NEIL PEARSON • EW LARSON • CF GRAY

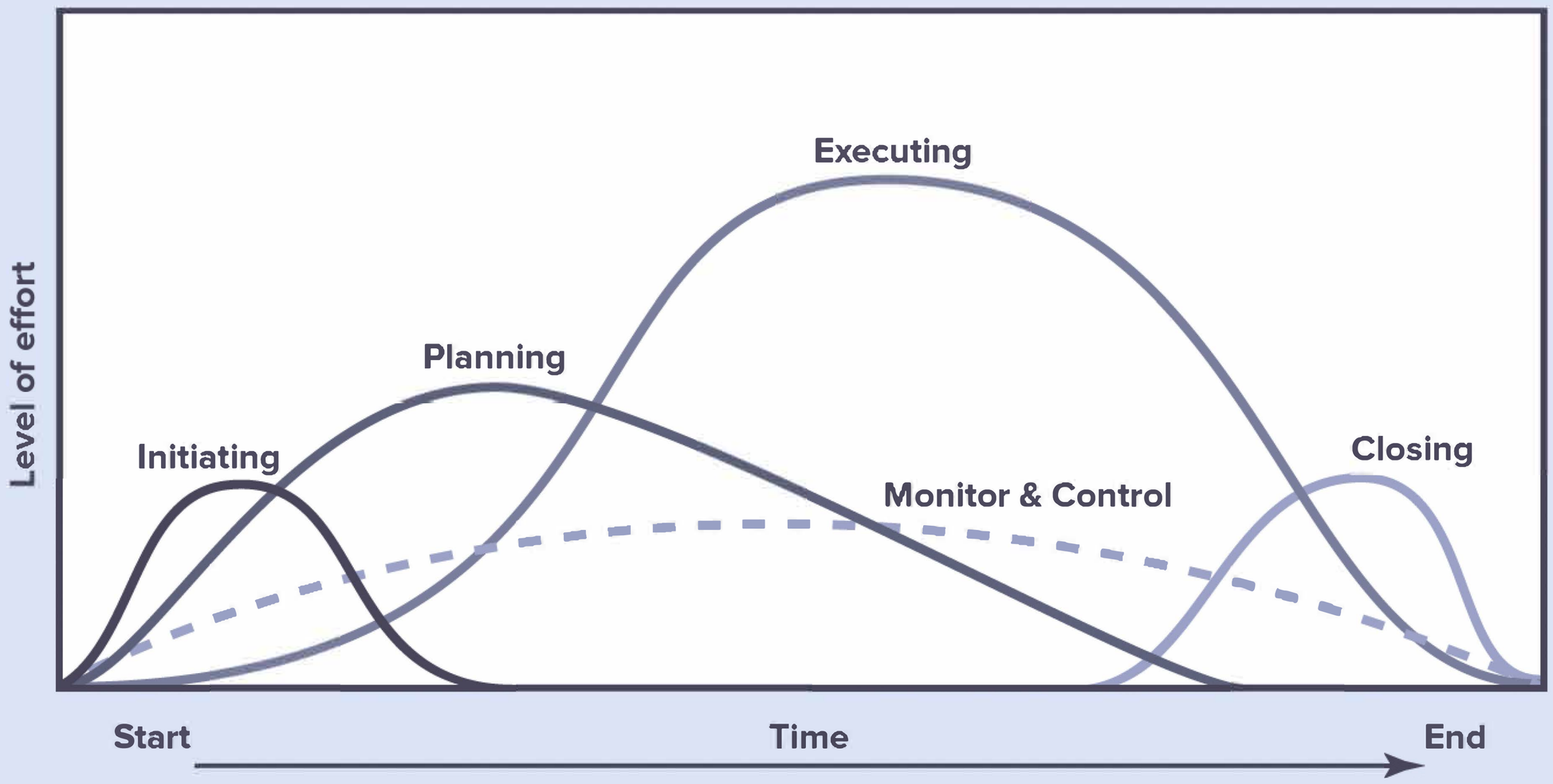
2e

PROJECT MANAGEMENT IN PRACTICE

For Certificate IV and Diploma courses

Mc Graw Hill Education

Project Life Cycle



Initiating

- Scoping the project (including project charter and sign-off)
- Gaining key stakeholder understanding, involvement and backing
- Establishing the project's governance arrangements (including the change process)
- Scope approvals

Planning

- Project kick-off
- Establishing the initial project team
- Developing the detailed Project Management Plan (PMP) and sub-plans for: Scope, Time, Cost, Quality, Human Resources, Communications, Risk and Procurement
- PMP approvals

Executing

- Building and managing the project team
- Executing the Project Management Plan and all sub-plans for phase/stage
- Stakeholder management and project communications
- Project meetings and action tracking
- Phase/stage reviews and change/progress monitoring
- Deliverable acceptance and sign-off

Closing

- Final project handover to the customer and sign-off
- Financial reconciliation and contract closure
- Final project reporting
- Capture of final lessons learned (retrospectives)
- Post Implementation Reviews (PIR)
- Project celebrations and final project communications
- Disbanding the project team

Monitor & Control

- Project reporting
- Monitoring for changes/variations to the project
- Ensuring ongoing business need and justification for the project
- Quality control and corrective action taking

Acronyms

ALARP As Low As Reasonably Practicable

AON Activity-on-Node

BATNA Best Alternative To a Negotiated Agreement

BoM Bill of Materials

BOO Build, Own, Operate

BOOT Build-Own-Operate-Transfer

BOT Build, Operate, Transfer

CAPM Certified Associate in Project Management

CCPM Critical-Chain approach to Project planning and Management

CI Configuration Item

COTS Commercial Off The Shelf

CPAF Cost Plus Award Fee

CPFF Cost Plus Fixed Fee

CPI Cost Performance Index

CPIF Cost Plus Incentive Fee

CPM Critical Path Method

CSF Critical Success Factors

EF Early Finish

EP Elevator Pitch

EQ Emotional Quotient

ERP Enterprise Resource Planning system

ES Early Start

FFA Force Field Analysis

FFP Firm Fixed Price

FP-EPA Fixed Price with Economic Price Adjustment

FPIF Fixed-Price Incentive Fee

INVEST Independent, Negotiable, Estimable, Small, Testable

ITB Invitation To Bid

ITT Invitation To Tender

KISS Keep It Simple, Stupid

LF Late Finish

LS Late Start

MBWA Management By Wandering Around

MoSCoW Must have, Should have, Could have, Won't have

NGT Nominal Group Technique

NIH Not Invented Here

NPV Net Present Value

OBS Organisation Breakdown Structure

OCM Organisational Change Management

PERT Program Evaluation and Review Technique

PCI Per cent Complete Index

PDM Precedence Diagram Method Technique

PIR Post-Implementation Review

PMIS Project Management Information Systems

PMP Project Management Professional

PO Project Office

RBS Risk Breakdown Structure

RCA Root-Cause Analysis

RFI Request for Information

RFP Request for Proposals

RFQ Request for Quotation

RFT Request for Tender

RM Responsibility Matrix

RPN Risk Priority Number

SL Slack

SME Subject Matter Expert

SOAs Standing Offer Arrangements

SWOT Strengths, Weaknesses, Opportunities, Threats

T&M Time and Material contracts

VoC Voice of the Customer

WBS Work Breakdown Structure

WIIFM What's in it for me?

