Project Management for IT Projects

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INTRODUCTION

The provision of information systems, technology, and communications is a fundamental requisite to support competitive strategies and improve service levels in enterprises. Increasingly, with e-commerce developments using the Internet and World Wide Web (WWW), combined with increased compliance and regulatory requirements, medium to large businesses and governments are relying on IT to support operations and administration. Small to medium businesses also make use of Web, e-mail, and office productivity packages to gain commercial advantage.

Organizations establish projects to deliver business solutions using IT systems. Each project is unique and may be characterized by specific objectives, defined start and finish dates, a unique set of activities, resources (funds, people, and equipment), a discrete organization structure, and a requirement for management (Willson-Murray, 1997). Projects need to be managed, because set objectives have to be achieved within constraints such as scope, time, and budget.

Project management (PM) is not a discipline confined to the IT environment. PM is universal across industry sectors, both commercial and government sectors, and professions. The Project Management Institute (PMI), which had 70,000 members worldwide in 2001, included 15,000 members that had joined the Information Systems Specific Interest Group (Schwalbe, 2002).

International Standard (IEEE Std. 1490–1998) publishes a subset of the Project Management Institute's *A Guide to the Project Management Body of Knowledge*, embodying "generally accepted" knowledge and practices. The term "generally accepted" means that the content of the Standard applies to most projects, and that there is pervasive agreement about their suitability and value. However, it does not mean that the content applies consistently to all IT projects without taking into account appropriateness.

BACKGROUND

The framework of PM incorporates concepts of a project life cycle, thus demonstrating the nature of projects;
essentially, projects are temporary endeavors with a defined start and end. Each project life cycle consists of phases. Each phase is a manageable portion of work, and the phases collectively make up the project life cycle. PM processes are applied to define, manage, and complete a project or phase of a project.

A Guide to the Project Management Body of Knowledge (Project Management Institute, 2002), commonly referred to as *PMBOK*, distinguishes five interrelated processes, as follows:

- *Initiating*: covers activities for initiating and authorizing a project and formulating a project charter
- *Planning*: involves defining objectives and selecting the best project approach
- *Executing*: relates to the coordination of people and resources to execute the plan
- *Controlling*: deals with monitoring, measuring progress, and managing variances to a plan
- *Closing*: deals with acceptance and closure of the project

However, there are alternative approaches, including the structured *PRINCE2* PM method. *PRINCE2* is a nonproprietary methodology developed by the U.K. Government (Office of Government Commerce, 2004). It features a startup component prior to project initiation and processes for directing a project, controlling a stage (or phase), managing stage boundaries, as well as closing a project. There are other approaches, such as four interrelated processes, being definition, planning, execution, and close-out (Verzuh, 1999).

It is important to understand the relationship between product life cycle methodologies and PM processes when initiating and managing an IT project. Both are interrelated, but the differentiation between the two is not always clear and may depend on the methodology adopted for the project.

Product life cycle methodologies provide guidelines for planning and implementing "products" such as IT systems. There is a diversity of life cycle methodologies in the commercial or public domains that apply to IT projects. Each methodology may offer unique features, but each usually consists of a series of phases, such as requirements, design, construction, and operation (Verzuh, 1999). They may present a product-centric life

cycle approach with a more extensive series of phases (Willson-Murray, 1997).

PM processes may be applied to the project life cycle and the various phases within that cycle. Processes also intersect during a project or phase of a project. It is not unusual for product life cycles and PM processes to be combined for an IT project. Some PM methodologies integrate product-centric life cycles and processes, recognizing that IT projects deliver products, not activities (Bentley, 2000).

For example, a product life cycle might be applied to the deployment of a new IT system to cover the project from initiation to closure. The life cycle usually consists of a number of phases, one of which might be "procurement." PM processes might be applied to that specific phase to manage the procurement of hardware, software, communications, and professional services.

PM methodologies provide a generic interpretation of IT product life cycles and integrated PM processes. Specific methodologies may focus on the application of PM to types of IT products, covering a range of complex software implementation projects.

One example includes a project approach to supply chain management solutions (Ayers, 2003). Another example addresses the delivery of customer relationship management systems, to reduce the high failure rate in those types of projects (Gentle, 2002). Similar work has included the application of PM to integrated document and Web content management systems (Asprey & Middleton, 2003).

APPLICATION

PM processes are complemented in *A Guide to the Project Management Body of Knowledge* by nine knowledge application areas, covering the management of project integration, scope, time, cost, quality, human resources, communications, risk, and procurement (Project Management Institute, 2002).

Integration Management

Integration management relates to the coordination of elements such as developing and executing the project plan and integration of change control.

Plan development begins at initiation, once the aims of the project are mandated, initial constraints and assumptions are identified, and an approach is adopted. Planning draws upon other organizational strategies, plans, and knowledge resources.

Project managers utilize a work breakdown structure (WBS) technique to capture specific tasks in a logical assembly of related activities. The WBS is an input to a Gantt chart, and is often created in a Gantt chart tool, generally embodied within PM software. A Gantt chart is used to generate a project schedule, incorporating activities (or tasks), durations, start and finish dates, allocated resources, and linkages between activities.

The project plan is the key planning document for a project. Its structure varies depending on the PM methodology, but common elements are observable. A plan typically incorporates the project mandate (or charter), documents the project strategy or approach, and includes definition of scope inclusions and exclusions, and lists key stakeholders. It includes the description of the critical success criteria and performance measures. It defines the project organization, resourcing, budget and cost estimates, and key activity/deliverable and milestone dates. The plan also includes communication strategies and reporting structures, a risk/mitigation strategy, and is usually annexed with the relevant Gantt schedule.

When approved, the project plan is termed a "baseline" plan, being the original "approved" plan. Project execution is the process of putting the project plan into effect. The project manager is required to direct technical resources and coordinate organizational interfaces. The baseline project plan is monitored by the project manager, who takes corrective actions where activities or events impact the plan. Performance against the plan is evaluated by submission of status reports and planned meetings with a project sponsor or project board, who have governorship of the project.

Where variations to the scope of a project are required during the life cycle, these changes are subject to formal change control. Change control is a key component of integration management. It includes the management and processes for changes to project scope across all elements of PM. Integration management embraces the requirement to take into account the impacts of the change on elements such as schedule, costs, resources, risk, and quality management.

Change control usually involves submission of a change request form, which is logged in a change control register. The change request is assessed in terms of its impact on scope, costs, project timelines, and deliverables, and an evaluation of benefits and risk. The change request is then submitted for approval by the project board or other governing authority, and if approved, is then incorporated within the project scope.

Scope Management

Key to successful project delivery is the definition and management of scope, which defines the work to be performed by the project, and that work which is specifically excluded. Scope is typically defined during project initialization, encapsulated in a *project charter* or *project*

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