

What CEOs Must Demand To Compete and Collaborate in 2005

Part Two of Three

Unleashing the Full Power of Project Management in the Internet Age

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Basic Project Management Principles

One way to look at the project management discipline is to view it as consisting of these three basic principles:

1. Assignment of *integrative project responsibilities*—the key integrative roles.
2. Application of *integrative and predictive project planning and control systems*—the project documents, procedures, information processing and communication systems, and their application.
3. *Integrated project team-working*—identifying, integrating, and managing the project team to integrate the efforts of all contributors to the project.

Each of these is discussed in the following sections.

1. The Key Integrative Roles¹

The role of the project manager is obviously a central one, and in fact this role has received considerable attention in the project management literature over the past several decades. However, there are other important integrative roles in project management, and these frequently have been ignored. The key integrative roles are:

CEO Demand:

6. That *all* of these integrative roles are clearly defined, understood and assigned to qualified people.

Executive Level

General Manager: integrates all projects with the corporate strategic plans. This role in project management is focused on:

- Determining how the organization's portfolio of projects supports the overall business strategies of the organization,
- Overseeing the organization's overall project management process, and
- Monitoring how this process is integrated with all other aspects of the organization, and ensuring that sufficient money, human, and other resources are available on a timely basis to support the on-schedule completion all of the approved projects; if sufficient resources are not available then the General Manager must delay, cancel, or change the scope of one or more projects.

CEO Demand:

7. That the general manager (or COO) understands and fulfills these project management responsibilities.

Project Sponsor: integrates, on the assigned project(s), the ongoing strategic direction of the project with the ongoing operations of the organization. This strategic direction is given to the project manager and through him or her to the project team. The project sponsor role is usually held by a senior manager or a "plural executive" in the form of a steering group or committee, acting for the top management of the sponsoring or project executing organization. This role may be held by the general manager of the organization

CEO Demand:

8. That a project sponsor be appointed for every project and given appropriate indoctrination to carry out this role effectively.

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responsible for the project, by a high-level executive, or it may be delegated to someone who reports to the general manager. In some cases, the project sponsor role is held by a steering group comprised of key people from various parts of the organization. Only within the past decade or so has the importance of the project sponsor role been recognized, together with the importance of formally identifying whom is assigned to this role for a specific project.

Multi-Project/Portfolio Level

Manager (or vice president, director, and so on) of project management: integrates the operational aspects of the work being done on all projects within the organization, and integrates the development and use of the organization's project management methods and tools on all projects. This role has emerged in many organizations as they mature in their project management capabilities, and it recognizes that the project management function as an important capability within the organization, along with the more traditional functions of marketing, engineering, procurement, manufacturing, construction/field operations, finance and accounting, legal, and so on. The manager of project management may also be the project sponsor for specific projects, in some situations.

Some practitioners and consultants² have predicted that there will soon be a *chief projects officer* in many organizations, on a par with the fairly recent position of chief information officer. This position might combine aspects of the project sponsor and manager of project management roles. It remains to be seen whether or not this becomes a reality.

The *project office* is a term that is written about often in current project management literature. Dinsmore says "Any organization with a project backlog needs to support its projects from some coherent base. A project management home is just such a vantage point from which to support, influence, and direct project management endeavors."³ He goes on to say "There are some classic 'homes' for project management; they are sometimes referred to by the catchall term 'project office', even though they vary considerably in concept." He then describes four possibilities:

- The autonomous project team.
- The project support office.
- Project management center of excellence.
- The program management office.⁴

Multi-project Manager or Program Manager: integrates the efforts of all project contributors on his or her assigned projects. The multi-project manager or program manager performs the duties of the project manager on several projects at the same time. These may be several small projects, or a project manager near the end of one project may also be assigned to another project that is in its initial conception phase, for example. Strategically this role differs somewhat from the project manager since this person must often resolve conflicts between the two or more projects that she or he is managing. Depending on the number, size and nature of the projects, this role may take on some of the responsibilities of the manager of project management or the general manager. On some large aerospace programs, for example, a subordinate project manager is usually assigned to each project within the overall program.