Also refer to Table 11.2 for a list of EVM acronyms.

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Preface

SINCE YOU ARE READING THIS TEXT, you have made a decision that learning more about project management will have a positive impact for you. You are absolutely right! Project management has become an organisation-wide core competency; nearly every manager, regardless of discipline, is involved in projects. This text is designed to provide project managers and prospective project managers with the knowledge and skills that are transferable across industries and countries.

Our motivation for writing this text was to provide students and practitioners alike with a holistic, integrative view of project management. A holistic view focuses on how projects contribute to the strategic goals of the organisation. The linkages for integration include the process of selecting projects that best support the strategy of a particular organisation and that in turn can be supported by the technical and managerial processes made available to bring projects to completion. The goals for prospective project managers are to understand the role of a project in their organisation and to master the project management tools, techniques and interpersonal skills necessary to orchestrate projects from start to finish.

The role of projects in organisations is receiving increasing attention. Projects are the major tool for implementing and achieving the strategic goals of the organisation. In the face of intense, worldwide competition, many organisations have reorganised around a philosophy of innovation, renewal and organisational learning to survive. This philosophy suggests a structure that is flexible and project driven. Project management has developed to the point where it is a professional discipline having its own body of knowledge and skills. Today it is nearly impossible to imagine anyone at any level in the organisation who would not benefit from some degree of expertise in the process of managing projects.

AUDIENCE

This text is written for a wide audience. Although it is aligned to the Australian VET sector training package for the Certificate IV and Diploma of Project Management and the Project Management Body of Knowledge (currently in its sixth edition), it covers concepts and skills that are used by managers to propose, plan, secure resources, budget and lead project teams to successful completion. The text should prove useful to students and prospective project managers in helping them understand why organisations have developed a formal project management process to gain a competitive advantage. Readers will find the concepts and techniques discussed in enough detail to be immediately useful in any project situation. Practising project managers will find the text to be a valuable guide and reference when dealing with typical problems that arise in the course of a project.

Managers will also find the text useful in understanding the role of projects in the missions of their organisations. Facilitators of VET Training may use this text as a replacement to course notes, as the text is aligned to and covers all subject material at the Certificate IV and Diploma levels. Members of the Project Management Institute will find the text is well structured to meet the needs of those wishing to prepare for PMP (Project Management Professional) or CAPM (Certified Associate in Project Management) certification exams.

The text has in-depth coverage of the most critical topics found in PMI's Project Management Body of Knowledge (PMBOK®). People at all levels in the organisation assigned to work on projects will find the text useful not only in providing them with a rationale for the use of project management tools and techniques but also because of the insights they will gain on how to enhance their contributions to project success.

Our emphasis is not only on how the management process works but, more importantly, on why it works. The concepts, principles and techniques are universally applicable. That is, the text does not specialise by industry type or sector. Instead, the text is written for the individual who will be required to manage a variety of projects in a variety of different organisational settings. In the case of some small projects, a few of the steps of the techniques can be omitted, but the conceptual framework applies to all organisations in which projects are important to

survival. The approach can be used in pure project organisations such as construction, research and engineering consultancy. At the same time, this approach will benefit organisations that carry out many small projects while the daily effort of delivering products or services continues.

CONTENT

In this Australian edition of the book, we have responded to valuable feedback received from both students and teachers. As a result of this feedback, the following changes have been made:

- Extended the coverage of all ten areas of the sixth edition of the Project Management Body of Knowledge (2017), with a new chapter covering the aspects of project integration management (chapter 6).
- Further recognition and explanation of other project management methodologies such as Scrum (Agile), PRINCE2, ISO21500:2012, APM, Praxis and Lean Six Sigma.
- A new chapter covering Scrum in greater detail (chapter 3).
- Localisation of the text to the Australian marketplace, including mapping to the VET competency framework for the Certificate IV and Diploma of Project Management.
- Development of a number of additional online resources to provide students and facilitators (teachers) with a rich set of content.
- Complete update of content to bring it in line with current project management thinking.
- Coverage of key project management documents (artefacts) typical of most projects managed under a life cycle approach.
- Access to a number of online project management templates to visually display the structure and content of such project management documents.
- Greater consideration of the integrative nature of project management.

Overall, the text addresses the major questions and issues the authors have encountered over their 60 combined years of teaching project management and consulting with practising project managers in domestic and overseas environments.

The following questions represent the issues and problems practising project managers find consuming most of their effort:

- What is the strategic role of projects in contemporary organisations?
- How are projects prioritised?
- What organisational and managerial styles will improve chances of project success?
- How do project managers orchestrate the complex network of relationships involving vendors, subcontractors, project team members, senior management, functional managers, and customers that affect project success?
- What factors contribute to the development of a high-performance project team?
- What project management system can be set up to gain some measure of control?
- How do managers prepare for a new international project in a foreign culture?
- How does one pursue a career in project management?

Project managers must deal with all these concerns to be effective. All of the issues and problems listed above represent linkages to an integrative project management view. The chapter content of the text has been placed within an overall framework that integrates these topics in a holistic manner, and cases and snapshots are included from the experiences of practising managers. The future for project managers appears to be promising.

Brief contents

Contents

PART 4 Project wrap-up

BONUS ONLINE CONTENT

The following additional material is available online via McGraw-Hill Connect as well as at www.mhhe.com/au/pearson2e:

- Project management career paths (Chapter 20)
- Case studies, detailed competency mapping, video playlist, teacher implementation guide, PowerPoints, testbank questions and solutions to end-of-chapter questions.

About the authors

NEIL PEARSON

NEIL PEARSON (PhD) is a freelance corporate educator and management consultant. Neil teaches at various universities, corporate businesses and professional training institutes, and is highly versed in a number of subjects including portfolio, program and project management, strategy, Lean Six Sigma and Scrum.

Neil holds a PhD in a business and ICT-related discipline, having studied project management in both his bachelor and masters degrees. He also has an Advanced Diploma of Project Management, obtained through the Australian vocational education system and has facilitated many hundreds of training sessions at the vocational level (Certificate IV, Diploma and Advanced Diploma) in Australia. He is also a Blue Ocean Strategy affiliate. Throughout his long and distinguished career in program and project management Neil has inspired and led many professional teams, working across three continents: the UK, North America and Australia. His experience includes a variety of organisations including large corporates, small to medium enterprises, educational establishments and government-related entities.

Neil can be contacted at info@neilpearson.com. He also runs recognition of prior learning (RPL) preparation courses based on the McGraw-Hill Education resource. Please visit www.projectmanagementinpractice.world for more information.

