

GOWER HANDBOOK OF PROJECT MANAGEMENT 4TH EDITION



Edited by
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GOWER

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A handbook for Project Management Practitioners

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Projects and project management are now widely recognized by organizations as being essential to achieving their strategic objectives. Achieving the strategic objectives often involves change, and that change needs managing in a different way than managing the routine work of the organization. The change can take several forms:

- it may be an engineering construct, a new building, new infrastructure or a new product or production machinery
- it may be an information system, involving new information and communication technology (ICT)
- or it may be a social construct, new processes, a new organizations structure, or new skills in the work force

In each case, the organization that wants the new asset creates a temporary organization, a project, to which resources are assigned to do the work to deliver that beneficial change. The change itself is some new facility or asset. We have just seen that the facility or asset may be an engineering construct, an ICT system, or a social construct. Once the project is finished, that asset will be operated to deliver benefit to the owning organization. During its life, the temporary organization needs managing to deliver the asset and achieve the benefit on completion. The asset and desired benefit (the objectives) must be defined, as must the process of achieving the objectives, and the work and delivery of the objectives must be monitored and controlled. The management of the project (the temporary organization) is the responsibility of project management practitioners.

This book is intended as a handbook for project management practitioners. The aim is to give an introduction to and overview of the essential knowledge required for managing projects. In Chapter 32, Lynn Crawford defines competence as the knowledge, skill and behaviours required to perform according to defined standards. Through this book I can introduce the reader to the knowledge and skills required to manage projects. Competence the individual will develop

through their experience, and through their essential traits they bring to the job. The project management professional societies throughout the world take several different approaches to defining the competence required to manage projects.

- (a) Some focus on the knowledge and skills required. This is the approach taken by the Project Management Institute (PMI®, www.pmi.org), a global organization based in North America, through its body of knowledge and certification program (PMI, 2004). This is an input based approach to competence.
- (b) Some focus on what project managers have to be able to do to manage projects, what functions they have to perform. This is the approach taken by the Association for Project Management (APM, www.apm.org.uk), the UK's national association, through its body of knowledge and certification program (APM, 2006), and by the International Project Management Association, (IPMA, www.ipma.ch), a global federation of 36 national associations of which APM is the largest, (Caupin *et al*, 1999). This is a performance based approach to competence.
- (c) Some focus on what project managers must deliver. This is the approach adopted in the UK by the Engineering Construction Industry Training Board (ECITB, www.ecitb.org.uk), in its National Occupational Standards for Project Management, and by the Australian Institute for Project Management (AIPM, www.aipm.com.au), in its National Competency Standards for Project Management (AIPM, 2004).

Lynn Crawford (Chapter 32) says that competence is the ability to perform according to defined standards. Those standards can take different forms:

1. They may be global standards. The PMI® Guide to the Project Management Body of Knowledge, PMBoK®, (PMI, 2004) is often presented as a global standard. The International Standards Organization has produced a standard for Project Management, ISO 10,006, (ISO, 2004). Lynn Crawford herself is leading a global working party to produce global standards for project management
2. They may be national standards. The PMI® Guide to the PMBoK® (PMI, 2004) is also an American national (ANSI) standard. In the UK, the ECITB has produced the National Occupation Standards for Project Management (ECITB, 2003) and in Australia AIPM has produced the National Competency Framework for Project Management, (AIPM, 2004).
3. They may be standards produced by professional associations, such as the PMI® Guide to the PMBoK® (PMI, 2004), the APM Body of Knowledge, (APM, 2006) and the IPMA Competency Baseline, ICB, (IPMA, 1999).
4. They may be job descriptions produced by individual organizations for specific jobs within the organization.

As I say, in this book I can only give a guide to the knowledge and skills required by project management practitioners in their work, not to the performance required by project managers. Figure 1.1 shows the content of this book, and how it relates to three of the standards, the APM Body of Knowledge, the PMI® Guide to the PMBoK® and the IPMA ICB.

In the next section I give a brief description of the contents of each chapter, and in the following section a brief description of knowledge areas not covered in this book.