Project Level

Project manager: The project manager integrates the efforts of all persons and organizations contributing to the project, primarily working through the various functional project leaders. This role is more operational in nature compared to the more strategic role of the project sponsor. The project manager plans and directs the

CEO Demand:

9. That an experienced manager of project management be appointed reporting to a senior executive of the organization.

CEO Demand:

10. That an appropriate home be established within the organization for the project management discipline.

CEO Project Manager Demand:

11. That all multi-project and program managers are given the training needed to ensure their effective performance.

CEO Project Manager Demand:

12. That each project manager respects the functional lines of authority when giving project direction to team members.

execution of the project to meet the time, cost, and performance objectives as established by the project sponsor.

Functional Department and Project Contributor Level

Functional department managers: integrate the efforts of project contributors on all projects within their individual departments or disciplines, primarily through the allocation of resources available within the department to the approved, active portfolio of projects. When conflicts occur between projects (insufficient skilled resources, for example) the involved department and project managers will escalate the conflict to the appropriate level for resolution, in accordance with the escalation procedures given in the corporate project management process.

CEO Demand:
13. That functional managers and project leaders respect the project lines of authority as exercised by the project managers.

Functional Project Leaders: integrate the work of all contributors to their specific assigned projects within each of their respective functions.

Work Package Leaders: integrate the work of individual contributors to each of their assigned work control packages within each project.

Figure 4 illustrates the relationships between these integrative roles.

Other Important Roles

Other important roles relating to projects also exist, including:

Project customer: the person or organization that will receive the benefits from the results of the project. For projects under contract, the customer usually pays for and authorizes the project when the contract is signed. For in-house projects there may be several customers.

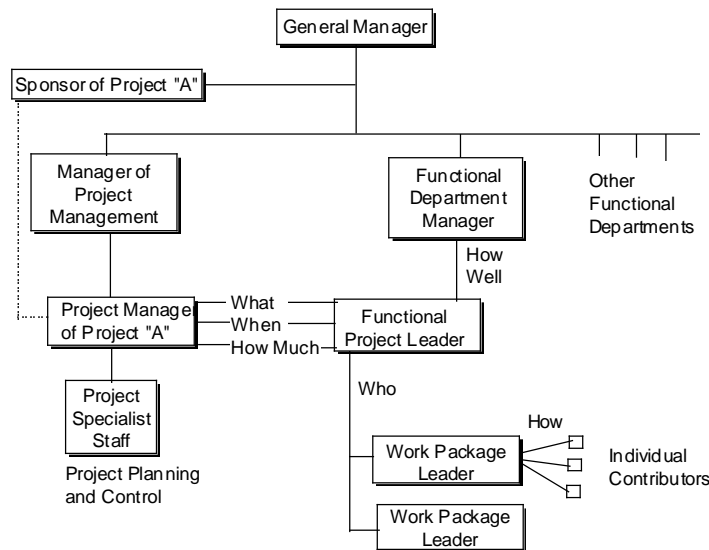


Figure 4. Relationships between the key integrative roles.⁵ The project specialist staff shown reporting to the project manager of project “A” may be directly assigned to the project office of project “A” (as shown) or may be located in a functional department responsible for all project planning and control support within the organization.

Project champion: the person who promotes and keeps the project alive, who may or may not be the general manager.

Owner of the results of the project: this person or organization may or may not be the project customer.

User or operator of the project results: this person or organization may or may not be the project owner.

While all of these additional roles are important, they do not carry the same level of integrative responsibility as the key roles listed above. However, if the project customer organization is a major

contributor to the project, performing important tasks on which project completion is dependent, then there is a need to identify the integrative roles listed above within the customer's organization as well. The same can be said for all outside organizations that contribute significantly to the project in question.

2. Application of Integrative and Predictive Project Planning and Control Systems.

This second key concept of the project management discipline requires that

- Each project be planned and controlled on an integrated basis;
- Including all contributing functional areas or organizations;
- Through all of the project life cycle phases: conception, definition, design, development/manufacture/construct, installation/initial use/operation, post-completion;
- Including all the elements of information (schedule, cost and technical) pertinent to the situation, together with proven *earned value*⁶ techniques with cost and schedule variance reports; and
- Using currently available Web-based project management software systems.