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ERIK W. LARSON is Professor of Project Management at the College of Business, Oregon State University. He teaches executive, graduate, and undergraduate courses on project management, organisational behaviour and leadership. His research and consulting activities focus on project management. He has published numerous articles on matrix management, product development and project partnering. He has been honoured with teaching awards from both the Oregon State University MBA program and the University of Oregon Executive MBA program. He has been a member of the Portland, Oregon, chapter of the Project Management Institute since 1984. He is a certified project management professional (PMP) and Scrum Master.

ORIGINATING AUTHOR: CLIFFORD F. GRAY

CLIFFORD F. GRAY is Professor Emeritus of Management at the College of Business, Oregon State University. His research and consulting interests have been divided between operations management and project management. He has published numerous articles and has conducted research in the International Project Management Association.

Cliff has been a member of the Project Management Institute since 1976 and was President of Project Management International, Inc. 1977–2005. He received his BA in economics and management from Millikin University, MBA from Indiana University, and doctorate in operations management from the College of Business, University of Oregon. He is a certified Scrum Master.

Acknowledgments

No activity is carried out in isolation; to Karen for her exemplary commitment to our family; and our children for their continued inspiration to achieve.

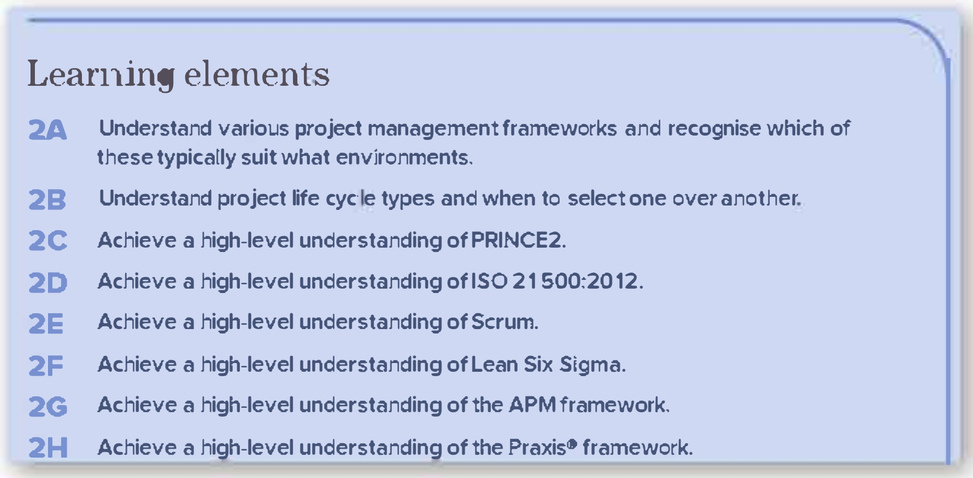
Thanks must go to David Freeman, Peter Bail, Owais Malick, Kim Goriss, and Renju Jacob Philip for their review of this text and their invaluable comments and suggestions.

Neil Pearson

Text at a glance

THIS TEXT IS DESIGNED to provide a holistic integrative view of project management for students and practitioners. We want students to get the most from this book, and we realise that students have different learning styles and study needs. We therefore present a number of study features to appeal to a wide range of students which are designed to test their knowledge of theory and practical skills. The text also includes a variety of real-life case studies and examples to help illustrate the key topics in each chapter.

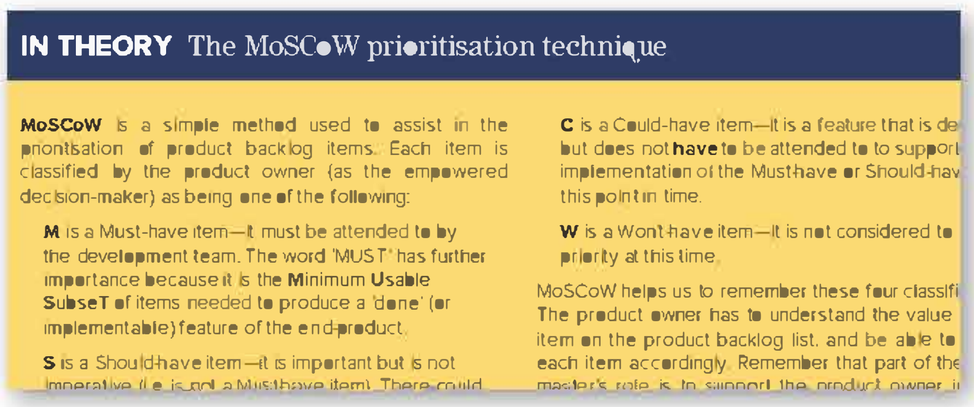
▼ Learning elements Each chapter begins with a number of learning elements that map out the important topics and learning goals to help guide students through the chapter. These Learning elements are mapped against the relevant heading level.



Learning elements

- **2A** Understand various project management frameworks and recognise which of these typically suit what environments.
- **2B** Understand project life cycle types and when to select one over another.
- **2C** Achieve a high-level understanding of PRINCE2.
- **2D** Achieve a high-level understanding of ISO 21500:2012.
- **2E** Achieve a high-level understanding of Scrum.
- **2F** Achieve a high-level understanding of Lean Six Sigma.
- **2G** Achieve a high-level understanding of the APM framework.
- **2H** Achieve a high-level understanding of the Praxis® framework.

▼ In theory This feature explains a tool or a technique widely used in the field of project management. Some of them provide a fascinating background to the rationale behind the management and teamwork strategies described in this book and give an insight into the way these strategies are developed and verified.



IN THEORY The MoSCoW prioritisation technique

MoSCoW is a simple method used to assist in the prioritisation of product backlog items. Each item is classified by the product owner (as the empowered decision-maker) as being one of the following:

M is a Must-have item—it must be attended to by the development team. The word 'MUST' has further importance because it is the **M**inimum **U**sable **S**ubse**T** of items needed to produce a 'done' (or implementable) feature of the end-product.

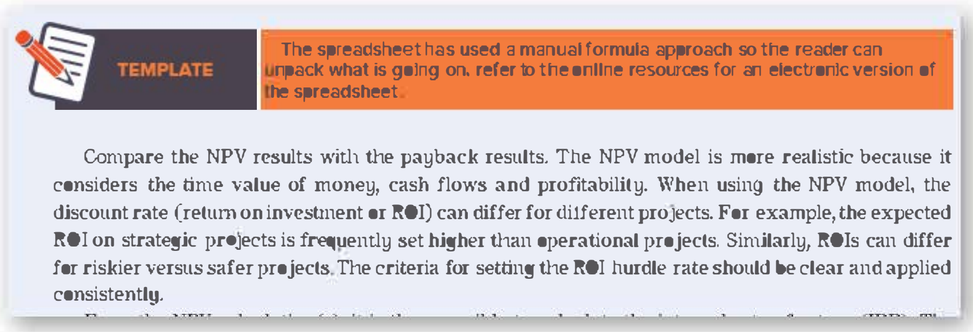
S is a Should-have item—it is important but is not imperative (i.e. is not a Must-have item). There could

C is a Could-have item—it is a feature that is de but does not **have** to be attended to to support implementation of the Must-have or Should-hav this point in time.

