evaluate the results, and look for additional areas of improvement.

A survey of over 100 senior-level project management practitioners revealed that "…most companies strategically rely on multiple coordinated project management improvement initiatives rather than just one or two. Organizational initiatives included implementing a project office, a project management methodology, project management software, integrating project management into key company processes, training staff in project management tools and techniques, and deploying a development program for project staff. Over 70% of the organizations implemented three or more initiatives within the past three years [Crawford and Pennypacker 2001].

Symptoms and Probable Causes of Poor Performance on Projects: Some symptoms of poor project performance are:

- **Schedule performance:** late completions and delays, with attendant cost overruns and contract penalties.
- **People performance:** High project staff turnover, high stress levels, low morale.
- **Cost performance:** Actual costs frequently exceeding budgets.
- **Management performance:** Excessive involvement of top management in project execution details.
- **Resource management performance:** Excessive multi-tasking (start and stop work on tasks), duplication of effort, inefficient use of functional specialists.

Identifying and correcting the causes of these typical problems usually requires rather intensive effort by knowledgeable project management practitioners.

Identifying Opportunities and Need for Improvement: The need for improving project management capabilities can be determined by realistically answering these fundamental questions within a specific organization:

- Do projects exist within the organization?
- Does each project support an approved corporate strategy?
- Have the risks associated with each project been effectively determined and managed?
- Have these projects been completed, or are they going to be completed, in accordance with the original (or revised with justification) schedules, budgets, contract prices, and so on, specified in the contracts or other authorizing documents?
- Have the original profit objectives been achieved on commercial projects? Have penalties been paid?
- Can the present management structure and planning and control systems be expected to manage effectively the larger, more numerous, or different projects required to achieve the organization's growth strategies or other long-range goals in the near and longer term?

If the answers to these questions are affirmative, the organization's capabilities in project management are exceptionally good. If not, various improvements are in order. These could require changes in the:

- Knowledge and skills of people;
- Organization of responsibilities;
- Policies, processes, procedures, systems, tools, and methods for project management;

or in all three of these areas.

Using a Formal Project Management Review Process to Identify Opportunities for Improvement: The Project Management Center of Excellence for AT&T designed and implemented a formal project management review process to establish "a practical way of putting Project Management 'concepts' into widespread practice…assessing how we are doing…and identifying targets for improvement" [Schneidmuller and Balaban 2001]. Such formal project reviews have been reported by a number of practitioners to improve performance on the projects being reviewed and at the same time identify specific weaknesses in the overall project management practices that need to be addressed in the improvement efforts.

Possible Improvement Efforts: To achieve significant improvement in a discipline as complex as project management it is necessary to introduce changes in all areas—people, organization, processes, systems, and procedures—in a well-coordinated manner. Some typical improvement projects and tasks in each of these areas are identified here. Additional efforts no doubt can be defined for specific situations.

Strategic Project Portfolio Management: Carry out improvement projects to:

- Design and implement an appropriate project portfolio management process for the organization.
- Formalize the selection of new projects and prioritization of all projects in each portfolio.
- Proactively exploit and manage risk and uncertainty on programs and projects.

Management Development and Training: Establish development and training efforts to:

- Improve the understanding and acceptance of project management concepts and practices at all levels.
- Develop the planning, control and other related skills required by project managers and project support specialists.
- Develop the leadership skills of program and project managers.
- Create the necessary understanding of new project management policies, systems, tools and methods.
- Improve the understanding and practice of teamwork.
- Develop policies and procedures related to:
- Selection criteria for project managers by type and size of project.
- Career development of persons working in project management assignments.
- Performance evaluation of and rewards to project managers and others assigned to or contributing to projects.

Organization of Responsibilities: Carry out the following improvement projects as appropriate:

- Establish at a reasonably high level in the organization a Program/Project Management Office/PMO holding responsibilities for implementation and continued improvement of project management processes, practices and tools.
- Establish an operations planning and control office to provide integrated planning and control support for multiple small project situations.
- Define the integrative responsibilities for project portfolios, programs and projects at every level of the organization, and assure that all persons holding these responsibilities fully understand and accept them.
- Improve the understanding and practice of teamwork.
- Establish appropriate policies regarding the roles of the project portfolio steering group, project sponsors, program and project managers, and functional managers and project leaders.
- Develop responsibility matrices based on the project/work breakdown structures to clarify the relationships of all managers and contributors involved in projects. Develop position descriptions and specifications appropriate to various types and sizes of projects for the key integrative roles in PM.
- Formalize the project-functional matrix organization of responsibilities and take the actions needed to make the matrix work.