Integrative means that all phases of the project and all the elements of information mentioned above are logically linked together. *Predictive* means that the system forecasts what will happen in the future based on the current plans, and estimates, with the actual physical progress and reported expenditures constantly updating the schedule and cost baseline for the future forecasts.

Most organizations are faced with the need to plan and execute many projects simultaneously using common resource pools, creating the need to use one common project planning and control information system for all projects. Effective application of the powerful computer-supported project planning and control systems available today requires **using one integrated system** (usually consisting of project-oriented subsystems that are properly linked together) for each and every project within the organization to:

1. Define and control systematically the project's objectives and scope.
2. Evaluate and proactively manage individual project risks together with the aggregate project portfolio risks.
3. Define and control the specification, quality, configuration and quantity of intermediate and final products (or deliverables) of the project.
4. Systematically define and control the work to be carried out using the project/work breakdown structure (P/WBS) approach.
5. Estimate the labor, material and others costs associated with the project's deliverable products and related work elements, and each summary element in the P/WBS.
6. Plan and control the sequence and timing of the project deliverables and related work elements using a top level project master schedule plus an appropriate hierarchy of schedules.
7. Authorize and control the expenditure of funds and work hours required to execute the project.
8. Provide the information—regarding both a) actual progress and expenditures and b) forecasts in the future—required by project managers, department managers, functional task leaders and work package leaders on a timely and reasonably accurate basis.
9. Continually evaluate progress and predict and mitigate problems with quality, cost, schedule and risk using earned value project management methods.
10. Report to management and customers on the current status and future outlook for project quality, cost and schedule completion, including post-completion reports.

CEO Project Planning and Control Demands:

14. That every project is planned and controlled within the guidelines specified in the corporate project management process documentation.
15. That all P & C systems and procedures are integrated so that all project information is current and consistent throughout the organization.
16. That only one summarizing project planning and control system is used throughout the organization.
17. That *earned value* progress evaluation and forecasting methods be applied on all projects.

CEO Demand:

18. That the corporate project management process includes a detailed description of the corporate project management information and control system.

With regard to the earlier statement that only one corporate system be used, there are times when customer demands or other factors may require that a specific project planning and control system that is different from the corporate system be used for a particular project. In such cases the different system must be capable of linking with and providing summary information to the corporate system so that all project information, and particularly the time-related resource data, can be viewed on an integrated basis for the total company.

An Overview of Project Management Systems: There are many ways to define and depict a project management system. Cleland⁷ has defined an overall project management system consisting of five subsystems (planning, information, control, human, and facilitative organizational subsystems) and two additional elements (techniques and methodologies, and cultural ambiance). Tuman⁸ presents detailed descriptions and analyses of project management information and control systems from several perspectives, reflecting his long experience in developing and implementing computer-based systems for project planning and control. He defines a "project management and control system" of broad scope, as shown in Table 3, including both technical and risk information and control systems, in addition to a project information and control system.

CEO Demand:
19. That all modules shown in Table 3 are included in the corporate project management process and the overall corporate information and control system.

However one defines such systems they all consist of

- Documents (containers of information) and
- Procedures and software systems for preparation, maintenance, preservation, transmittal and utilization of the documents that are used for creating, planning, evaluating and executing projects within a given organization.

Technical Information and Control System	Project Information and Control System	Risk Information and Control System
Engineering Management Module	Project/Work Breakdown Structure Module	Planning Assurance (Risk Assessment) Module
Procurement Management Module	Planning and Scheduling Module	Quality Assurance Module
Construction/Production Management Module	Cost Management Module	Reliability Module
Test Management Module	-- Cost Estimating	Maintainability Module
Configuration Management Module	-- Cost Estimating Support	Safety Assurance Module
	-- Craft and Crew	
	-- Unit Material	
	-- Unit Labor hours	
	-- Source Document	
	-- Cost Control	
	-- Cost Projection	
	Accounting Module	
	Data Entry Module	
	On-Line Query Module	

Table 3. Definition of a Project Management Information and Control System.⁹

Table 4 presents a summary of the documents typically used for project planning, authorizing, controlling and reporting. Procedures must exist for the preparation and use of each of these documents. Computer software systems incorporating essentially all of these documents and procedures have proliferated within the past ten years and have made it possible to use one integrated information system for managing all projects within the organization.