W is a Won't-have item—it is not considered to priority at this time.

MoSCoW helps us to remember these four classifi The product owner has to understand the value item on the product backlog list, and be able to each item accordingly. Remember that part of the master's role is to support the product owner i

▼ Template At appropriate junctures in selected chapters, a template signpost signals a project template available. These templates are made available online.



TEMPLATE The spreadsheet has used a manual formula approach so the reader can unpack what is going on, refer to the online resources for an electronic version of the spreadsheet.

Compare the NPV results with the payback results. The NPV model is more realistic because it considers the time value of money, cash flows and profitability. When using the NPV model, the discount rate (return on investment or ROI) can differ for different projects. For example, the expected ROI on strategic projects is frequently set higher than operational projects. Similarly, ROIs can differ for riskier versus safer projects. The criteria for setting the ROI hurdle rate should be clear and applied consistently.

SNAPSHOT FROM PRACTICE Apple's strategy

When Steve Jobs returned to Apple Computer as its CEO in 1997, he became strikingly successful in developing a turnaround strategy that developed new markets and increased market share. It all began with a strict adherence to the mission statement:

> Apple is committed to bringing the best personal computing experience to students, educators, creative professionals and consumers around the world through its innovative hardware, software and Internet offerings.

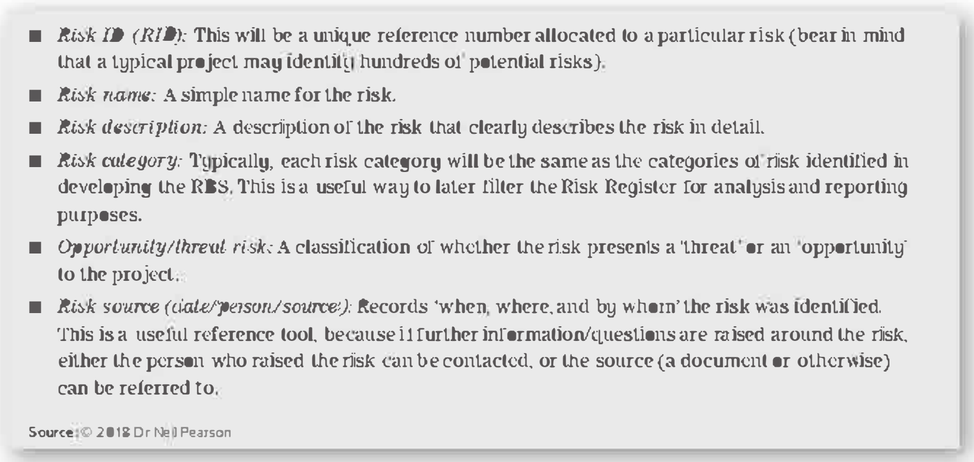
The thrust of this turnaround strategy included mass customisation and targeting market segments. Apple's primary competitive advantage is that it controls both the hardware and software aspects of most of its products. The vision, coupled with this strong strategic advantage, allows Apple to offer innovation in hardware, software and internet offerings. Many product strategies were

Figure 4.3 An array of Apple devices

Source: Alexey Boldin/Shutterstock.com

- high quality and innovative
- common architecture (which fits most products

▲ Snapshots from practice A series of short case studies illustrating real-life project management problems and creative solutions. The snapshots provide a fascinating insight into recent projects from Australia as well as internationally and give practical examples of how the key topics discussed in the text play out in the real world context.

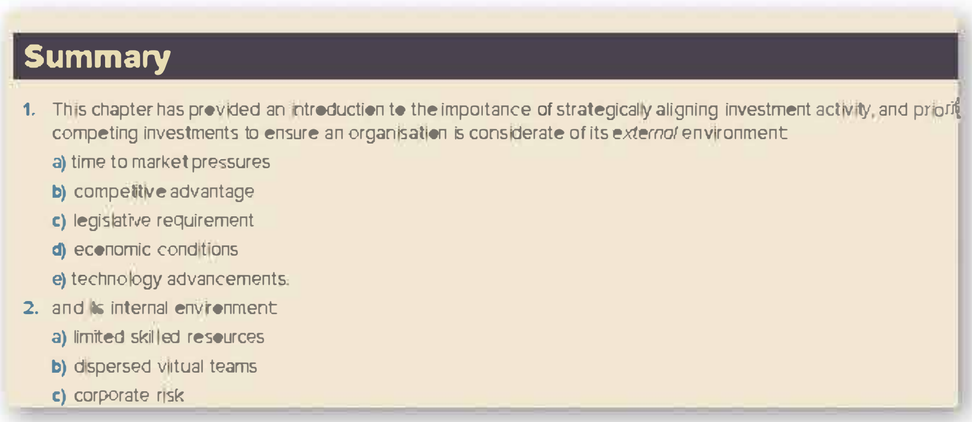


- *Risk ID (RID):* This will be a unique reference number allocated to a particular risk (bear in mind that a typical project may identify hundreds of potential risks).
- *Risk name:* A simple name for the risk.
- *Risk description:* A description of the risk that clearly describes the risk in detail.
- *Risk category:* Typically, each risk category will be the same as the categories of risk identified in developing the RBS. This is a useful way to later filter the Risk Register for analysis and reporting purposes.
- *Opportunity/threat risk:* A classification of whether the risk presents a 'threat' or an 'opportunity' to the project.
- *Risk source (date/person/source):* Records 'when, where, and by whom' the risk was identified. This is a useful reference tool, because if further information/questions are raised around the risk, either the person who raised the risk can be contacted, or the source (a document or otherwise) can be referred to.

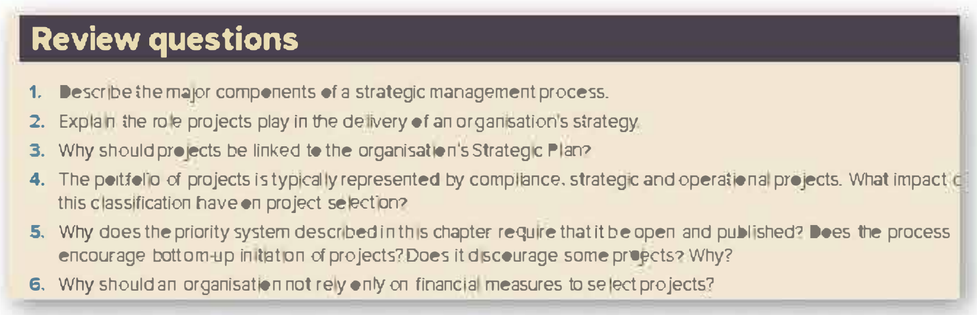
Source: © 2018 Dr Neil Pearson

▲ In-text highlights This feature depicts the content that has been developed exclusively by the lead author, Dr Neil Pearson. This content appears within his commercial templates (available at www.projectmanagementinpractice.world) and reflects real world practices, techniques and analysis.