Integrative Systems, Tools, Methods, and Procedures: Initiate improvement projects to:

- Identify and define the project categories for the organization and document the integrated Project Life Cycle Management System (PLCMS) for each project category.
- Improve the PLCMS for each project category (see further discussion below.)
- Establish procedures to assure coordination of plans and actions between all functions (marketing, engineering, purchasing, manufacturing, field operations, others): (a) prior to commitment, during submittal of a project proposal or acceptance of a contract change, and (b) during execution of the project.
- Introduce new or revised procedures to:
    - Assure that realistic commitments are made for new projects;
    - Estimate and quote prices and schedules in project bids;
    - Authorize project work within supporting organizations and control the expenditure of project funds;
    - Obtain project cost accounting reports for control purposes; monitor and control project manpower expenditures;
    - Plan projects with project/work breakdown structures and network planning methods;
    - Forecast project manpower and other resource requirements;
    - Establish adequate project files;
    - Control changes in project scope, cost, schedule, and end product specifications; and
    - Carry out project evaluation and review on a systematic, disciplined basis.
- Implement integrative, multiproject information systems that capitalize appropriately on the Internet and all available communication means.
- Establish a project control room for major programs and projects with related support procedures.

Planning and Execution of the Improvement Project: In a given situation the responsible manager should select the appropriate improvement tasks, establish their interdependencies and relative priorities, and lay out the resulting improvement program to reflect the resources available for the effort.

The Pilot Improvement Project Approach: The nature of project-oriented situations gives a unique opportunity to develop and test a particular group of changes on a pilot test or prototype basis, using a carefully selected project, prior to full-scale commitment to the changes. The pilot project can serve not only as a vehicle for introducing and testing new practices and methods, but also as a case study for use in management development and training efforts.

If this approach is used, care must be exercised in choosing a program or project that is:

- Not too far along in its life cycle.
- Representative of other projects within the organization.
- Not so beset with inherent problems (already committed to unattainable schedules, for instance) that the benefits of any improvement cannot save it.

There is always the danger that the pilot project will receive such special attention by all concerned and therefore be so successful that the usefulness of the changes being tested cannot be determined. In this case another result may be that other projects suffer significantly because all resources and attention have been devoted to the pilot project. A number of improvements cannot, however, be introduced on a single project but must affect all active projects if maximum benefits are to be obtained. Implementation of a project portfolio management process obviously requires the incorporation of a number of projects in the initial application. Implementation of a computer-based planning and control system for multiple projects is another example that cannot be tested with only one project.

Using Real and Case Study Projects for Management Development and Training: Detailed descriptions of how to develop and train project teams using their real projects are given by Ono and Archibald (2001) and Archibald (2003, Chapter 11, "Project Team Planning and Project Start-Up," pp. 280-299). This has been found to be the most effective way to introduce project management concepts and improve existing practices. The use of real projects, as well as case study projects, is also strongly supported at the university level: "Many books, seminars, and courses related to project management are now available from a variety of sources. However, there is still a need for good strategies for using real projects in classroom settings to help students understand and apply various aspects of project management. There is also a need for good case studies for analyzing and evaluating various topics in project management. In this paper, we present three distinct ways to enhance learning in the field of project management—using real projects, analyzing past projects as case studies, and using fictitious case studies" (Schwalbe and Verma 2001).

3. IMPROVING THE PROJECT LIFE CYCLE MANAGEMENT SYSTEM (PLCMS)

Once the life cycles have been designed and documented for each category or subcategory of projects [see Archibald, 2003, Chapter 2, Section 2.5, "Life Cycles for 'High-Technology' Projects,"] it is then possible to define and document the project life cycle management system for each appropriate category. Only when such documentation exists can the system be improved on a systematic basis.

To establish a total quality management (TQM) approach to an organization's project management capabilities and to avoid sub-optimal improvements being introduced on a disjointed, piece-meal basis, the following approach is recommended:

Document the Integrated Process

1. Define the life cycle phases for the project category.
2. Identify the gates or decision/approval points between the life cycle phases.
3. Describe and define the process flow within each project phase and identify the intermediate and final deliverables for each phase.
4. Identify and inter-relate the existing risk analysis, planning and control processes and related documents and approvals within each phase.
5. Document and describe the resulting ***Project Life Cycle Management System*** (PLCMS) for each project category within the organization.

Re-Engineer the Integrated Process

6. Apply appropriate re-engineering methods to each category's PLCMS to:
    a. Identify system constraints, gaps and weaknesses.
    b. Relate the undesirable project results and possible causes to the PLMSC wherever possible.
    c. Redesign the PLMSC beginning with the most obvious constraints, gaps and weaknesses and document the results.

Implement the Improvements

7. Obtain needed agreements and conduct appropriate tests or analyses to prove out the validity and feasibility of the proposed system revisions.
8. Plan, approve and execute the improvement project to implement the revised PLMSC.
9. Repeat the steps as required until an optimum achievable PLMSC has been implemented.

Improving the New Product Life Cycle Process

Cooper et al (2001, Appendix A, "Overhauling the New Product Process: Stage-Gate ™ Methods—A Synopsis", pp 333-339) describe a useful approach to improving the new product development process based on their extensive experience in a number of industries.