CEO Demand:
20. That all (with specifically approved exceptions) project planning, authorizing, controlling and reporting documents be produced by the supporting computer software systems.

Level of Detail in Project Planning, Authorizing, Controlling and Reporting Documents:

Determining how much detail is needed and practical has always been a fundamental problem in achieving effective project management. Available automated systems apparently can handle an unlimited amount of detail, but the people involved in estimating, reporting and evaluating the information have definite limits in the time they have available for planning and control purposes and in their ability to integrate and digest large amounts of data. A related problem of equal significance has always been how to effectively integrate project management systems and information with all the other business information and systems in the organization.

CEO Demand:
 21. That the concepts of the P/WBS and project interface management be applied to achieve an effective, sustainable level of detail in project documentation.

Two basic concepts provide invaluable assistance in resolving these two related problems:

- *Systematic, hierarchical breakdown* of the project using the project/work breakdown structure concept to define the work packages (or tasks) that form the basic elements of project planning and control, and to provide a logical structure for summarizing information for evaluation, control, and reporting purposes.
- The systematic use of the *project interface management* concept to identify the points of interaction between project plans and schedules and other established planning and control systems in the organization.

These concepts, coupled with the power of today’s automated systems, enable organizations to work at the appropriate, economically and practically feasible level of detail. Figure 5 (later in this paper) illustrates how project management systems can be linked with other business systems through project interfaces.

Planning	Authorizing	Controlling	Reporting
<ul style="list-style-type: none"> uProject Summary Plan. uProject/Work Breakdown Structure (P/WBS) uTask Responsibility Matrix uProject Master Schedule uIntegrated Project Network Plan uProject Interface and Milestone Event List uProject Budget uProject Funding Plan uProject Chart of Accounts uTask Statements of Work uTask Schedules uTask Budgets uDetailed Network Plans uTechnical Perf. Planned Value Profiles and Milestones 	<ul style="list-style-type: none"> uMaster Contract Release uProject Release uSubcontracts and Purchase Orders uTask Work Orders <p style="text-align: center;"><i>[“Task: A short-term effort ... performed by one organization....”¹⁰ May be synonymous with “work package”; usually comprised of more detailed activities.]</i></p>	<ul style="list-style-type: none"> uManagement Reserve Transaction Register uCost Expenditure Reports uUpdated planning and authorizing documents, comparing actuals with budgets and schedules <ul style="list-style-type: none"> - Project Master Schedule - Milestone Charts - Other uCost Performance Reports uSchedule Variance Reports uEarned Value and Cost Variance Reports uTechnical Perf. Measurement Reports uRisk & Issue Tracking Reports uMilestone Slip Charts uTrend Analysis Charts uTask Estimates to Complete (ETC) and Estimates at Completion (EAC) uAction Item Lists from Project Review Meetings 	<ul style="list-style-type: none"> uMonthly Progress Reports <ul style="list-style-type: none"> - Narrative - Project Master Schedule - Cost Performance Reports - Risk Tracking Reports uManagement Reviews of Critical Projects: <ul style="list-style-type: none"> - Major Project Identification Data - Summary Status Reports - Above Reports as required

Table 4. Summary of documents for project planning, authorizing, controlling and reporting.¹¹

3. Integrated Project Team-Working

The third basic concept of project management is that of designating and managing the *project team*, to integrate the efforts of all contributors to the project. Projects consist of many diverse tasks that require the expertise and resources of a number of different specialties. These tasks are assigned to various people and organizations, usually from both within and outside the organization holding primary responsibility for the project. Other persons hold decision making, regulatory, and approval authority over certain aspects of a project. All of these persons contributing to a given project are considered members of that project team. The most effective project management is achieved when all such contributors collaborate and work together as a well-trained team, under the integrative leadership of the project manager.