END OF CHAPTER

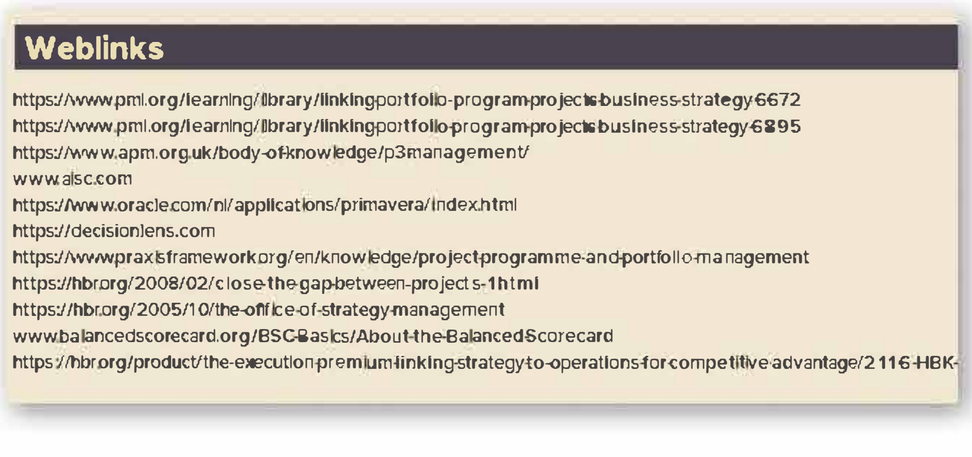


▲ Chapter summary Each chapter contains a summary of the key points and topics in an easily digestible format, perfect for revision or to remind the student of the important topics in each chapter.

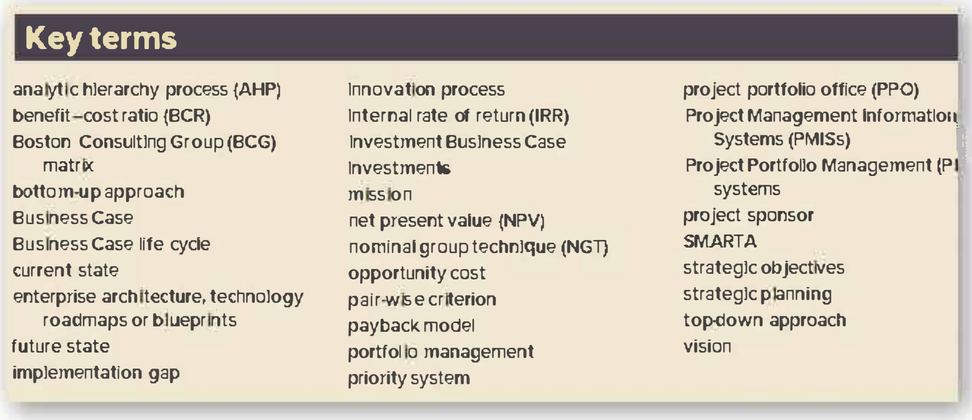


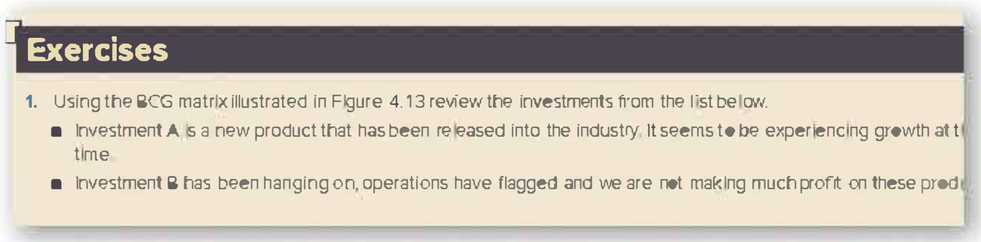
▲ Review questions These are found at the end of each chapter and are designed to get students to reflect on the important topics in each chapter and to ensure students have understood them.

▼ Weblinks Websites mentioned throughout the text are listed at the end of each chapter as an easy reference guide for students. These sites can be explored to undertake additional research and to deepen understanding.

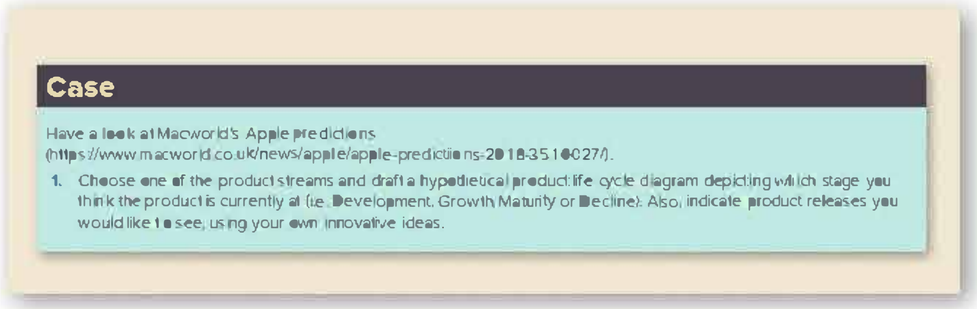


▼ Key terms Within each chapter key terms are highlighted the first time they appear. Key terms are defined in the text. For added reference, there is a comprehensive list of key terms at the end of each chapter and further definitions of project management terms may be found in the glossary.





▲ Exercises A list of exercise questions is also found in each chapter. These test students on more specific skills and knowledge that have been covered throughout the chapter. Answers to selected exercises are provided online.



▲ Cases Selected chapters contain in-depth case studies which are designed to immerse the student in detailed, simulated projects and get them thinking about the challenges and potential solutions for each unique case. Each case comes with a series of exercises and tasks for the student to complete which mimic the considerations and decisions a project manager would have to make.

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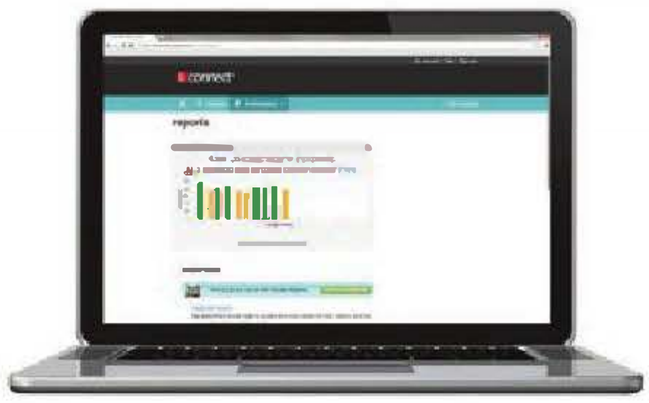

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Text overview

THIS TEXT IS WRITTEN TO provide the reader with a comprehensive, integrative understanding of the project management process. The text focuses both on the science of project management and the art of managing projects.

