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Strategic Analysis Report
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The Project Office: Teams, Processes and Tools

Management Summary

The recent success of the many project offices that addressed the year 2000 problem has proven the project office to be a “best practice” for delivering successful projects. Now, the growth in globalization and e-commerce, along with the need for IS and application development (AD) organizations to extend applications to the Internet, support increasingly distributed workforces via such emerging technologies as wireless and Internet Protocol (IP) voice, and develop data mining and other capabilities, has made the management of AD projects mission-critical to many enterprises.

In the 2000s, applications are an indispensable part of enterprise business processes, often with no “manual” alternative. For business to work, applications must work. Although enterprises will continue to license packages and increasingly utilize application service providers (ASPs), substantial new development, package customization and enhancement work often will remain the purview of internal IS organizations — as will quality control over the integration of packages, including ASP offerings, with legacy systems.

The complexity of orchestrating the use of internal and external resources to deploy applications as needed is growing more tangled as IS and AD organizations balance contractors, outsourcers, ASPs and other external service providers (ESPs) with their central IS/AD capabilities and those of their business units.

With applications increasingly indispensable, but delivery increasingly complex, enterprises are more threatened than ever before by the risk of cancelled AD projects, ballooning costs or ever-receding delivery dates. The roles and skills of a project office, plus support for a consistent and disciplined approach to chartering, prioritizing and resourcing project work with attention to quality and project knowledge collection, can help mitigate these risks.

This *Strategic Analysis Report* addresses the following Key Issues:

- What methods and management policies best address the issues that arise during the design, development and implementation of business IT projects?
- What best practices will reduce application total cost of ownership (TCO) through 2005?
- What strategies, processes and techniques will assist AD organizations in reducing their exposure to project failures?
- How will AD organizations identify and manage external delivery partners through 2004?

- What project management best practices assist IS or AD organizations in maximizing return on investment for their projects while reducing the potential for cost overruns, late delivery and scope creep?

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1.0 Introduction

Key Issue: What methods and management policies best address the issues that arise during the design, development and implementation of business IT projects?

Strategic Planning Assumption: Through 2004, IS organizations that establish enterprise standards for project management, including a project office with suitable governance, will experience half the major project cost overruns, delays and cancellations of those that fail to do so (0.7 probability).

The proliferation of project proposals in the next 12 months to 24 months increasingly will drive many CIOs and other IS executives into a role of Chief Project Officer on a motley mix of business projects as business increasingly depends on IT. The pent-up demand for innovative applications like Web-enabled customer systems and business-to-business e-commerce projects, as well as the craving for enhancements to existing systems, are being unleashed like a hungry wolf on IS organizations still reeling from the biggest project many have ever tackled. In the past few years, while hardware and network capacity have snowballed and every corner of the enterprise has become "IT-aware," most AD organizations have had to allocate 20 percent to 40 percent of their budgets to year 2000 programs. Most enterprises postponed dozens — even hundreds — of projects, which they are now struggling to address.

Satisfied with the effectiveness of the project office in running massive year-2000 programs, many organizations are looking to an IS project office for help with their next round of big programs. Many IS managers have learned a great deal from organizing to manage their year 2000 work, and will be better able to manage the next decade's portfolio of projects than in the past. Gartner has discussed the role and potential benefits of an IS/AD project office for years and in 1996 recommended using year 2000 program offices to reduce exposure to year 2000-project risk.

The year-2000 program office proved highly valuable to many enterprises. Benefits included increased project visibility and correspondingly reduced project risk and uncertainty. By enabling stronger resource and communication management, it often was the determining factor in many enterprises' avoidance of year-2000 project delays and possible failures. Satisfaction with the role and function of the year-2000 program office has generated an interest in extending the organizational model beyond 2000. Many IS organizations that have used year-2000 program offices successfully should carry the organizational model forward to help them address the backlog of postponed work, as well as the approaching avalanche of e-commerce and e-business projects. Those that avoid the organizational change risks and invest appropriately in tools and staff can more reliably deliver quality systems and reduce their volume of problem projects.

2.0 Well-Rounded Project Management: The Three C's

Key Issue: What best practices will reduce application TCO through 2005?

Key Issue: What strategies, processes and techniques will assist IS/AD organizations in reducing their exposure to project failures?

Strategic Planning Assumption: IS/AD organizations failing to qualify contractors' business understanding and to administer contracts will receive deliverables that do not address at least 15 percent of critical requirements in three of four contracts through 2003 (0.8 probability).

Application criticality, distributed development and outsourcing are forcing IS/AD organizations to focus on three aspects of project management: the communication plan, contractor management and cost management. Surveys of 900 Gartner IT Executive Program clients (i.e., 1996 through 1999) and Gartner forecasts (i.e., 2000 through 2004) show that project and process management efficiency are growing

concerns of IS executives. Trends in project management are toward more contracting and outsourcing, more distributed development organizations and more business dependence on applications.

The drivers of these trends include project criticality, problems with reliable project delivery and the new accounting guideline, SOP 98-1, which requires enterprises to capitalize costs of software assets developed for internal use. One result of the new focus on project management has been a move toward formally capturing and scheduling more small and midsize project requests. This has buoyed sales of Microsoft Project from approximately $50 million annually a few years ago to approximately $400 million in 1998. By 2003, most IS organizations will move from scheduling and closely tracking less than half of their total work to more than 75 percent (0.7 probability).

Project management, if — mistakenly — understood as synonymous with project planning and scheduling, falls short of providing reliable project processes. Effective IS project and resource management extends beyond drawing up the usual "pseudo-schedule." The growing use of the project office and the emergence of such roles as the project "coach" reflect this widening understanding of project — and multiproject — management. The project coach, normally from some form of project office, assists with project modeling, scheduling and review, and increasingly focuses on "three C's" of project management: communications, contractors and cost.

Planning to communicate: A lack of structured communication often lets small problems create large delays. As development increasingly is distributed and often involves third-party contractors or consultants, teams are less able to meet briefly as needed. To compound the problem, communication between team members and project managers often is ad hoc, except for time sheets and pro forma status reports.

Because collocation and oral tradition are inadequate for modern management, projects require explicit communication plans supported by tools that enable new communication processes. Taking priority over tools, however, is old-fashioned human communication; project teams should be encouraged to keep on track with daily, brief, mandatory meetings. Other techniques for effective project management include:

Using contractors effectively: With the growing use of systems integrators (SIs) on a contract basis, IS/AD organizations increasingly encounter contractor management issues. IS management often underestimates the work necessary for the SI to understand the business and coordinate with internal staff. The project's benefits, together with well-defined tracking and documentation requirements, should be included in the request for proposal (RFP). A best practice in contracting is the consistent use of the RFP process.

An RFP details the enterprise's technical environment and the planned project. A good RFP also helps the IS/AD group define the requirements and scope of the project. Because designs should be reviewed with end users and adjusted to fit their needs, contracts should provide for an agreed-on level of changes that are within the contract scope at no added cost. Implementation, training and support needs, performance and service levels also should be specified. In addition, penalties should be outlined. IS/AD organizations failing to qualify contractors' business understanding and to administer contracts will receive deliverables that do not address at least 15 percent of critical requirements in three of four contracts through 2003 (0.8 probability).