THE GOWER HANDBOOK OF PROJECT MANAGEMENT

The book consists of four parts

- the first describes projects and the context within which they take place, including projects and programs
- the second part describes the functions that a project manager has to perform in execution of the project
- the third part describes the process that needs to be followed in managing the project
- the fourth part describes how to manage the people

PART 1: PROJECTS

The first part of the book describes issues that relate to why projects exist, their nature and the nature of project management. We also consider why organizations undertake projects, how they contribute to the achievement of corporate strategy, and how they adopt strategies for undertaking projects, including the adoption of program and portfolio management.

Chapter 2: Implementing strategy through projects: Organizations undertake projects and programs to achieve beneficial change. They need to do something differently than the way it has been done in the past, and so they undertake projects and programs to develop new facilities and assets and implement the new way of working, and those new facilities will give the organization benefit and help it achieve its development objectives.

Chapter 3: Managing programs of projects: Often an organization will undertake an extended program of change, beyond the scope of a single project. They need to undertake several related projects to achieve their overall change objectives. To achieve the best results the organization should manage those

<i>Gower Handbook of Project Management</i>	<i>APM BoK, 5th edition</i>	<i>PMI® Guide to the PMBoK®, 3rd edition</i>	<i>IPMA ICB</i>
<i>4th edition, Chapter</i>	<i>APM, 2006</i>	<i>PMI, 2004</i>	<i>IPMA, 2006</i>

1. Introduction

Projects

2. Implementing strategy	1.5 Project sponsorship	2.3 Organizational influences	3.06 Business
3. Managing programs	1.2 Program management		3.02 Program orientation
4. Managing portfolios	1.3 Portfolio management		3.03 Portfolio orientation
5. Projects and project management	1.1 Project management	1.2 What is a project	3.01 Project orientation
		1.3 What is project management	
6. Success and strategy	2.1 Project success and benefits management		1.01 Project management success
7. Processes and procedures	6.9 Methods and procedures	3 Project management processes	3.04 Project, program and portfolio implementation

8. Systems	3.7	Information management and reporting		1.17	Information and documentation
9. The project office	1.6	Project office			
10. Maturity and benchmarking					
11. Audits	6.6	Project reviews			
12. Managing context	1.4	Project context	1.6	Project management context	
	6.10	Governance of projects	2.3	Organizational influences	
Performance					
13. Managing benefit	5.1	Business case	2.3	Organizational influences	
14. Managing requirements	4.1	Requirements management	4.1	Develop charter	1.03 Project requirements and objectives
15. Managing scope and configuration	3.1	Scope management	4	Project integration management	1.10 Scope and deliverables
	3.5	Change control	5	Project scope management	1.15 Changes
	4.7	Configuration management			2.08 Results orientation
16. Managing value	2.3	Value management			
	4.5	Value engineering			

5 **Figure 1.1** The structure of this book and its relationship to the project management of bodies of knowledge of leading professional institutions *continued*

17. Managing quality	2.6	Project quality management	8	Project quality management	1.05	Quality
18. Managing project organization	6.7	Organization structure	9	Project human resource management	1.06	Project organization
	6.8	Organizational roles				
19. Managing the schedule	3.2	Scheduling	6	Project time management	1.11	Time and phases
	4.3	Estimating				
20. Managing cost	3.4	Budgeting and cost management	7	Project cost management	1.13	Cost and finance
	3.6	Earned value management				
	4.3	Estimating				
21. Managing resources	3.3	Resource management	6.3	Resource estimating	1.12	Resources
			9	Project human resource management		
22. Managing risk	2.5	Project risk management	11	Project risk management	1.04	Risk and opportunity
	3.8	Issue management				
23. Managing health and safety	2.7	Health, safety and environmental management			3.09	Health, safety, security and the environment
24. Managing the environment	2.7	Health, safety and environmental management			3.09	Health, safety, security and the environment

Process

25. The project life-cycle	6.1	Project life-cycles	2.1	The project life-cycle	
			3	Project management processes	
26. Project start	2.3	Project management plan	4.1	Develop project charter	1.19 Start-up
27. Proposal, feasibility, and design	4.2	Development	4.2	Develop initial project scope statement	
	6.2	Concept			
	6.3	Definition			
28. Project modelling	4.6	Modelling and testing			1.09 Project structures
29. Managing implementation, progress and performance	6.4	Implementation	4	Project integration management	1.16 Control and reports
	3.5	Change control			
30. Project close-out	6.56	Handover and close-out	4.7	Close project	1.20 Close-out