CHAPTER 1 is a general introductory chapter, providing a wide background to the subject of project management. Why we do it and what it involves. Chapter 1 sets the scene for all chapters in the text and introduces the concept of using a lifecycle approach to project management. The chapter also defines and explains the difference among the terms 'Standards', 'Frameworks' and 'Methodologies'. Examples of projects undertaken by companies like Tesla Motors®, Apple® and how these projects are important to their future.

CHAPTER 2 introduces a number of project management frameworks and methodologies. Although the bulk of this text is based on the Project Management Institute's Project Management Body of Knowledge (PMBOK), it is important for project managers to have a high level understanding of key frameworks and methodologies currently present in the marketplace; and an understanding of the key features each offers. Included in this chapter is a discussion on PRINCE2®, Scrum (Agile), Praxis®, APM, ISO 21500:201 and Lean Six Sigma, in addition to a more detailed overview of the PMI's life cycle approach and the PMBOK sixth edition.

CHAPTER 3 is a new chapter that provides an extended narrative of the Scrum approach, roles, events and artefacts. It includes examples of up-to-date techniques and tools commonly experienced in a Scrum project environment.

CHAPTER 4 focuses on how organisations go about evaluating and selecting projects. Special attention is devoted to the importance of linking project selection to the strategic objectives of an organisation. Included in this chapter is the preparation and use of the business case prior to project selection and during the life of a project. The chapter also considers project prioritisation and portfolio and program management as a backdrop to the selection of projects.

CHAPTER 5 reviews the setting within which most projects exist, that is, the organisation. The different types of project structures are introduced, ranging from functional and matrix to projectised. This is supplemented with a discussion on the influence of the organisational culture on the project environment.

CHAPTER 6 is a new chapter that takes the subject of project integration management and outlines the key activities critical to ensuring an integrative approach to managing a project. The chapter also includes dot-point summaries for each knowledge area with examples of integrative activities.

CHAPTER 7 deals with defining and gaining approval for the scope of the project and the development of the project's Work Breakdown Structure (WBS). Included in this chapter is a discussion on the importance of having a change process in place from the outset of the project.

CHAPTER 8 details the challenge of formulating resource, cost and time estimates. The chapter utilises the information from the WBS to arrive at a project cost and duration. This is then further extended in **CHAPTER 9** and **CHAPTER 10**, where a detailed review of project schedule management and project cost management is carried out.

CHAPTER 11 brings together the scope, time and cost chapters from a performance and monitoring perspective. This chapter introduces the topic of project performance reporting with a focus on Earned Value Management (EVM).

CHAPTER 12 considers the topic of project quality management. Here the importance of specifying quality is discussed (a departure from the phrase 'fitness for purpose'); along with the discrete activities around ensuring Quality Assurance (QA) and Quality Control (QC) is defined and applied to the project environment.

CHAPTER 13 assesses how resources (human, financial, materials and other) are identified, allocated and managed in a project environment.

CHAPTER 14 takes a look of the sociocultural side of project management, covering aspects such as the role and skills of the project manager. The chapter then focuses on the core project team; it combines the latest information on team dynamics with leadership skills/techniques for developing a high-performance project team. Included is an introduction to servant leadership, how the approach is leveraged in a Scrum environment and its applicability to the 'traditional' project manager.

CHAPTER 15 takes a more in-depth look at stakeholders from the identification of stakeholders, to the analysis of the stakeholders, through to some of the complexities in managing stakeholders on a day-to-day basis. This chapter also covers the importance of understanding organisational change management as a project manager, and introduces the topic of stakeholder co-creation—a form of cooperation in which all participants (stakeholders) influence the process and the result.

CHAPTER 16 is concerned with planning and developing a communications strategy for the project, the increasing role and significance of stakeholder management; in addition to the identification, scheduling and development of communications across the myriad mediums now available to the project manager. The task of managing project information systems is also considered in this chapter.

CHAPTER 17 is all about risk—beginning with the context of risk within which the organisation operates and how this influences the project environment. This is followed by an extensive discussion on the components and tools used in each part of a mature risk management standard—that of ISO 31000:2018 Risk management—Principles and guidelines.

CHAPTER 18 reviews the procurement aspects of project management. Procurement activities start from the Initiation stage of the project with the identification of long-lead time items and large capital items. The Procurement Management Plan is introduced along with the different types of tenders and a typical contract negotiation process.

CHAPTER 19 brings the project life cycle to a close, with a discussion on project closure. Covering aspects of financial, human and project reporting. This chapter also takes a more in-depth look at lessons learned.

CHAPTER 20 (online) provides insights into project management as a career.

PMBOK and competencies matrix

Book Chapter	BSB41515 Certificate IV in Project Management Practice Release 3	BSB51415 - Diploma of Project Management (Release 1)	PMBOK
Chapter 1 Modern project management	**BSBPMG417** Apply project life cycle management processes (release 3) (E)	**BSBPMG511** Manage project scope (release 1) (C)	Chapter 2
Chapter 2 Popular frameworks and methodologies	**BSBPMG417** Apply project life cycle management processes (release 3) (E)	**BSBPMG520** Manage project governance (release 1) (E)	Agile Practice Guide, Chapter 3
Chapter 3 The Scrum (Agile) approach	**N/A**	**N/A**	Agile Practice Guide, Chapter 2
Chapter 4 Organisational strategy and project selection	**BSBPMG417** Apply project life cycle management processes (release 3) (E)	**BSBPMG520** Manage project governance (release 1) (E)	Chapter 1
Chapter 5 Project organisational structures and cultures	**BSBPMG413** Apply project human resources management approaches (release 3) (E)	**BSBPMG520** Manage project governance (release 1) (E) **BSBPMG515** Manage project human resources (release 1) (C)	Chapter 2
Chapter 6 Project integration management	**BSBPMG417** Apply project life cycle management processes (E)	**BSBPMG521** Manage project integration (release 1) (C) **BSBPMG520** Manage project governance (release 1) (E)	Chapter 4
Chapter 7 Defining the scope of a project	**BSBPMG409** Apply project scope management techniques (release 3) (C)	**BSBPMG511** Manage project scope (C) (release 1)	Chapter 5
Chapter 8 Estimating time, costs and resources	**BSBPMG410** Apply project time management techniques (release 3) (C) **BSBPMG412** Apply project cost management techniques (release 3) (E)	**BSBPMG512** Manage project time (release 1) (C) **BSBPMG514** Manage project cost (release 1) (C) **BSBPMG515** Manage project human resources (release 1) (C)	Chapter 6 Chapter 7 Chapter 9
Chapter 9 Project schedule management	**BSBPMG410** Apply project time management techniques (release 3) (C)	**BSBPMG512** Manage project time (release 1) (C)	Chapter 6
Chapter 10 Project cost management	**BSBPMG412** Apply project cost management techniques (release 3) (E)	**BSBPMG514** Manage project cost (release 1) (C)	Chapter 7
Chapter 11 Progress and performance measurements	**BSBPMG410** Apply project time management techniques (release 3) (C) **BSBPMG412** Apply project cost management techniques (release 3) (E)	**BSBPMG512** Manage project time (release 1) (C) **BSBPMG514** Manage project cost (release 1) (C)	Chapter 4
Chapter 12 Project quality management	**BSBPMG411** Apply project quality management techniques (release 3) (C)	**BSBPMG513** Manage project quality (release 2) (C)	Chapter 8
Chapter 13 Project resource management	**BSBPMG413** Apply project human resources management approaches (E)	**BSBPMG515** Manage project human resources (release 1) (C)	Chapter 9