Cost planning and tracking: Many late or over-budget projects deemed "failures" are actually only estimating failures. Gartner recommends re-estimating when starting each major project phase; only with confidence in the relative accuracy of an estimate is time and cost tracking useful for anything but historical purposes. When an estimate is expected to be 35 percent off, variances from it seem a minor

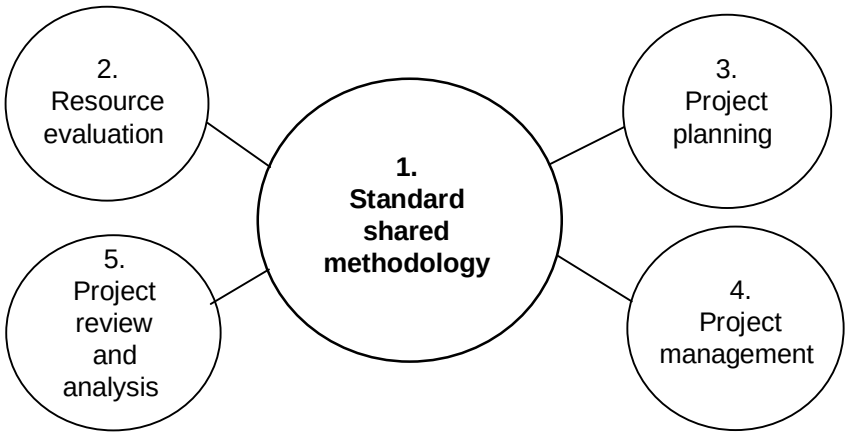
concern. Estimating from flawed requirements increases the risk of scope creep or the delivery of an ill-fitting application needing major rework. Even with accurate requirements, though, estimating duration without a reasonable knowledge of the AD team's productivity is groping in the dark. Finally, although IS and application delivery projects mainly tend to incur labor expense, the costs of any additional servers, middleware, tools and temporary workers should be included.

Thus, IS management should foster the development of capabilities in planning communications, managing contractors and better estimating costs. IS/AD groups that lack well-rounded project management will continue to suffer from cancellations, unpredictable costs and poor performance from their contractors.

3.0 The Role of the Project Office

The idea of developing an enterprise discipline for project management has been around for years; however, recently Gartner has seen the renewed use of a dedicated organizational structure to fulfill that role. Based on contacts and informal surveys at Gartner's management conference in North America, more than 40 percent of client organizations have implemented some form of project office to "professionalize" project management for AD, infrastructure change and large-scale systems migrations (e.g., year 2000).

Their goal is a base-level improvement in project completion against schedule and budget estimates, while delivering the expected functionality with satisfactory quality. World-class organizations complete nearly 90 percent of their projects within 10 percent of budget and time estimates. In Gartner's role-based organizational model, the project office is assigned the key roles of assessing and validating project estimates, as well as staffing the project manager function (see Figure 1).



Source: Gartner Research

Figure 1. Five Governing Roles of the Project Office

Figure 1 suggests a broader set of roles, based on enterprise feedback, that includes resource evaluation, project planning, management, review and analysis using a standard, shared methodology. These five roles are linked in that the documentation and management of projects leads to better evaluation techniques and a firmer basis for assessing the capability of the organization to execute against expectations.

Gartner has identified five key roles for a project office, although implementations vary based on business structure, the degree of dysfunction and the sense of urgency across business divisions that a need exists for a shared solution.

- *Standard methodology:* The key to implementation — a consistent set of tools and processes for projects — provides a basis for measuring performance and can act as a communication and training vehicle for developing project skills.
- *Resource evaluation:* The initial assessment of resources (i.e., people, money and time) is critical on several fronts. Based on experience and evidence from previous projects, the project office acts to validate business assumptions about project and life cycle costs. It also serves senior management by feeding back information that may alter project priorities, based on resource availability or cross-functional project conflicts.
- *Project planning:* The project plan is a cooperative effort coordinated by the project office, which — as a best practice — serves as a competency center and as a library for previous project plans.
- *Project management:* Consistent practices, frequent review and a governing responsibility are the baseline roles for management within the project office. In most initial implementations, project managers are not staffed directly from the project office. However, in some organizations, the project office is also the source for project managers, who are deployed as consultants — in effect — for the life of the project.
- *Project review and analysis:* Enterprises need to know if project goals are achieved on time, on budget and as designed. The review and analysis phase is a loop back to the resource evaluation role.

Thus, a project office is a shared competency designed to integrate project management within an enterprise. A project office can be a key resource in establishing an enterprise competency in project analysis, design, management and review. Given the appropriate governance, it can improve communication, establish an enterprise standard for project management and help reduce the disastrous effect of failed development projects on enterprise effectiveness and productivity.

However, IS organizations establishing projects offices must be prepared to face a common — and often ongoing — problem: organizational change management. The year 2000 imperative may have helped many IS organizations alter their organizational structure to include a year 2000 program office. However, having made this change and having seen it largely succeed in addressing its project challenge, many IS organizations — unfortunately —have allowed this organizational structure to lapse. Others, like Chase Manhattan with its Chase.com organization, are establishing enterprise-level project offices to manage their next rounds of Internet, e-commerce and e-business projects. Other costs include those for training programs, project portfolio management tools and additional staff, including administrative staff to help with project reporting like facilitating project bookkeeping for SOP 98-1 accounting on major AD projects. Other pitfalls include exclusive reliance on internal staff to implement a project office, when often the necessary skills and experience are lacking.

3.1 Implementing the Project Office: Multiple Styles

Enterprises should compare several organizational styles in designing a project office. A project office is a shared organizational structure that may simple serve as a repository of information for project reporting and disseminating best project management practices and methodology. In other cases, a project office is a competency center that provides project expertise and oversight for the business; or it acts as an internal consultancy to run projects.

Typically, the initial goal is the adoption of a standard methodology for measuring performance. From a practical perspective, the initial implementation often meets considerable resistance from functional business management, application managers and distributed project managers throughout the enterprise.

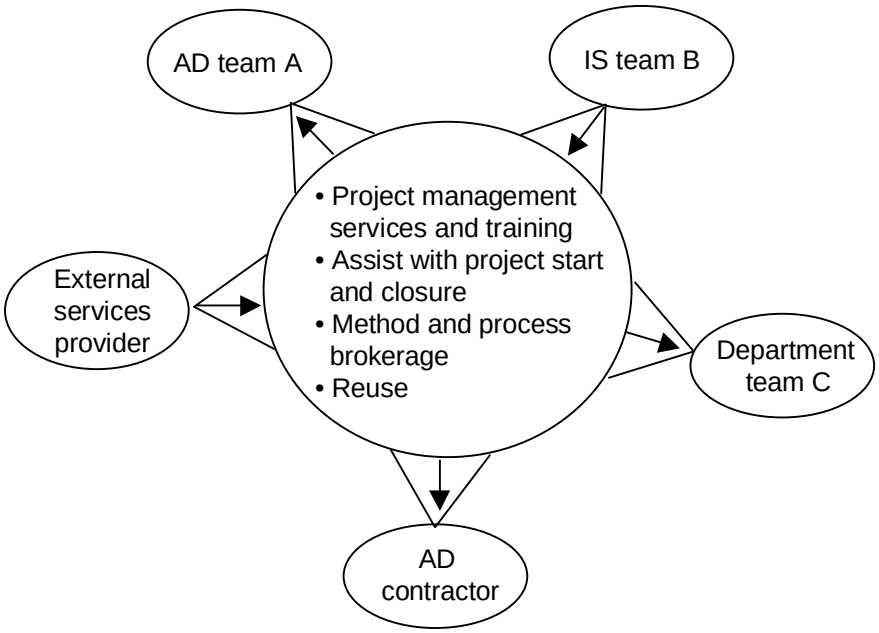
They may view the project office as an intrusion into their domain or as a preliminary action aimed at reducing their project control. Ironically, most organizations do not have clear metrics to assess baseline performance and, thus, cannot defend their performance on a statistical basis. Therefore, a key factor in the initial implementation is a shared urgency across business functions — a problem to be solved — and a commitment from senior management to establish common practices for projects. The worse the situation, the more likely the project office will receive that charter.