People

31. Human resource management	7.6	Human resource management	9.1	Human resource planning	3.08 Personnel management
32. Developing people	7.7	Behavioural characteristics	1.5	Areas of expertise	
	7.8	Learning and development			

Figure 1.1 The structure of this book and its relationship to the project management of bodies of knowledge of leading professional institutions *continued*

33. Enterprise pm capability					
34. Managing teams	7.2	Teamwork	9	Project human resource management	1.07 Teamwork
35. Leadership	7.3	Leadership			2.01 Leadership 2.02 Engagement and motivation
36. Managing stakeholders	2.2	Stakeholder management	2.2	Project stakeholders	1.02 Interested parties
37. Managing communication	7.1	Communication	10	Project communications management	1.18 Communication
38. Managing conflict	7.4	Conflict management			2.10 Consultation 2.11 Negotiation 2.12 Conflict and crisis
	7.5	Negotiation			
39. Managing culture					2.06 Openness 2.14 Values appreciation
40. Ethics	7.9	Professionalism and ethics			2.15 Ethics

Figure 1.1 *Concluded*

projects as an integrated program. The projects in a program contribute to a common, shared objective, or outcome.

Chapter 4: Managing portfolios of projects: Often an organization will be undertaking a portfolio of projects with unrelated objectives, but which need to draw on a common pool of resources (labour, money, information). To achieve the best results the organization should manage the portfolio in a coordinated way, prioritizing resources and coordinating interfaces between the projects. A portfolio of projects shares common inputs.

Chapter 5: Projects and their management: Projects are temporary organizations to which resources are assigned to do work to achieve beneficial change. Project management is the process which defines the objectives of the project, (both the change and the benefit it should deliver), and the means of obtaining the objectives, and then monitors progress towards their successful delivery. From these simple definitions we can derive most of the competencies required to manage a project.

Chapter 6: Project success and strategy: To achieve a successful outcome for a program, portfolio or project, the manager needs to develop a strategy for how he or she will manage it. First, the manager needs to identify how the stakeholders will judge successful achievement of the objective, and what key success factors will help to deliver those criteria. This will then form the basis of a strategy.

Chapter 7: Processes and Procedures: As we have seen, international standards have been developed which give guidance about successful methods of delivering program, portfolio and project objectives, (based on standard success criteria and success factors). Organizations should maintain standard procedures and guidelines based on international standards and their previous experience, and develop individual project procedures manuals for the projects they undertake, and job descriptions for project management professionals.

Chapter 8: Systems for project and program management: As part of implementing procedures, and managing the successful delivery of projects, an organization needs a system for monitoring and reporting progress on projects to be able to take corrective action where necessary. The systems will be based on standard and individual project procedures. They may be computer or paper based.

Chapter 9: The project office: Many organizations have a project or program office to administer the systems either for individual large projects, or all the projects in programs or portfolios they are undertaking.

Chapter 10: Maturity and benchmarking in the project-oriented organization:

The maturity of a project-oriented organization is a measure of its competence at undertaking its projects, a measure of its enterprise-wide project management capability. Competence can be measured at the individual, team, organizational or even societal level and maturity is a measure of competence at the last two of these. In order to judge its maturity and to improve its performance, an organization can benchmark its performance internally or against others.

Chapter 11: Audits and health checks:

Audits and health checks are undertaken for two reasons. The first is to ensure that a given project is progressing satisfactorily, in accordance with the systems and procedures, to deliver its objectives. The second is to learn from the success and failures of a completed project to improve the organization's standard procedures for future projects, to feed-back into improving organizational maturity. Audits are conducted by external assessors and health checks by the project team.

Chapter 12: Context:

Projects and programs take place in an external context, which creates the need for the project, influences people's perceptions of it, and can enhance or impede the successful delivery of the objectives. The analysis of these issues is sometimes called PESTLE analysis, (political, economic, social, technical, legal and environmental).

PART 2: PERFORMANCE

The second part of the book looks at what the project manager must do and produce. The parent organization undertakes the project to achieve beneficial change. In order to achieve that it must deliver some outputs or requirements, and they must be delivered within constraints of time, cost and quality. The project involves risks which must be managed, and particular risks are threats to health and safety and potential impacts on the environment.

Chapter 13: Managing benefits:

The parent organization undertakes the project to achieve development objectives, to achieve some business need. It is expected that the project will deliver benefit, and without that benefit the project is not worth doing. Not only does the parent organization need to define what the expected benefit is, it needs to make sure that it is actually achieved once the project is completed.