Book Chapter	BSB41515 Certificate IV in Project Management Practice Release 3	BSB51415 - Diploma of Project Management (Release 1)	PMBOK
Chapter 14 The project manager and project teams	**BSBPMG413** Apply project human resources management approaches (release 3) (E)	**BSBPMG515** Manage project human resources (release 1) (C)	Chapter 3
Chapter 15 Project stakeholder management	**BSBPMG418** Apply project stakeholder engagement techniques (release 3) (E)	**BSBPMG519** Manage project stakeholder engagement (release 1) (E)	Chapter 13
Chapter 16 Project information and communications management	**BSBPMG414** Apply project information management and communications techniques (release 3) (E)	**BSBPMG516** Manage project information and communication (release 1) (C)	Chapter 10
Chapter 17 Project risk management	**BSBPMG415** Apply project risk management techniques (release 3) (E)	**BSBPMG517** Manage project risk (release 1) (C)	Chapter 11
Chapter 18 Project procurement management	**BSBPMG416** Apply project procurement procedures (release 3) (E)	**BSBPMG518** Manage project procurement (release 2) (E)	Chapter 12
Chapter 19 Project closure	**BSBPMG417** Apply project life cycle management processes (release 3) (E)	**BSBPMG521** Manage project integration (C)	Chapter 4
Chapter 20 Project management career paths (online)	**N/A**	**N/A**	Chapter 3

PART 1

SETTING THE SCENE

CHAPTER 1
MODERN PROJECT MANAGEMENT

Learning elements

1A Understand how projects differ from routine operational work.

1B Develop an understanding of the background to project management.

1C Understand the difference between a standard, a framework and a methodology.

1D Understand, at a broad level, the concept of a project life cycle.

1E Make the link between an organisation's strategy and the need for projects.

In this chapter

LE 1A

1.1 INTRODUCTION

This is a good time to be reading an up-to-date text about project management as many business leaders and experts have proclaimed that project management is a strategic imperative. Project management provides employees with a powerful set of tools that can improve their ability to design, plan, implement and manage activities to accomplish specific organisational objectives. But project management is more than just a set of tools; it is a results-oriented management style that places a premium on building collaborative relationships among a diverse 'cast of characters'. Exciting opportunities await people who are well-skilled in project management!

The 'project approach' has long been the preferred style of 'doing business' in the construction and mining industries and in government, as well as in big consulting firms. Project management is found in all avenues of work in today's global marketplace. Project teams carry out everything: from port expansions, to hospital restructuring, to upgrading information systems. Project teams are creating next-generation fuel-efficient vehicles, are developing sustainable sources of energy, exploring the farthest reaches of outer space, and 'delving beneath' our seas to explore offshore resource possibilities. The impact of project management is arguably most profound in the software industry, where the new 'folk heroes' are those professionals whose Herculean efforts lead to a constant flow of new hardware innovations and software products.

Project management is a discipline that can be applied to all industries, whether the private sector, the public sector (government) or not-for-profit organisations. It can be applied to endeavours as varied as providing emergency aid (e.g. during Cyclone Yasi, in Queensland) to devising and implementing strategies for reducing crime and illicit drug abuse within a city.

A strong indicator of the demand for project management can be seen in the rapid expansion of the **Project Management Institute (PMI)**, a professional organisation for **project managers**. PMI membership has grown from 93 000 in 2002 to more than 500 000 as of 2018 (PMI 2018a). See Snapshot from Practice: Project Management Institute (PMI), **Australian Institute of Project management (AIPM)** and other key project management bodies for information regarding professional certification in project management.

It is nearly impossible to pick up a newspaper or business periodical and not find something about projects! As Figure 1.1 indicates, the value of just seven countries' infrastructure projects is a staggering US$381 billion. As of 2016, the Australian Department of Industry, Innovation and Science reported investment in the services and construction, mining and manufacturing industries as valued in excess of A$130 billion (OCE 2016).

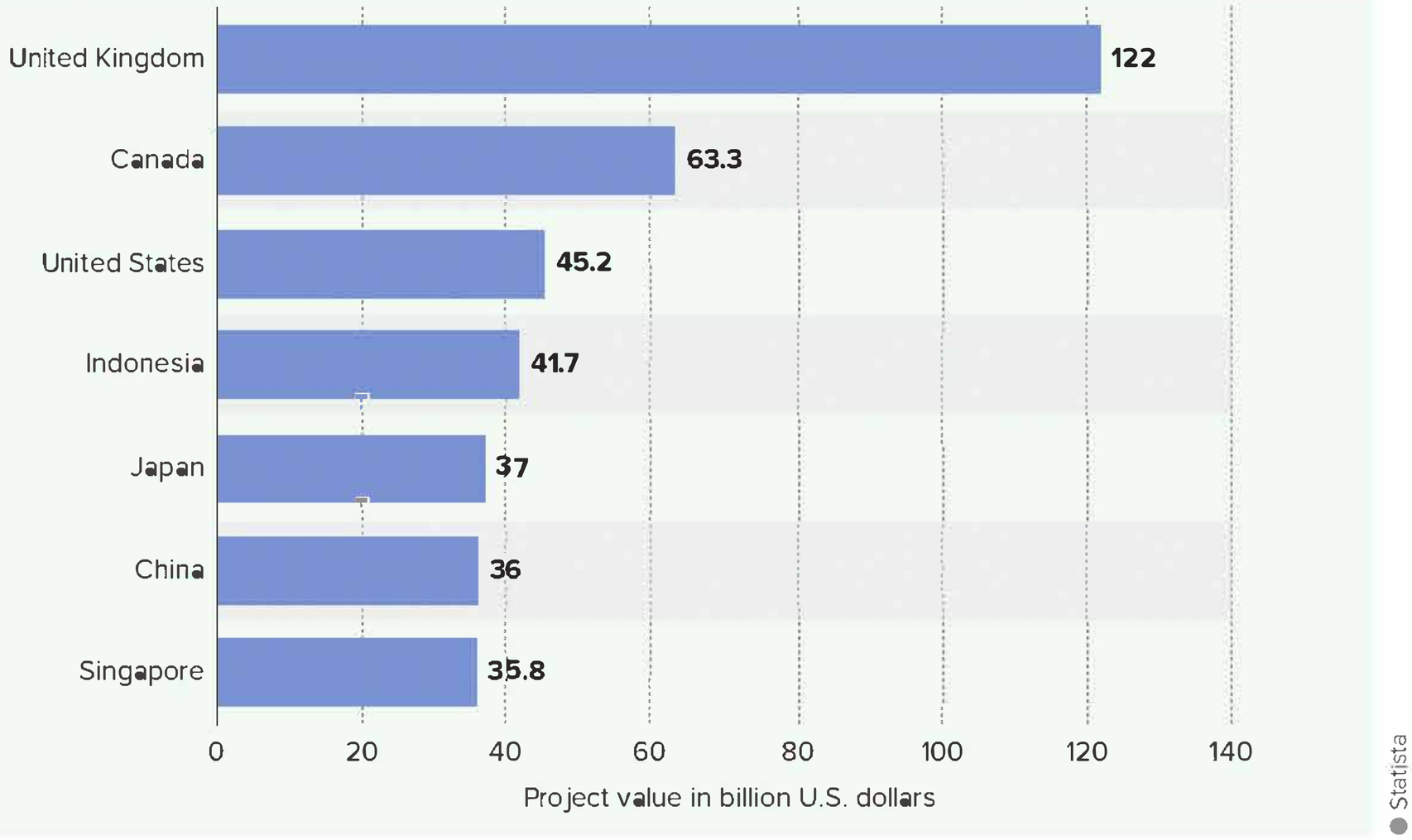
The value of individual projects is also increasing to meet the demands of a growing global population; for example, the Sydney Metro Northwest project (due to open in 2019) is estimated at a cost of A$13 billion, and the cost of the new London Crossrail project (due to open at the end of 2018) stands at UK£15 billion (about A$25 billion at 2018 rates). To meet the demands of such projects, the project management discipline is fast entering a new era of even more integrated and complex projects.