> "Many companies have undertaken internal audits only to conclude that their new product process isn't working. Projects take too long; key activities and tasks are missing; and Go/Kill decisions are problematic. As a result, they have overhauled their process using a Stage-Gate ™ approach. Numerous benchmarking studies and investigations into winners versus losers have pointed to the following goals for a successful new product process:
> Goal 1: Quality of Execution….
> Goal 2: Sharper Focus, Better Project Prioritization….
> Goal 3: A Strong Market Orientation….
> Goal 4: Better Upfront Homework and Sharp, Early Product Definition….
> Goal 5: A True Cross-Functional Team Approach….
> Goal 6: Delivery of Products with Competitive Advantage—Differentiated Products, Unique Benefits, Superior Value for Customers….
> Goal 7: A Fast-Paced and Flexible Process…"(Cooper et al 2001, pp333-336).

These authors provide complete and authoritative information (Cooper et al 2001, Chapter 11, "Designing and Implementing the Portfolio Management Process: Some Thoughts Before You Charge In," pp 303-332) on how to design, implement and improve an organization's new product life cycle process.

Consider Applying the Theory of Constraints (TOC) to Improve the PLCMS: The theory of constraints (TOC) and its application to project management, critical chain project management (CCPM) (Goldratt, 1997), have generated considerable enthusiasm among many practitioners and consultants in the past few years in the project management field.

Basically, TOC is a commonsense way to understand a system. TOC says, "Any system must have a constraint that limits its output.…The purpose of using TOC is to improve a business system. In *What Is This Thing Called Theory of Constraint, and How Should It Be Implemented?*, Goldratt (1997) stated: … before we can deal with the improvement of any section of a system, we must first define the system's global goal; and the measurements that will enable us to judge the impact of any subsystem and any local decision, on this global goal" (Leach, 2000, p 52, 53).

The global goal of any PLCMS is to proceed from the start of the concept phase through to completion of the project execution and closeout phases as quickly as possible while consuming minimum resources (human, money, materials, and facilities). Leach (2001) provides a detailed explanation of the theory, tools and techniques for applying TOC together with the total quality management approach to improving project management systems. He also describes how TOC and critical chain project planning and control can improve schedule and cost performance on projects.

4. OVERCOMING THE BARRIERS TO PROJECT MANAGEMENT

Introducing integrated project management practices and the related formalization of the project management function usually require significant adjustments in attitudes, understanding, responsibilities, methods,

and reporting relationships throughout the involved organizations. These changes affect the parent organization and all organizations represented on the project team.

Cultural and other factors—within the project environment, the involved organizations, the industry, the geographic region, and the involved nations—create barriers to these required changes. These barriers can require substantial effort to overcome or mitigate, and if they are not overcome will reduce the effectiveness of the project management efforts.

A five-phase strategy is recommended to implement changes required for effective project management and to help overcome the barriers that will be encountered:

1. Identify and understand the barriers anticipated in regard to a proposed change,
2. Create awareness of the need for change and identify and harness the motivating forces that will help to overcome the barriers,
3. Educate and train all affected people using the knowledge gained in the first two steps,
4. Define "change projects" to implement new project management practices and use good project management practices to plan and execute them, and
5. Modify and evolve the project management practices and/or the manner of their implementation to accommodate the current or anticipated cultural and other barriers.

Identifying the Barriers: In order to overcome barriers to change, each organization needs first to *identify and prioritize* the key changes that are required to progress toward fully effective project management. Then the barriers to each of these changes can be identified so that strategies for mitigating them can be developed and executed. Eight key changes are identified here, and others will no doubt be identified within specific organizations.

1. Integrative Roles Below the General Manager
2. Shared Responsibilities for Projects
3. Direction from Two Bosses: Functional and Project
4. Integrative, Predictive Planning and Control
5. Computer-Supported Information Systems for Management Purposes
6. Project Objectives over Department Objectives
7. Working, and Being Rewarded, as a Team Rather Than as Individuals
8. Temporary Assignments on Projects
9. Other Sources of Barriers

In addition to the barriers associated with these changes one must consider that cross-cultural lack of understanding or long-standing animosities (national or ethnic) bring with them additional barriers. These can be found in joint-venture projects bringing together two corporate cultures in the same country, or projects involving two industries, or multinational projects involving two or more nationalities and languages. Additional cultural factors that create barriers to effective project management no doubt can be identified by the experienced reader.

Summary: Project management is the management of change. Improving project management capabilities requires change. Therefore, implementing or improving project management itself requires the use of effective project management practices, and must be viewed from a long-term perspective. There is no one best answer that fits all situations. The concepts of project management must be tailored to the situation and culture, including the cultural mix of the project teams. Success in overcoming the cultural barriers to effective project management can be enhanced by using the five-phase strategy described earlier.

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