Chapter 14: Managing requirements:

To achieve that benefit the project must deliver certain outcomes, or requirements. Those requirements must be defined, and that initiates the project planning process. The requirements must also be delivered and converted into the expected benefits.

Chapter 15: Managing scope – configuration management: To achieve those requirements the project team needs to do work to deliver products. The products and their components need to be defined through a product breakdown structure, and the work to make and assemble those components identified through a work breakdown structure. Configuration management is a tool to control the identification and delivery of work and products.

Chapter 16: Value management: The benefits only have any value to the parent organization if they can be produced at a cost that allows it to make a profit. Further the higher the benefit for a given cost, or the lower the cost for a given benefit the better the project's value. Value management is a tool for optimizing the project's outcome.

Chapter 17: Managing quality: To perform effectively, the project's products must be delivered to certain standards. First, the product must perform to provide the functionality expected, and to solve the problem, deliver the benefit and value expected of it. It must also meet other performance requirements, or service levels, such as availability, reliability and maintainability, and have acceptable finish or polish.

Chapter 18: Managing project organization – structure and responsibilities: In order to be able to do the work, it is necessary to determine what people are required, the roles and responsibilities they will fulfil, what skills they need, and the numbers required. These people need to be structured into the temporary organization that is the project, and the relationship of that temporary organization with the parent organization identified.

Chapter 19: Managing resources: The actual resources required (money, materials and people), must be identified and estimated, and their assignment to the work managed.

Chapter 20: Managing cost: To be of value, the functionality must not cost more than a certain amount. Clearly the more benefit it delivers, the more that can be spent on its delivery. The cost of the product, and the value it gives, must be estimated, and the cost controlled within those limits while the work is done.

Chapter 21: Managing time: Likewise, to provide benefit, the project's products must be obtained within a certain time to satisfy the need, and to cover both interest and capital payments on the finance. Hence, the timing of the work must be managed. Sometimes very tight time constraints must be met, but normally they are more flexible. Also on many projects, the work of different

resources must be carefully coordinated, and that will also be achieved through the management of the timing of the work.

Chapter 22: Managing risk: Projects being unique, novel and transient are inherently risky. More so than the routine work of organizations. This is what differentiates project management from the management of normal operations. Risk management is therefore an essential part of project management.

Chapter 23: Managing health and safety: In all working environments, the safety and health of people doing the work must be of paramount concern to managers, mainly for moral reasons. However, a safe working environment usually results in more cost effective outcomes. Since some managers do not seem to behave ethically towards their employees, this area is now also tightly controlled by law.

Chapter 24: Managing the environment: The impact of the project on the environment must also be carefully managed. Most people sweep managing the environment in with health and safety. However, my view is that they are fundamentally different issues with different processes adopted to manage them.

PART 3: PROCESS

Because projects are transient, their delivery goes through a cycle of development, from germination of the idea, through initiation, design, and delivery, to commissioning, handover to the client, and close-out of the work. This cycle is known as the 'life-cycle'. Someone once suggested to me it should be called the 'life', since 'cycle' implied a return to the start. However, I think life-cycle is a good biological metaphor, as the project goes from germination through growth, maturity and eventual metamorphosis into a new and successful operation. As we progress through the life-cycle, the plans, and design of the product or objectives, are developed in increasing detail. We gain greater understanding of the objectives and how they will be delivered, and that feeds into increasing detail in the plans. Because we develop the lower level definition at successive stages of the life-cycle, the levels are essentially linked to the stages.

Chapter 25: The life-cycle: There are many versions of the life-cycle, but they all essentially contain the steps of germination of the idea, proposal and initiation, design and appraisal, mobilization of the team, execution and control, and integration of the team and their work, testing, commissioning and handover of the project's product and close-out of the work.

Chapter 26: Start-up: The difference between project start and -start-up has been likened to the difference between starting the engine of a car to the complex sequence of activities required to start the diesel engine of a ship. A complex sequence of activities are required to start the project, to mobilize the team, to initiate the project definition process, to obtain agreement to the project objectives and plan to deliver them.