A second key ingredient in a successful deployment is limiting the scope of the implementation to the culture, requirements and governance realities of the enterprise. IT governance is defined as the set of rules and agreements that permit the organization to make decisions, resolve disputes and allow people to work together effectively across departments and other business boundaries. These may include informal relationships as well as service-level agreements and service contracts, and may be resolved within steering committees, end-user councils, and other formal or virtual organizational structures.

Gartner has identified three basic organizational styles for the project office. Each embodies unique functions that define its role within the project development-to-management life cycle.

The project repository: In this model, the project office simply serves as a source of information on project methodology and standards. It assumes that the enterprise has embraced a cohesive set of tools for project design, management and reporting. This model occurs most often in organizations that empower distributed, business-centric project ownership, or enterprises with weak central governance. It is often used as a first step to enfranchise the idea of consolidating or sharing management practices, but it falls short of direct project oversight within the business. Project managers continue to report to, and are funded by, their respective business areas.

The project coach model: An extension of the repository, this model assumes a willingness to share some project management practices across business functions and uses the project office to coordinate the communication (see Figure 2). Best practices are documented and shared, and project performance is monitored actively. Results are used as an opportunity to raise enterprise performance and train inefficient or new project managers.

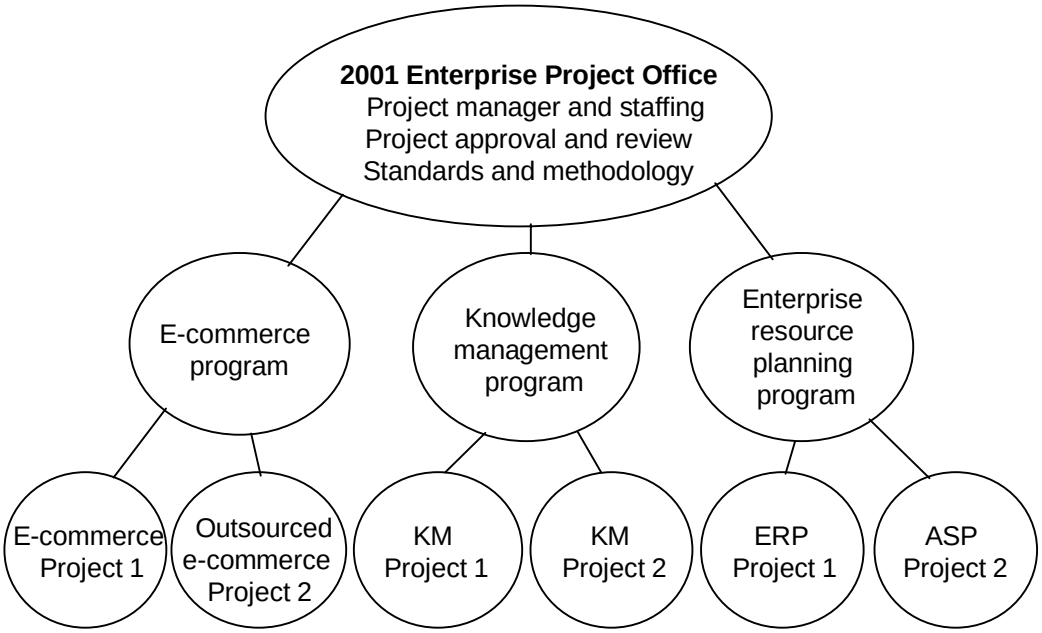


Source: Gartner Research

Figure 2. The Project Office: Coach Model

In some organizations, mentoring relationships have been established across business boundaries between high-performing project managers and those who are less able. The project office in this model is a permanent structure with staff and has some supervisory responsibility for all projects; therefore, often a "dotted-line" reporting relationship exists between business-staffed project managers and the project office for performance and reporting. Funding for this model typically is based on a fixed allocation for staffing and administrative support.

The enterprise project office: The most permanent, consolidated organizational model concentrates project management within the project office (see Figure 3). This implies direct management or oversight of projects — depending on scope and duration — wherever they occur within the enterprise. In some cases, all project managers actually are staffed within the shared service and consigned to projects as needed. This model also assumes a governance process that involves the project office in all projects regardless of size, allowing it to assess scope, allocate resources and verify time, budget, risk and impact assumptions before the project is undertaken. Funding is generally a combination of direct, budgeted allocation for baseline services and a fee-for-service charge for others.



Source: Gartner Research

Figure 3. The Project Office: Manager Model

An enterprise project office acts as a contracted project manager, assessing scope, allocating resources and verifying time, budget, risk and impact assumptions. However, management's choice of models should not focus solely on control, but also on enabling project planning and leadership.

A project office should address a set of business needs; and the development of excellence in project management, as in any evolving discipline, may be a progression through organizational styles that add layers of capability as a result of time and experience. Hybrids of these models evolve as organizations improve their project processes.

In the coach model, the project office acts as a trainer, a consultant or mentor and a source of information on project processes. This project office often helps in project setup and post-project review. Some enterprises use variants of this model to "seed" their enterprises with trained project management professionals. In either model, the project office usually:

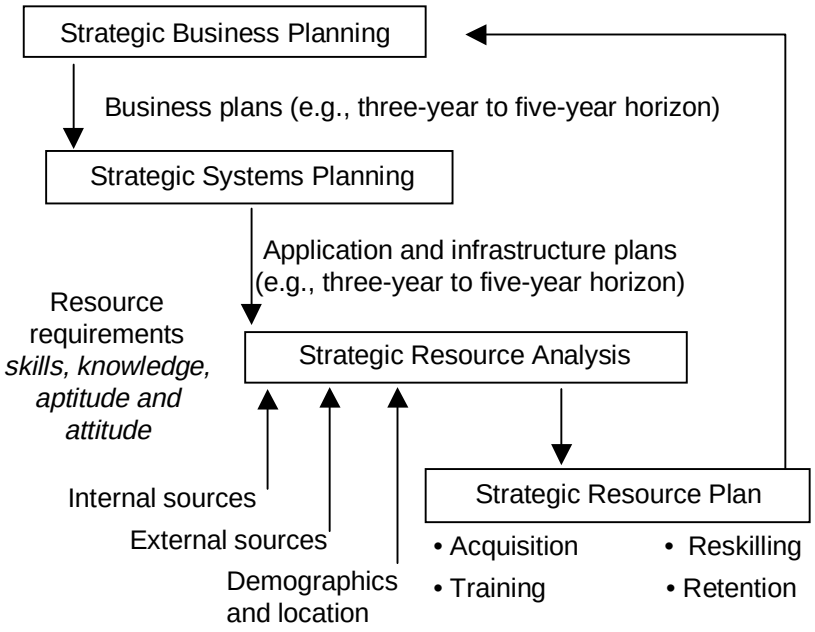
- Maintains the IS/AD organization's repository of reusable project-related artifacts (e.g., project plan templates, estimating models and components)
- Helps institute architectural standards
- Collects and disseminates best practices
- Performs project close-out (i.e., collecting such metrics as project cost, size, quality and end-user satisfaction)

4.0 The Project Office and External Delivery Partners

Key Issue: How will IS/AD organizations identify and manage external delivery partners through 2004?

Strategic Planning Assumption: Through 2004, IS organizations with no strategy for blending internal and external resources to achieve "best-in-class" staffing will incur 25 percent higher labor costs than those that do (0.7 probability).

