Chapter 4.19
The Role of Project Management in Technology Literacy

Daniel Brandon
Christian Brothers University, USA

INTRODUCTION

A key component in technology literacy involves the management of technology resources. In industries that "build things", that management of technology is largely encompassed within the discipline of Project Management. Project Management is "the application of knowledge, skills, tools, and techniques to the project activities in order to met or exceed stakeholder needs and expectations from a project." (Duncan, 1996) A project is defined as "a temporary endeavor undertaken to create a unique product or service" (PMI, 2000). In such industries, the first level management job for a technical person is typically in a "project manager" role.

BACKGROUND

Despite ongoing innovations in project management, many projects fail; in some industries, particularly Information Technology (IT), most projects still fail. A Standish Group study found that only 16% of all IT projects come in on time and within budget (Cafasso, 1994). Field's study discovered 40% of IS projects were canceled before completion (Field, 1997). The problem is so widespread that many IT professionals accept project failure as inevitable (Cale, 1987; Hildebrand, 1998).

PROJECT MANAGEMENT IN PROFESSIONAL ORGANIZATIONS

A number of professional organizations have developed around the world to address and foster this specific discipline. Most notable is the Project Management Institute (PMI, www.pmi.org) with about 140,000 members worldwide. Other major international organizations are the Association for Project Management (APM) and the International Project Management Association (IPMA) (Mor-

Figure 1. PMI processing groups and knowledge areas

	Initiation	Planning	Executing	Controling	Closing
Integration		Project Plan Development	Project Plan Execution	Overall Change Control	
Scope	Initiation	Scope Planning	Scope Verification	Scope Change Control	Scope Verification
		Scope Definition			
Time		Activity Definition		Schedule Control	
		Activity Sequencing			
		Activity Duration Estimation			
		Schedule Development			
Cost		Resource Planning		Cost Control	
		Cost Estimating			
		Cost Budgetting			
Quality		Quality Planning	Quality Assurance	Quality Control	
Human Resources		Organizational Planning	Staff Acquisition	Team Development	
Communications		Communications Planning	Information Distribution	Performance Reporting	Administrative Closure
Risk	Risk Identification	Risk Identification		Risk Response Control	
		Risk Quantification			
		Risk Response Development			
Procurement		Procurement Planning	Solicitation	Contract Administration	Contract Closeout
		Soliciation Planning	Source Selection		
			Contract Administration		

ris, 2001). These organizations have recognized there is a distinct skill set necessary and level of technology literacy for successful project managers, and the organizations are devoted to assisting their members develop, improve, and keep current these skills (Boyatzis, 1982; Caupin, 1998).

The Project Management Institute has developed an index of project management skills and knowledge called the "Project Management Body of Knowledge" (PMBOK). The PMBOK has been developed through several iterations over many years; the first version was developed in 1976 (Cook, 1977). The latest version (PMBOK 2000**)** was just released (for certification testing beginning 1/2002) (PMI, 2000). It defines nine "Knowledge Areas" (KA) which are organized into 37 "Processes". The processes are grouped into 5 "Process Groups" (PG). This is illustrated in Figure 1 (for PMBOK, 1996) (Duncan, 1996). The KA's represent the technology literacy necessary for effective project management: scope management, time management, cost management, risk management, quality management, human resources, communication, and procurement.

PMI (and the other international project management organizations) have a certification program, and for PMI the designation for the most important certification level is "Project Management Professional" (PMP). To obtain PMP certification an individual must have 4500 hours of documented project management experience over a period of six years, have a BS level college degree, and pass a rigorous four hour examination. The first PMP exam was given in 1984 to about 30 people, and today there are over 30,000 PMP's worldwide (Foti, 2001).

These professional organizations recognize that while there is a large set of common technology literacy amongst industries, each industry (and each government sector) has it's own spe-