Chapter 27: Proposal, initiation, feasibility and design: The problem the project is to solve (or opportunity it is to exploit), is identified. Several options are developed, functional designs produced, and respective costs and benefits estimated to the current level of accuracy. The best solution is chosen for further definition. A high level, strategic plan, for the design and execution of the project is developed. The information generated so far is incorporated into a Project Definition Report or Project Brief. The chosen solution is developed further. A systems design is produced, and the costs and benefits estimated in more detail. The project is appraised and if found acceptable, it is sanctioned. The information generated at this stage is incorporated into a Project Manual or Project Initiation Document.

Chapter 28: Project modelling: Projects are complicated systems, and managers cannot generally analyse all the aspects of a project in their head. Modelling can be useful to help managers understand their projects, and so lies at the heart at project planning and development. It can be particularly useful on complex projects.

Chapter 29: Implementation, progress and performance: Work is undertaken to deliver the project's products. The first step is to produce detailed plans to control execution, as opposed to the systems level plans required for appraisal. As work progresses, it must be measured and controlled to ensure the project delivers the required performance. A key feature of project management, which sets it apart from normal operations is the integrative function. Operations management emphasises discrete functions; project management integrated teams. This is in evidence throughout the life-cycle, but particularly at this stage. The work of the project members must be integrated, the work of the design, execution and commissioning teams must be integrated, the work of project team and client must be integrated.

Chapter 30: Project Close-out: The work of the project is brought to a timely and efficient conclusion. The product is tested and commissioned, and handed to the operations team, who must be trained in its use, and operational and logistical procedures must be put in place. The client ensures they receive the benefit

required to repay the project finance, and the contractor obtains sign off from the client and receives final payment. The project team is disbanded, and debriefed. The project performance is audited, and lessons learnt for future projects.

PART 4: PEOPLE

Project management may be viewed as a systems science or a social science. I believe it is more social science than systems science, but in most of what appears above you may have gained the impression that it is more systems science. This final part of the book redresses the balance and is primarily about the social science, managing the needs of all the people involved in the project. It was suggested I leave this out and make it a separate book. Gower published a spin-off book from the 3rd edition, *People in Project Management*, (Turner, 2003a), and so it was suggested I didn't need this part in the main handbook. However, I think projects don't exist without people, and so it was essential to include it. I could also see all the charges levelled at me that I don't care about the people if I didn't include it.

Chapter 31: Managing Human Resources in the project-based organization: Projects are unique, novel and transient, and hence standard Human Resource Management concepts do not apply to project-based firms. Every project requires a new structure, and every time a new project is created the human resource configuration of the parent organization changes. Thus, some of the core concepts of HRM need rethinking. There are three core concepts of HRM theory in particular which need novel approaches in a project organization. These are the selection of people to work for the organization, the management of their careers and their and the organization's learning and development. There are also three new processes required, the assignment of people to projects, their development on projects, and their dispersement after projects have been completed.

Chapter 32: Developing project management competence of individuals: To undertake its projects, an organization needs competent individuals. It needs to develop people competent in the technology of the project and people competent in the management of projects.

Chapter 33: Developing enterprise-wide project management capability: The organization also needs to be competent itself in the technology used and in the management of projects, and so needs to develop enterprise project management capability. The competence of the people is a component of this, but there are also other things the organization can do to develop its capability and to

innovate in the processes it uses. These include the use of procedures, reviews and benchmarking, knowledge management, and the development of a project management community.

Chapter 34: Managing teams: Project teams are formed to undertake a unique and novel task, and are transient in their existence. The team needs to be formed and raised to peak performance. This is part of the mobilization process. Achieving peak team performance is critical to project success. The team needs to be composed of a balanced set of individuals with complimentary strengths and weaknesses. The team also needs to be properly disbanded at the end of the project so that its members can look forward to their future work, and they need to be properly debriefed so that the organization can learn from their experiences.

Chapter 35: Leadership: Volumes have been written on the elusive quality of leadership, and volumes devoted to the question of whether leaders are born or made. My view is that the majority of people are born with inherent leadership skills, and they can learn to develop these. Understanding the skills and styles of good leadership can improve the performance of a project manager in leading the team and motivating the individuals in the team to great things. One of the most important skills of a good leader is to be able to communicate the vision for the project, and the process of achieving that vision.