By 2003, 60 percent of enterprises will use externally sourced workers to fulfill more than half of their IT activities (0.7 probability). Few enterprises are prepared to manage such a heavily externalized workforce (e.g., to set and monitor performance goals for externalized workers with the same rigor applied to internal workers). Even fewer enterprises are committed to strategic resource planning (i.e., to a process for systematically aligning strategic business plans with human resource acquisition, training, reskilling and retention) (see Figure 4).



Source: Gartner Research

Figure 4. Strategic IT Resource Planning

Larger ESPs — especially — can offer higher wages, more exciting assignments and stronger opportunities for skill and career development than the typical IS/AD organization. ESPs also spend much more heavily than can most internal IS organizations on competency-building infrastructural investments, including:

- Training
- Methodology
- Leading-edge technology acquisition and deployment
- Performance benchmarking

They are, therefore, well positioned to compete effectively for the best picks in a diminishing labor pool — a circumstance that is self-reinforcing and amplified over time. In short, the ability to manage externally sourced workers is not simply a matter of additional resources; for many IS/AD organizations, especially those in small to midsize enterprises, it is the surest way to acquire the best available resources.

Action Item: Implement a structured strategic resource planning and acquisition process if none exists.

4.1 Project Directors: Master Contractors

Strategic Planning Assumption: By 2003, 40 percent of enterprises will use an internal or external "master contractor" executive to manage all ESP IS/AD relationships (0.7 probability).

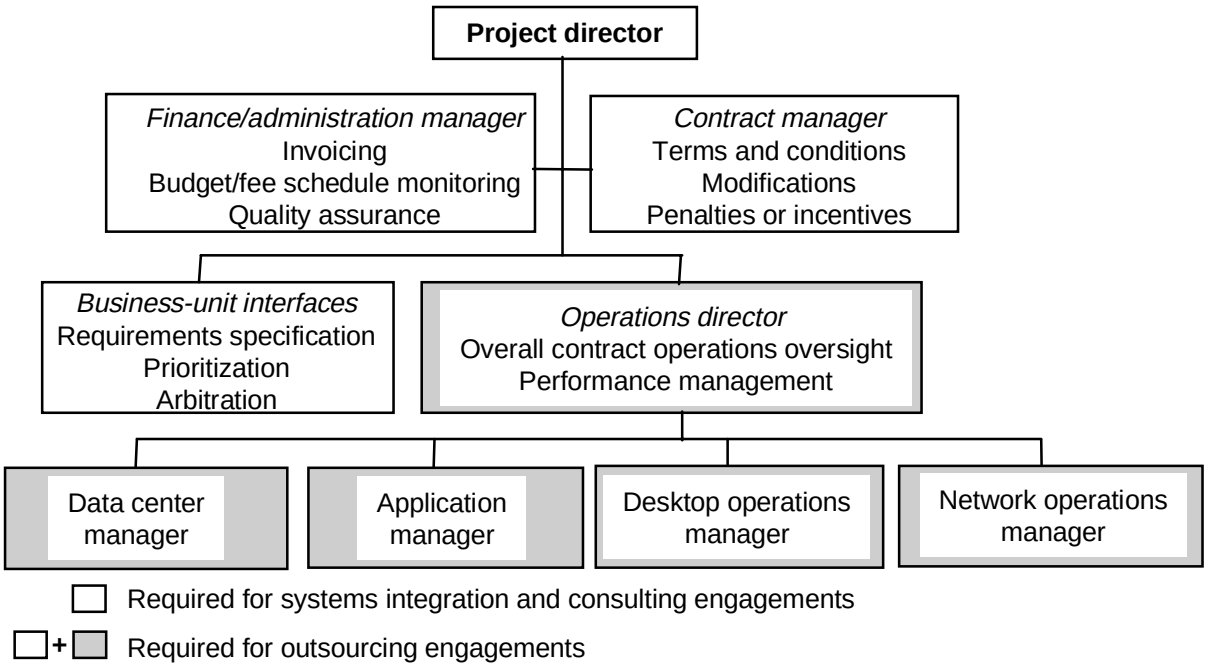
A significant management infrastructure is required to manage externally sourced workers effectively, and someone internal to the enterprise must occupy the highest level of the infrastructure.

Gartner research shows that enterprises consistently underestimate the management effort needed to ensure success in an ESP relationship. The breadth of the necessary functions is more extensive than most enterprises would prefer and are willing to implement; however, ESPs are vendors, not partners, and they cannot be expected to manage themselves with the same attention to their client's interests that the client would exercise (see Figure 5). Successful ESP management requires interfaces for each critical aspect of the deal, including:

- Contract and financial management
- Business-unit-requirements management
- Service-specific performance management
- Overall project management

Although some of the necessary functions can be supplied through the IS organization, successful vendor management requires an enterprise team of experienced decision makers that possess in-depth knowledge of the wide array of concerns involved in business decisions, ongoing major projects and ESP performance expectations.

Action Item: Ensure realistic staff allocations are committed that allow for adequate project management. IS organizations must develop alliances with all affected units within the enterprise and involve key executive personnel in ongoing management of the ESP.



Source: Gartner Research

Figure 5. Project Contractor Management: Roles and Organization

4.1.1 ESP Master Contractor

Many enterprises do not have the expertise necessary to qualify, hire and manage multiple service providers; and many of those will be unable to develop and maintain such expertise within the next five years. These enterprises are likely candidates for a new service offering: the ESP master contractor. The ESP master contractor is an ESP that negotiates and manages contracts with other providers on behalf of its client. Such offerings will be available from leading ESPs and other providers (e.g., project management tool and consulting vendors) by 2001 (0.8 probability).

The ESP master contractor, like the application sourcing provider, offers simplified sourcing and administration, and allows the enterprise to compensate for low internal competency in such areas as contract negotiation, procurement, vendor qualification and vendor performance management. However, as a long-term strategy, enterprises should question whether the simplification offered by the arrangement is adequate payback for the potential atrophy of their own ESP management capabilities.

Action Item: An ESP master contractor should be used as part of a carefully considered strategy — it is not a tactical move.

4.2 Staffing the Project Office

The size of the staff and the skills embedded within the project office vary depending on the role that it is designed to play. In the repository model, methodology experts or a project librarian may be sufficient; however, as its role becomes more complex, the project office requires a manager and, optionally, relationship managers to develop requirements with the business — and manage the staff. In the most complex models, project managers and administrative staff are added. Typical project office sizes range from five to 20; although in very large organizations, there may be hundreds of project managers linked directly or indirectly to the project office.

A variety of skills are required to staff a project office, depending on its size and the scope of its charter. Typical staff roles and assignments include:

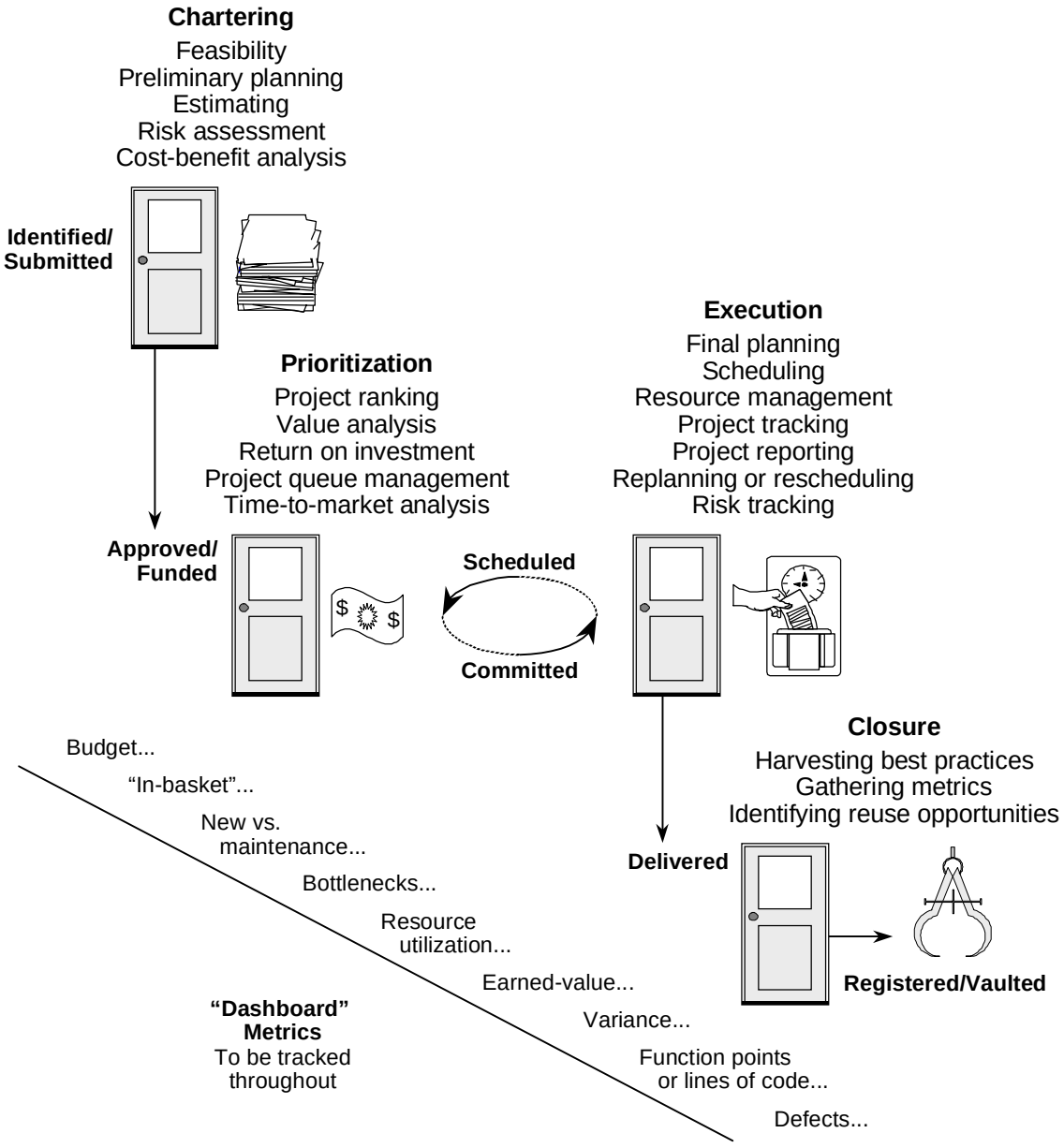
- Project managers:
  - Project specification
  - Analysis
  - Scheduling
  - Implementation
- Administrative support:
  - Back-office
  - Reports
  - Support
  - Calendars
- Manager-relationship manager:
  - Business interface
  - Development of project requirements
  - Human resources interface (i.e., compensation and review)
  - Budget or chargeback support
- Best practice or process experts:
  - Training
  - Project oversight
  - Quality assurance
  - Methodology development
- Librarian:
  - Project records
  - Standards
  - Project repository maintenance

5.0 The Project Portfolio: Get a Grip

Key Issue: What project management best practices assist IS or AD organizations in maximizing return on investment for their projects while reducing the potential for cost overruns, late delivery and scope creep?

Strategic Planning Assumption: Through 2003, organizations using rigorous gating criteria to move projects from the requirements phase to the development phase will save more than 25 percent in organizational costs for canceled projects (0.7 probability).

To better control their development and other projects, IS organizations typically focus on more tightly tracking their projects in progress (e.g., via time reporting). Tracking individual projects against schedules certainly helps account for costs, but it is useless for estimating or prioritizing resource requirements. It also is inadequate for scheduling shared resources and not much help for optimizing allocation of specialty skills (see Figure 6).



Source: Gartner Research

Figure 6. Continuous Portfolio Validation

To assist IS organizations prioritize and schedule, account for costs and apply resources across their broader project portfolios efficiently, IS/AD management should not only analyze the project portfolio's mix but also validate it continuously.

Figure 6 shows a four-phase process with a view toward this validation. The diagonal bar provides sample indicators for continuously evaluating projects against one another and against business goals. For example, in the chartering phase, a growing imbalance between strategic or innovative projects and maintenance work could provide a warning signal. To avoid excess overhead, management will have to set a threshold (e.g., a person month) below which work is not subject to a full "chartering" review; such work, however, must still be entered in the system's chart of accounts to enable time capture.

5.1 The Project Viability Review

Strategic Planning Assumption: Through 2004, without significant changes to its project management processes, an AD organization of 100 developers can expect to spend more than $10 million on canceled software projects (0.8 probability).

Most IS organizations suffer cancellation of 20 percent to 25 percent of their AD projects — and significant schedule and budget overruns on most others. Based on widely accepted estimates of project failure rates, through 2005, the typical AD organization of 100 developers will spend more than $10 million on canceled software projects (0.8 probability). That equals approximately 20 percent of the organization's personnel costs during that period.

Many IT executives ask how these projects can be saved. A better question is: Why will they not be killed sooner? Most AD organizations are better off canceling failure-prone projects early instead of dragging them through design and into the code-and-unit test phase. If a project lacks at least one critical success factor (CSF), early cancellation is the best possible outcome (i.e., the one that wastes the fewest resources in pursuit of an impossible goal). Some of the most-important causes of project failure are visible from the start, and an early viability review process to verify the presence of project CSFs can reduce costs drastically from failed projects and raise overall productivity for the IS organization.

The project viability review verifies the presence of the CSFs and includes:

- Identification of the project sponsor; formal acceptance by the sponsor of responsibility for the project, including achievement of the benefits and costs described in the business case
- Acceptance of the business case
- Identification of a project manager with a track record of success on similar projects. Discrepancies between previous experience and the demands of the current project must be explained.
- Certification that key resources are available as required by the project plan
- Certification that major functional deliverables will arrive in six-month to 12-month intervals

The review should be conducted by personnel — usually senior business and IS managers — who are empowered to kill projects that are missing CSFs. Project prioritization should be handled separately using different criteria. CSFs easily checked at the project's start include:

- *Project sponsor:* Does the sponsor have the authority to define project goals, secure resources, and resolve organizational and priority conflicts? Multiple studies indicate a direct correlation between lack of project sponsorship and project failure. Well-meaning but costly mistakes include substituting a steering committee for a sponsor, and assuming that a big budget and highly visible project does not need a formal sponsor. Steering committees are useful for monitoring project progress but often lack unified goals or a mechanism for resolving conflicts. Multienterprise consortia are particularly dangerous in this respect. Big projects lose direction more easily than small ones, especially when no sponsor exists to drive a shared vision.

- *Business case:* Does the business case clearly define the detailed costs as well as the expected payback period for the project? Without a business case, no way exists — short of politics — to assess a project's value. Projects that lack detailed, strong business cases often lack sponsors because acceptance of sponsorship implies an understanding of the project's purpose and value.

Estimates used for the business case should be based on systematic estimating techniques, not guesswork. Accurate estimating uses one or more of the following techniques:

- *Experience-based:* Acceptable when the business problem and the technical problem are within the experience of the estimator; otherwise, experience-based estimating is useless
- *Task-based or deliverable-based:* Estimates based on tasks or intermediate deliverables — or defined milestones — to produce an overall estimate; requires an AD methodology that includes necessary tasks or deliverables, a database of related metrics and variance factors (e.g., complexity)
- *Function point-based:* Uses a function point (i.e., size) estimate and historical productivity metrics to calculate effort. Most AD process management tools (e.g., Computer Associate's Process Continuum, CMD Group's Synergy and DMR Consulting Group's Macroscope) provide automated support for estimating task-based or deliverable-based and function-point based techniques.