The advantages of effective *team-working*, especially in conjunction with the other two primary concepts of project management discussed above—focused, integrative responsibilities and integrative, predictive planning and control—include:

- The ability to bring needed multiple disciplines together from diverse organizations to collaborate creatively to achieve project objectives.
- Understanding of and strong commitment to the project and its objectives.
- Development of jointly agreed plans, schedules and budgets for executing the project, with resulting commitment to achieving the results within the target schedule and cost.
- Frequent monitoring of progress and expenditures and re-forecasting their future impact on intermediate milestones and project completion.
- Achieving outstanding performance on the project—at Internet speed.

Requirements for an Effective Team and for Excellent Teamwork

Because a project is comprised of a number of diverse tasks different people—each having the required expertise and experience—are needed to perform each task. In the broadest sense, all persons contributing to a project are members of the project team. However, on larger projects it is not possible to have several hundred or several thousand people working as one giant, monolithic team. Therefore we must identify the *key* project team members in order to have a reasonable number of people to work with as a team. These key team members will include at least the project manager (the team leader) and the key functional project leaders (discussed earlier). Each of these persons becomes a team leader of their sub-team within the overall project team.

The term "functional project leader" is used here generically, and includes people within the project's parent organization as well as people in outside organizations, such as consultants, contractors, vendors and suppliers. In many projects the client or customer is an active contributor, and therefore is included as a member of the team. When possible, inclusion on the project team of representatives of other outside organizations that contribute in some way to the project can be very beneficial. Such organizations include financial institutions, regulatory or oversight agencies, and labor unions, as examples.

To have an effective project team, as distinct from simply a group of people working on loosely related tasks, five conditions are necessary:

1. Identification of the project team members and definition of the role and responsibilities of each.
2. Clearly stated and understood project objectives.
3. An achievable project plan and schedule.
4. Reasonable rules of the game (procedures regarding information flow, communication, team meetings, and the like).
5. Leadership by the project manager.

If any of these conditions is not present it will be difficult to achieve effective teamwork.

1. Identification of the Project Team Members and Definition of the Role and Responsibilities of Each

It seems obvious that in order to have an effective team, the team players must be identified. However, experience shows that project managers often fail to do this, or only identify their team members on an "as needed" basis when a new task comes up that cannot be performed by someone already on the team. In some cases

CEO Demands:

22. That a complete team list as described here is produced and distributed to all key team members.

the project manager may know the team members, but will fail to inform the other members, so that only the project manager knows who is on the team.

Using the defined project scope and objectives and the initial list of project deliverables, a listing of all project team members is compiled and distributed to the entire team. This list should include each team member's full name, address (regular and e-mail), voice and facsimile telephone numbers, and any other pertinent communication information. Frequently, this list will include home telephone numbers. For those project teams that have established escalation procedures (for resolving issues, conflicts or other problems), the team member's immediate supervisor with office and home telephone numbers are also listed.

The general duties and responsibilities of each team member will normally be documented by the organization's human resource practices and its project management process description. However, for effective project teamwork it is imperative to define the responsibilities of each team member for each task to be carried out on their specific project. The best tool available for this purpose is the task/responsibility matrix¹² based on the project/work breakdown structure.

2. Clearly Stated and Understood Project Objectives

The basic project objectives will usually be known prior to identifying the project team members. However, for effective teamwork, experience has demonstrated that a team effort is required to clarify, expand on, and quantify these initial project objectives, with input as appropriate with the project customer, to produce a statement of objectives that all members of the team understand, accept and are committed to. Hastings et. al.¹³ point out that teams must be aware that there are multiple and often conflicting sets of expectations about their performance on the project, including expectations from outside the project, the team, and each individual team member. These authors suggest thinking about good performance and successful achievement along two dimensions, the hard/soft dimension and the acceptable/excellent dimension. The hard/soft dimension refers to two different kinds of *criteria* of performance, and the acceptable/excellent dimension refers to two different *standards* of performance.

CEO Demands:

23. That the project team develops a statement of project objectives that all team members understand and support — consistent with the 'official' project objectives—within two weeks of the team formation.

"The Hard/Soft Dimension: The hard/soft dimension concerns the tangible and intangible aspects of performance. Hard criteria tend to be measurable, the most frequent being to do with time, cost, resources and technical standards. Soft criteria on the other hand are more subjective and difficult to measure. Yet they are clearly used frequently in evaluating performance. They are more about "how" the task was accomplished, the attitudes, skills and behavior demonstrated by the team and its members....