Chapter 36: Managing stakeholders: The wider project team encompasses people beyond those people doing the work of the project. There are many people whose lives are affected by the project and its outcomes, and most of these have a view on the project. Some people view it positively, some negatively. Some can influence the outcome, some cannot. Where they view the project negatively, and can influence the outcome, they will work to undermine the project and that can lead to conflict. The project manager needs to communicate the vision, communicate the process, to win everybody over to the sense of the project. He or she also needs to negotiate everybody's involvement in the project, making them aware of how it can lead to positive outcomes for them, and what contribution is expected from them.

Chapter 37: Managing communication: Communication between the project manager and the client, between the client and the project manager and between both and the other stakeholders is essential for maintaining cohesion of the project team. The client in particular wants to be comfortable about project progress and to trust the project manager. The right type of communication from the project manager is essential to maintain that comfort and trust. But in order for the client to be able to trust the project manager, the latter must know what the

client wants and needs, and so communication in the opposite direction is also essential. Communication with all the stakeholders is essential for keeping them committed and resolving conflict.

Chapter 38: Managing conflict, persuasion and negotiation: Conflict often arises on projects, either because people have differences of opinion about the expected project outcomes, or because some people misunderstand or fear the expected outcomes, or because there are personality clashes. Unresolved conflict can be damaging to the project's performance and so must be managed. If people fear or misunderstand the expected project outcomes, then if they are properly explained they may be persuaded to accept them.

Chapter 39: Managing culture: The team is composed of many individuals, with different backgrounds. International teams are now common, and the project manager and team members need to be aware of cultural differences. However, there is a view that the cultural differences between different professions can be greater than that between nations. Hence even people working within a single country need to be aware of difference that can arise from a person's professional, religious, class, educational, gender, age and other backgrounds.

Chapter 40: Ethics: Several times I have said people should behave morally, especially with regard to health, safety and the environment. So often the law has to intervene. Experience shows that even though many people think the moral road is the more expensive road, it often leads to greater rewards, and on earth, not just in heaven. The ethical approach usually leads to the greater good for everyone, and people respect that and respond in like fashion.

OTHER PROJECT MANAGEMENT KNOWLEDGE AREAS

In compiling the book, choices had to be made about what was to be included. I said above that it was suggested I leave out the part dealing with people, but I decided people are so essential to project management I would include it. However, I did decide to leave out the commercial and contractual parts. (I have included the four Ps, projects, performance, process and people, but left out the two Cs, commercial and contractual.) People might say both those issues are just as important as the people issues. Projects cannot happen without finance and contracts. That is true, but I thought they were of less general interest. Also I thought I would be less exposed to criticism if I left them out. Both were included in the 3rd edition, and the contractual issues have been included in a spin-off book, *Contracting for Project Management*, (Turner, 2003b). For completeness of this

overview of the project management body of knowledge, I include brief descriptions of these areas.

COMMERCIAL

There are several commercial and financial issues relating to the way the project is financed.

Project appraisal: The value for the project must be appraised, by comparing projected cash inflows (revenues and savings) to expected cash outflows (costs) using investment appraisal techniques.

Finance: Finance must be raised from any of a number of sources. The simplest is to obtain money from the parent organization. Alternatively, money can be obtained from other equity shareholders, or as loans from banks. There are also a number of specialist sources of finance. The costs and benefits of different sources of finance must be compared, and a financial package produced for the project.

Taxation: Even rich people have to pay their taxes. It is important to understand the tax laws of the country. What counts as capital expenditure and what as revenue? What tax exemptions and grants are available? How can capital exemptions be worked to the best advantage? How can expenditure be phased to best tax advantage?

Insurance: The sponsor's investment needs to be protected against unexpected loss. Some risks are insurable, such as fire, civil strife, transport losses. Severe weather can be insured, but not inclement weather. Projects may be insured with insurance companies. However, there are also ways of insuring the projects, such as setting aside a contingency in the budget, or buying currency futures. That is related to risk management.

CONTRACTUAL

On anything but the smallest projects, the sponsor will not have the necessary resources in-house to undertake the project. Hence, it is almost always necessary to buy in external goods and services. On a project there is an essential difference between the procurement of a service, such as works or labour, which is used over an extended period of time, and the procurement of goods and materials, which are delivered at an instant in time. The term 'procurement' tends to be used for the latter and 'project contract management' for the former, even though both involve procurement and contracts.