Best practices for estimating also include:

- One-phase-forward estimating
- Triangulation, in which estimates produced using different techniques are compared until no more than a 10 percent variance exists between any two sets of results

5.1.1 Additional CSFs

Assessing and monitoring CSFs provides the best assurances that projects will succeed, including:

- *Project manager:* Does the project manager have experience handling similar projects? The project manager is the person who has the most affect on the success or failure of the project. Absence of a project manager with a successful track record on comparable projects is, in many cases, sufficient cause for the project's cancellation. "Apprentice" project managers may reasonably be given responsibility for smaller projects of less importance to business processes, especially when paired with a more experienced project "coach."
- *Project team:* Will specially knowledgeable or skilled resources be available on time? The unavailability of skilled technical and business resources always affects the business case, which demands payback at a certain point in time. Business personnel are as essential as technical personnel and often are harder to secure for a major project. Availability of such personnel is a key test of the authority and resolve of the project sponsor.
- *Granularity in planning:* Does the project attempt to "boil the ocean?" Three-year to five-year projects typically experience "scope creep" of 33 percent to 60 percent. Such overruns can — and usually should — result in the project's cancellation. To avoid scope creep, the implementation of major functional pieces should be planned in six-month to 12-month increments.

Projects are dynamic, and a project that starts well may be endangered when key personnel leave or are reassigned, or if changing business conditions invalidate the business case. Therefore, a project plan should include regular checkpoints — or "gates" — for reverifying CSFs, particularly for the continued

validity of the business case. Regardless of how projects are ultimately prioritized, viability must be considered before significant resources are committed.

Steadily reducing costs for canceled projects — especially in enterprises that charge back project costs to business managers — also should reduce, if not eliminate, push-back related to early cancellation for politically connected but nonviable projects. The significant cost savings from canceling too-risky projects should help offset political pressures. Key metrics for success include increasing rates of early project cancellations, decreasing rates of projects canceled in post-requirements phases and the effort and costs expended on canceled projects.

5.2 Reducing Project Risk

Strategic Planning Assumption: IS organizations that lack stringent risk assessment procedures will continue to cancel more than 20 percent of AD projects in the execution phase through 2002 (0.7 probability).

Chartering risky projects with proper assessment of their risk can be strategically sound; however, often risk is neither assessed nor tracked, nor is the potential impact on other projects evaluated.

Project sponsors' business cases typically draw attention to all the benefits of their proposed projects, but cost/benefit analyses seldom seek to identify the risk to the overall portfolio that a project could pose. Danger signals around risky projects often go undetected well into a project's life, even as resource and duration requirements become clear. As a result, IS and AD organizations typically expend substantial resources on projects that are eventually canceled. This wasted effort is preventable with proper risk management, which does not mean managing schedule risk (e.g., via Monte Carlo-style simulation to anticipate critical path schedule slippage). It means assessing project *and* portfolio risk. Any tardy or canceled project in the portfolio is comparable to a delay on the critical path of a project. A late project draining vital resources can throw off several other projects' plans. Therefore, prior to chartering a project, IS/AD management should make a disciplined risk assessment of any project likely to take more than a person-month, using a process similar to the following.

First, the project sponsor working with the AD managers who may work on the eventual project, together, detail the system's goals and specific requirements for the management group responsible for project chartering. Next, the chartering group, meeting or otherwise conferring monthly or quarterly, uses this information to rate the project from low-risk to high-risk (i.e., 1 to 5) in three categories:

- Project size and effort
- Business and requirements stability
- Resource capability (i.e., especially with new technologies or complex systems) (see Appendix B, "Sample Questions")

IS or AD managers also update the chartering group regularly with key indicator information on the rest of the project portfolio, including chartered and prioritized projects and those actively in execution.

Project effort estimates prepared for the business case should be based on systematic estimating techniques; a "large" rating of 5 might be for a project estimated at more than 30,000 staff hours. The most accurate estimating combines three approaches:

- Experience-based estimates (i.e., if personnel experienced with the business and technical problems are available)

- Task or deliverable estimates based on a methodology route that breaks out the necessary tasks or deliverables
- A function-point size estimate sometimes supplemented with a database of analogous projects

The second rating category looks at the stability of the project in terms of its business requirements and business environment. The third category, resource risk, refers mainly to resources' skill and experience with the requisite technologies and to project managers' experience, especially on similar projects. Only the skills and experience of the team of people likely to actually work on the project are relevant. One benefit of tool-enabled portfolio management is the ability to move skilled resources among projects efficiently and track key skills and experience gained.

Analysis of feedback gathered during the "assessment" portion of the chartering phase of Gartner's recommended portfolio validation process ultimately will tell the IS organization what scores indicate danger. Initially, an average score of greater than 3 might result in rejection or redefinition of the project (e.g., via a more compelling business case, stricter project controls or more frequent deliverables) to reduce risk. Proposed projects also should be subject to Gartner's recommended five-step viability review. Using the viability review and risk assessment together can make a project's first gate a difficult one to pass and ensure a valid project portfolio.

Therefore, IS and AD management should conduct stringent risk assessment of any significant project before deciding whether or not to charter it. IS organizations that lack stringent risk assessment procedures will continue to cancel more than 20 percent of AD projects in the execution phase through 2002 (0.7 probability).

6.0 Project Portfolio Management: Techniques and Tools

The cycle of iteration depicted between Phase 2 (i.e., prioritization) and Phase 3 (i.e., execution or "micro" project life cycle) in Figure 6 signifies the reprioritization and rescheduling of projects based on portfolio validation. These phases interact fluidly, so a project's place in the queue is changeable. Forecasting the availability of key resources can demote those projects in the queue that will require those resources, and the enterprise project management tools can be used to plan and control this.