"In setting success criteria ordinary teams tend to concentrate on *hard* criteria only and ask questions such as, "How many, how much and when?" Superteams do all this too (and mostly more punctiliously) but add another dimension. They also draw out clients' and sponsors' more subtle expectations, those to do with ways of working and the relationships with the client, to attitudes adopted on such things as quality, reliability and attention to detail. These are all factors that are crucial to a client's ultimate satisfaction. Equally these soft criteria are explored, clarified and agreed with the sponsor, and service departments.

CEO Demands:

24. That project teams set both hard and soft criteria for project success.

"The Acceptable/Excellent Dimension. The acceptable/excellent dimension on the other hand concerns standards of performance. And it is around this dimension that the whole Superteam idea was originally crystallized. In a world where the best is no longer good enough, the frontiers of performance are always being stretched. "The best can always be bettered" could almost be the Superteam motto. We find many teams who think that their performance is good, but who in fact are under-performing.

CEO Demands:

25. That each project team establishes success criteria to achieve excellent results, beyond the normal acceptable standards.

They may be averagely good when compared with those other teams they see. Their performance is acceptable but in no way outstanding.... Superteams strive to be different, and achieve just a little bit more than the competition. They are constantly looking for ways to do things better,

constantly testing their assumptions about what is achievable and searching for ways to overcome any problems that lie in the path.”¹⁴

In achieving results beyond the normal acceptable standards the project manager and team must always be alert to the fact that such results must be achieved within the bounds of the established schedule, resources available and cost.

3. An Achievable Project Plan and Schedule

Effective teamwork depends heavily on having a project plan and schedule that reflects the way the team members will actually do the work. The team must understand and be committed to the plan and schedule, which must be reasonably achievable. The project management literature contains abundant descriptions of how to plan projects. For example, "Project Team Planning and Project Start-Up"¹⁵, describes methods for setting the stage for effective project teamworking.

CEO Demands:

26. That each team establishes an achievable project plan to which all team members are committed.

4. Reasonable Rules of the Game

Reasonable rules, procedures, guidelines and practices for how the project will be planned, the work authorized, progress reported and evaluated, conflicts escalated and resolved, and so on, must be established. Trying to achieve good teamwork on a complex project without having such established procedures is like collecting the best athletes from six different sports and turning them loose on an open, unmarked field with instructions to "play the game as hard as you can".

Each organization must develop its own set of project procedures covering the topics of importance within its environment. On large projects, such procedures are usually tailored to the specific needs of that project and issued to all team members in the form of a Project Procedures Handbook, Project Manual, Project Guidelines, or some similar document. The project procedures usually rely on established corporate practices and procedures wherever possible, and avoid duplication or conflict with such practices.

CEO Demands:

27. That the corporate project management process documentation includes the procedures needed to insure effective teamwork.

5. Leadership By the Project Manager

Extensive literature exists on the subject of leadership, and it is not the intent here to treat this complex and important subject in great detail. The key point to be made is that the project manager is expected to be the *leader* of the project. Successful project managers have used many different styles and methods of leadership, depending on their own personalities, experience, interpersonal skills and technical competence on the one hand, and the characteristics of the project and its environment on the other. Owens concluded the following regarding project leadership and related behavioral topics:

CEO Demands:

28. That project managers be given appropriate leadership training prior to their being put in charge of any major project.

- Leadership behavior. Project managers cannot rely on one particular leadership style to influence other people's behavior. Different situations call for different approaches, and leaders must be sensitive to the unique features of circumstances and personalities.
- Motivational techniques. An awareness of unfulfilled needs residing in the team is required to successfully appraise motivational requirements and adjust a job's design to meet those needs.
- Interpersonal and organizational communications. Conflict situations occur regularly. A problem-solving or confrontation approach (confronting the problem and not the persons), using informal group sessions, can be a useful resolution strategy.
- Decision-making and team-building skills. Participative decision making meets the needs of individual team members and contributes toward effective decisions and team unity.¹⁶

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