Project contract management: The client must develop a contract strategy, deciding the best form of contract from several available to appropriately motivate the contractor and govern the relationship between them. They must choose an appropriate contractor to do the work and govern the relationship with the contractor. Contractors must bid for work and administer the relationship with the client. Both the client and contractor need ways of managing variations, to minimise claims arising, and to try to prevent claims becoming disputes.

Procurement: The word 'procurement' strictly applies to the purchasing of all goods and services, but in projects it does tend to be limited to the procurement of goods and materials. Similar processes apply as applied to the selection of contractors as described above, but at a more detailed level.

Contract law: In most countries the law of contract involves concepts of offer, acceptance, consideration, functions, validity, mistakes, terms and conditions, termination and remedies.

GENERAL MANAGEMENT KNOWLEDGE AREAS

Most versions of the project management body of knowledge also deal with some of the general management skills required by project managers. Some of these are directly related to knowledge topics above, the knowledge topics above just being their interpretation in the unique, novel and transient context of projects or project-based organizations.

Human Resource Management: There are many elements of human resource management, terms and conditions of employment, industrial relations, career development, work and organizational design, organizational learning, leadership, team development, individual empowerment and motivation.

Marketing and Customers: Marketing is the process by which an organization identifies its customers, and the products they want to buy, and tries to influence their buying habits. There are ways of identifying the marketing mix (the four P's: product, price, promotion and place of sale), and the product portfolio, and making improvements to both. Marketing is significant to projects in two ways. The project-based firm, selling bespoke products and services, needs to identify its customers and the products and services they want to buy, like anyone else. In routine organizations, the marketing process will lead to the identification of new products, technologies or organizational structures needed to service the market, and the implementation of those changes will be undertaken through projects, (or at least it ought to be).

Operations: Above we have identified the processes required to manage projects. Organizations also need to define the processes required to manage their routine operations.

Information Technology: I talked above about identifying the information management needs of projects. Organizations need to identify the information needs of all their business processes across all areas of management and all functions.

Finance and Accounting: Organizations must manage the cash. Firms in the private sector need to generate cash to operate and to grow, and they need to make profits to provide returns to shareholders. Organizations in the public and voluntary sectors need to ensure that they do not over-spend their budgets, and ensure that they get value for money. That will not happen by accident, it must be planned and controlled.

Innovation, technology and change: Technology may be viewed as part of operations and innovation part of marketing. I have included this separately, because I see operations as being about defining the business processes. The knowledge of the technology that adds value for the organization is a key part of its competitive advantage, and so that knowledge, that technology, should be managed carefully, and separately from routine operations. Innovation and change are essential to maintain competitive advantage. Innovation usually refers to improvements in the products and technology of the organizations, and change to improvements in the process and effectiveness of the organization.

Governance: Absolutely nothing happens in an organization without governance. In a narrow sense governance (in the private sector) is the legally defined roles of directors and the company secretary. In a wider sense governance is the process by which the organization defines its objectives, and the means of obtaining those objectives and the means of monitoring performance. It is strategic planning and implementation through projects, and it is leadership (communicating the vision, communicating the process).

Strategy: At the end we are back where we started. Projects are undertaken to help organizations deliver their strategic plans. The strategic planning process is essential for the survival of organizations, and it is the strategic planning process that generates projects. There is not one without the other, and there is no organization without either.

REFERENCES AND FURTHER READING

- APM, 2006, *APM Body of Knowledge*, 5th edition, High Wycombe, UK: Association for Project Management.
- AIPM, 2004, *National Competency Standards for Project Management*, Hawthorn, VA, AU: Innovation and Business Skills Australia.
- ECITB, 2003, *National Occupational Standards for Project Management*, Kings Langley, Herts, UK: Engineering Construction Industry Training Board.
- IPMA, 2006, *ICB: IPMA Competence Baseline*, Zurich. CH: International Project Management Association.
- ISO, 2004, *ISO 10,006: Quality Management – Guidelines to Quality in Project Management*. 2nd edition, Geneva, CH: International Standards Organization.
- PMI, 2004, *The Guide to the Project Management Body of Knowledge*, 3rd edition, Newtown Square, PA: Project Management Institute.
- Turner, J.R., (ed) 2003a, *People in Project Management*, Aldershott, UK: Gower.
- Turner, J.R., (ed) 2003b, *Contracting for Project Management*, Aldershott, UK: Gower.