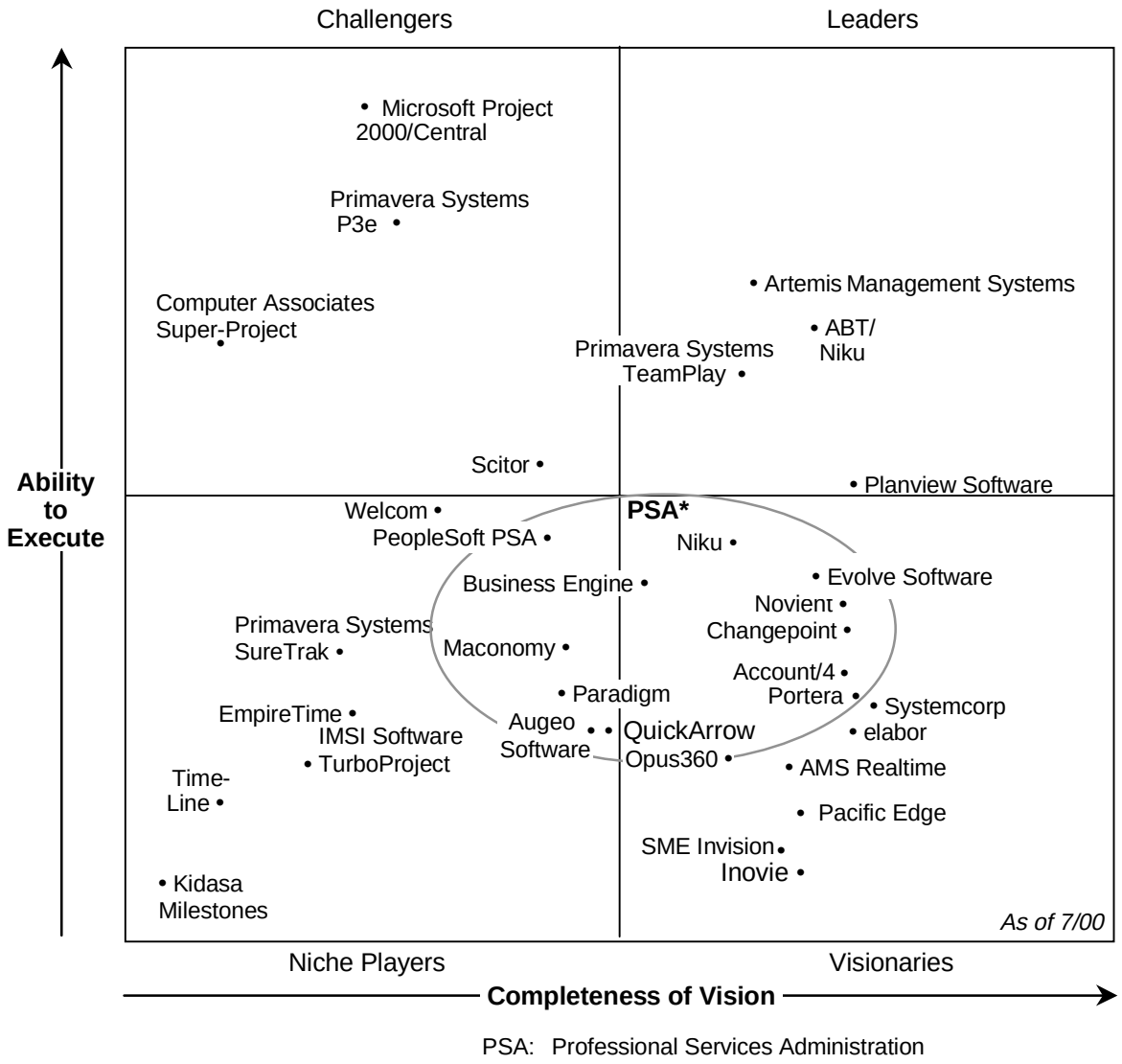
Thus, the "gate" involves a reverification of a project's CSFs, including resource availability and the continued validity of the business case. Also, shifting business, technology and market conditions can rearrange priorities, as with many Web projects in the past few years.

The closure phase begins with the post-project review. How long did the project really take? What was its actual size, and what functionality was delivered vs. the requirements? Quality and defect metrics are collected during this closure phase, via a shakeout period of approximately three months; and as defects are corrected, any reusable components can be "hardened" for possible later reuse. Increasing defect rates or late delivery can provide warning signals.

IS organizations struggling with canceled projects, inefficient resource utilization or frequent postponement of high-value application work should attempt to "get a grip" on their project portfolios using a process framework similar to the one outlined in Figure 6, enabled by organizational mechanisms and project portfolio management (PPM) tools with a range of high-end features. A project office is appropriate to provide the project portfolio reports and forecasts required by IS/AD management. Project office-like organizations increasingly are used to provide either project managers or project management training. Such organizations also are being used to log the new skills and knowledge gained, capture best

practices, track defect rates, provide reuse services and related work. Most IS organizations can gain speed and quality from a project management competency center.

Attempts to manage project portfolios have been frustrated by a lack of practices and tools providing reliable information to facilitate control. PPM tools enable such control, and typically now import and export — or more tightly integrate — with Microsoft Project for scheduling purposes (see Figure 7).



PSA: Professional Services Administration

Source: Gartner Research

Figure 7. Project and Resource Management Tools: Magic Quadrant

Microsoft Project, since its Project 98 upgrade and increasingly with Project 2000, has become the dominant general-purpose, desktop scheduling tool, although approximately 20 percent of the desktop market is still composed of various alternatives, including:

- Computer Associates' SuperProject
- IMSI Software's TurboProject
- Kidasa Software's Milestones

- Primavera Systems' SureTrak and — in construction — P3
- Scitor's Project Scheduler
- Time Line Inc.'s Time Line
- Welcom's OpenPlan

However, these tools constrict a project officer's ability to plan, organize and control multiple, complex projects in an enterprise portfolio.

Scheduling tools like Microsoft Project are necessary but not sufficient for managing a portfolio of projects. A multiproject view of work is required, with facilities to ease collaboration, automate skill and resource management, facilitate issue management, and assist with metrics collection and organizational learning. Microsoft Project 2000, though an improved tool and with dominant desktop market share, has only begun to scale past the workgroup level. However, third-party toolsets (e.g., from elabor.com, Pacific Edge and SME Corporation) enable IS/AD organizations to extend Microsoft Project's capabilities. With annual sales approaching $400 million, Microsoft Project has led the traditionally defined project management market — including scheduling and tracking — as it grows toward a $1 billion market. In addition, Gartner expects significant growth based on the Web-based collaborative features in its companion product, Microsoft Project Central. Gartner research indicates that, with the shorter duration of many e-business projects, knowledge professionals now move on to new projects, often in new organizational units, every two months to eight months. The ability to orchestrate these workers — increasingly external to the enterprise — will be a key driver of the professional service administration (PSA) market. Enterprises, including ESPs, cannot implement new business models without adjusting their strategies for administrative business systems.

As IT workforces become a more variable mix of employees, free agents, long-term consultants and others, the difficulty of resource coordination and project administration will vex ESPs and their clients alike. *By 2004, 75 percent of all administrative functions will support electronic collaborative practices that extend beyond the enterprise (0.6 probability).*

PSA vendors will enjoy quick growth as ESPs seek to control the flow of opportunities better through the project life cycle, handle contracts and analyze profitability, and invoice for time and other expenses more quickly and accurately. ESPs struggling with inefficient assemblages of homegrown and point solutions should evaluate PSA tools, along with the PPM alternatives. IS organizations that have shifted to an internal service provider model — especially those with strategic relationships and hybrid project teams with an ESP — also should consider some PSA toolsets.

Another factor contributing to this market growth will be project or resource toolsets offering advanced new features extending project management to support project accounting, online analytical processing, management "dashboard" alerts, workflow, Web schedule publishing, Web collaboration, project document support, estimating and more. Figure 7 illustrates the market positions of most of the significant PPM vendors, including PSA vendors targeting service firms and extended enterprises that make heavy use of service firms. PSA features include the ability to track prospective customers, handle customer information, RFPs and contracts, to plan projects and resource allocation, as well as to track time and expense for invoicing/billing — or chargeback, in cases where an internal IS organization is managed like a service business. When evaluating a PPM or PSA toolset, IS organizations should consider the vendor's ability to execute (i.e., vendor viability, technology function and vendor support capability) and its completeness of vision (i.e., meeting IS project team requirements, its technology direction and its consulting or service commitment).

The tool capabilities typically sought in a PPM tool include:

- *What-if modeling:* Based on newly added projects, changes to available resources or changes to project schedules
- *Project views:* For different roles, executives, project managers and various end users, workers will need a different view or screen into the program.
- *Ease of use:* Through reduced keystroking or clicking requirements by good design, intelligent searching, keywords for searching, configurable keyboard short cuts and configuarble system rules and events
- *Project time reporting:* Easy-to-report status changes in tasks or projects, and the ability to record time against them
- *Interface to different formats:* Especially for time reporting, support for Microsoft Windows CE or Palm Pilot file formats and programs
- *Project information and status:* Task and sub-task information and drill down, GANTT chart building, project searching and the ability to drill down in a project or task from the retrieved information
- *Resource allocation:* Resource profiling (e.g., by skill, geography, business or organizational unit) and allocation
- *Rules-based workflow configuration:* Events and flow of work configurable to match current and future changes in enterprise workflow
- *Internet or intranet enablement:* Support the use of Netscape Navigator and Microsoft Internet Explorer (IE) browsers to enable project and task review, as well as the ability to changes status or record time against projects or tasks
- *E-mail notification:* E-mail notification to individuals or groups based on events occurring in a project
- *Reporting:* Review the quality and usefulness of standard out-of-the-box reports. Review the custom report writing capabilities. Standard and custom reports should have a Hypertext Markup Language (HTML) output option for publishing as static Web pages.
- *Database support:* SQL databases typically are preferred, though other formats may be specified.
- *Security:* Access to system features and functions are to be based on username and password security. Links to Novell Directory Service to authenticate often are sought, as well as other security protections.

6.1 The Project Dashboard: Where Do High-Priority Projects Stand?

Usually driving many project office activities — including tool use — is the management question: "Where do high-priority projects stand?" Project delivery rates directly impact customer satisfaction, IT’s value to the business, the enterprise’s competitive edge, market share and profitability. A project portfolio management tool's “dashboard” includes a set of organization-specific metrics pertinent to project delivery, and allows managers to “manage by exception” (i.e., take action when a tolerance range has been exceeded).

Data-gathering processes must be established with senior IS/AD management support, and focus initially on the IS group's key areas of concern. A comparative benchmark helps to identify areas of relative

weakness; however, typically, management can identify key goals (e.g., improved application quality, reduced cancellations, better estimating and cutting maintenance costs).

Procedures for collecting specific data are then built into the current process, with the conviction that they are key to problem prevention and process improvement, and will yield substantial payback. Normally, these procedures should be directed by an authorized project manager, perhaps working through a project office. Tools (e.g., for estimating, testing or time collection) support these procedures. Savings gained by assessing and applying the knowledge derived from the new procedures should be quantified and publicized, including:

- *Resource management:* Where are people, and what are they doing? Tracking skill sets, learning rates, availability and performance will enhance a manager's ability to optimize resources across efforts, consequently impacting application delivery, cost and quality.
- *Reuse:* What is the leverage factor? How often is the wheel being reinvented? Reuse should involve as many project elements as possible (e.g., methods, techniques, templates, objects, components, source code, project plans and estimates). Reuse achievement rates can directly impact project delivery, time to market, quality — assuming a previously quality-assured element — and competitive advantage.
- *Quality:* Is it being delivered? Quality can have multiple meanings based on constituency (e.g., delivered on time within budget, a highly intuitive end-user interface, defects discovered during implementation period, application response times, the volume of change requests or maintenance costs).

Ultimately, the creation of a dashboard process is imperative for IS/AD organizations that wish to remain competitive and manage application delivery proactively. With limited visibility into project status, resource utilization, reuse activities and quality levels, only "reactive" decision making is possible. Given the criticality of such enterprise initiatives as e-commerce and e-business, and a growing intolerance for failure, IS managers need a more proactive approach. The creation of a dashboard, validated against business requirements, is an absolute imperative for IS organizations that wish to remain competitive and proactively manage solutions delivery.

7.0 Conclusion

Today, more than ever before, applications can be mission-critical, competitive differentiators. Enterprises utilizing an AD project office to manage the growing complexity involved with creating or acquiring — and then implementing and managing — these applications have a distinct advantage over those that do not. However, to succeed, enterprises need to employ the best practices for managing the project office, including:

- Implement a structured strategic resource planning and acquisition process if none exists.
- Ensure realistic staff allocations are committed that allow for adequate project management. IS organizations must develop alliances with all affected units within the enterprise and involve key executive personnel in ongoing management of the ESP.
- An ESP master contractor should be used as part of a carefully considered strategy — it is not a tactical move.

To assist enterprises in managing the project office, the following Strategic Planning Assumptions were presented in this report.

- Through 2004, IS organizations that establish enterprise standards for project management, including a project office with suitable governance, will experience half the major project cost overruns, delays and cancellations of those that fail to do so (0.7 probability).
- By 2003, most IS organizations will move from scheduling and closely tracking less than half of their total work to more than 75 percent (0.7 probability).
- IS/AD organizations failing to qualify contractors' business understanding and to administer contracts will receive deliverables that do not address at least 15 percent of critical requirements in three of four contracts through 2003 (0.8 probability).
- Through 2004, IS organizations with no strategy for blending internal and external resources to achieve "best-in-class" staffing will incur 25 percent higher labor costs than those that do (0.7 probability).
- By 2003, 60 percent of enterprises will use externally sourced workers to fulfill more than half of their IT activities (0.7 probability).
- By 2003, 40 percent of enterprises will use an internal or external "master contractor" executive to manage all ESP IS/AD relationships (0.7 probability).
- Through 2003, organizations using rigorous gating criteria to move projects from the requirements phase to the development phase will save more than 25 percent in organizational costs for canceled projects (0.7 probability).
- Through 2004, without significant changes to its project management processes, an AD organization of 100 developers can expect to spend more than $10 million on canceled software projects (0.8 probability).
- IS organizations that lack stringent risk assessment procedures will continue to cancel more than 20 percent of AD projects in the execution phase through 2002 (0.7 probability).
- By 2004, 75 percent of all administrative functions will support electronic collaborative practices that extend beyond the enterprise (0.6 probability).

Appendix A: Acronym Key

AD Application development

ASP Application service provider

CSF Critical success factor

ESP External service provider

IE Internet Explorer

HTML Hypertext Markup Language

PPM Project portfolio management

PSA Professional service administration

RFP Request for proposal

SI System integrator

TCO Total cost of ownership

Appendix B:

Sample Questions

Sample questions that should be asked regarding project size and effort risk include:

- What is the project's estimated duration?
- What is the project's estimated size in function points?
- What is the project's effort, in staff-hours?
- What is the estimated cost?
- Will multiple physical installations extend project implementation?
- How much will the project schedule depend on availability of end-user staff for analysis and testing?
- Will stringent quality requirements for the proposed system add to duration and cost for frequent inspections, documentation and testing?
- Is the end date fixed or flexible?

Sample questions that should be asked regarding business and requirements risk include:

- Is the project in the IS or AD annual plan?
- Will business success depend on the project?
- Was cost of ownership analyzed?
- Do the intended users and their management accept and appreciate the value of the new system, or do they oppose it?
- How many departments or divisions are involved?
- Are there several complex deliverables?
- Will the project change whole business processes?
- How severely will end-user procedures change under the proposed system?
- Will enterprise politics affect the project team's makeup?
- How large is the end-user population? How diverse?
- Will this be the end-users' first experience with the type of system under development?
- Are the functional requirements clear or vague?
- Will the system depend on many other business systems?
- Will the new system require new maintenance procedures?
- Could implementation interrupt mission-critical operations?
- Will end-user staff be available during development?
- Will the proposed system adhere to enterprise standards?

Sample questions to ask regarding resource and skill risk include:

- Are more than three distinct systems involved?
- Are critical tasks out of the project team's control?
- Will the project require major hardware or software upgrades?
- Must multiple IS or AD departments provide resources to the project?
- Will the IS or AD staff be available continuously throughout the project?
- Is any software (i.e., language, database, communication or tools) for the project new to the development team?
- Is any hardware new to the development team?
- Will construction require complex and intricate logic?
- Will project teams inexperienced in the product or business areas be on the project?