The discipline of project management is not without its problems. The Standish Group has tracked the management of information technology (IT) projects since 1994. This firm's periodic 'landmark' reports summarise some of the factors behind the continued need for improved project management and the importance of continually learning from past projects, so future projects have smoother pathways.

Looking across the Standish Group's chaos reports for 2011 to 2015 (Table 1.1), it can be seen that there was marginal year-on-year resolution of projects (resolution being 'on-time,' 'on-cost' with a satisfactory result). The survey goes on to unpack various dimensions of projects—it is evident that the project management discipline has stalled in improving the 'resolution' of projects.

Underneath these figures however, has been a *change* in the project management approach: a big shift from 'waterfall' (predictive) project management, towards an Agile approach. Table 1.2 indicates this shift. Note the success rates of the Agile approach over Waterfall.

Figure 1.1 Leading countries in infrastructure projects in 2016-17, by value (US$ billion)



Source: Statista, 'Leading countries in infrastructure projects in 2016-17, by value (in billion U.S. dollars', Statista, https://www.statista.com/statistics/683174/transport-infrastructure-projects-leading-countries/, accessed February 2018

Table 1.1 Information technology project success (%), 2011–15

	2011	2012	2013	2014	2015
Successful	29	27	31	28	29
Challenged	49	56	50	55	52
Failed	22	17	19	17	19

Source: Adapted from The Standish Group, www.standishgroup.com (data from various Standish Group sources sighted and referenced)

Table 1.2 Waterfall versus Agile approaches (%), 2011 and 2015

	2012		2015	
	Waterfall	Agile	Waterfall	Agile
Successful	14	42	12	39
Challenged	57	49	56	52
Failed	29	9	32	9

Source: Adapted from The Standish Group, www.standishgroup.com (data from various Standish Group sources sighted and referenced)

Closer to the Australian market are reports from Blake Dawson indicating current trends in scoping issues in the Australian construction and infrastructure industry. Survey responses and interviews revealed the following key findings:

- a high prevalence of deficient scoping in Australian construction and infrastructure projects (52%)
- scoping inadequacies being discovered far too late and the consequences of poor scoping are 'significant' (64%)
- cost overruns (61%)
- delayed completion (57%)
- disputes (30%) (Dawson 2008, p. 7).

The Standish Chaos Report (2014) confirms that time has not improved many issues encountered in managing projects (Table 1.3).

Table 1.3 Project 'challenged' factors

1995	2014
1. Incomplete requirements	1. Lack of user input
2. Lack of user involvement	2. Incomplete requirements and specifications
3. Lack of resources	3. Changing requirements and specifications
4. Unrealistic expectations	4. Lack of executive support
5. Lack of executive support	5. Technology incompetence
6. Changing requirements and specifications	6. Lack of resources
7. Lack of planning	7. Unrealistic expectations
8. Didn't need it any longer	8. Unclear objectives
9. Lack of IT management	9. Unrealistic time-frames
10. Technology illiteracy	10. New technology

Source: Adapted from The Standish Group, www.standishgroup.com (data from various Standish Group sources sighted and referenced)

On the flip side, the Standish Group has reported (through its chaos reports) some project success factors (Table 1.4).

Table 1.4 Factors of project success

1994	2012	2016
1. User involvement	1. Executive support	1. Executive sponsorship
2. Executive management support	2. User involvement	2. Emotional maturity
3. Clear statement of requirements	3. Clear business objectives	3. User involvement
4. Proper planning	4. Emotional maturity	4. Optimisation
5. Realistic expectations	5. Optimising scope	5. Skilled resources
6. Smaller project milestones	6. Agile process	6. Standard architecture
7. Competent staff	7. Project management expertise	7. Agile process
8. Ownership	8. Skilled resources	8. Modest execution
9. Clear vision and objectives	9. Execution	9. Project management enterprise
10. Hard-working, focused staff	10. Tools and infrastructure	10. Clear business objectives

Source: Adapted from The Standish Group, www.standishgroup.com (data from various Standish Group sources sighted and referenced)

Professional project managers will regularly review these types of reports and will subscribe to industry journals and publications to learn from the project profession's wider context (and from more focused industry reports, if these are available).

As Tables 1.1 to 1.4 suggest, the need to elevate performance offers a challenge to the project management profession. Many people who excel at managing projects never actually hold the title of 'project manager'. This includes accountants, lawyers, administrators, scientists, contractors, public officials, teachers and community advocates—whose success depends on being able to lead and manage project work. For them, project management is not a title but a critical job requirement. It is hard to think of a profession or a career path that could not benefit from sound project management.

The skillset required in project management is transferable across many sectors, industries, businesses and professions. Project management fundamentals are universal: the same project management methodology used to develop a new product can be adapted to create new services, organise events, refurbish ageing operations (and so forth). In a world where it is estimated that each person is likely to experience three to four career changes over the course of their professional working life, being able to manage projects is a talent worth developing!

The significance of project management is also evident in the classroom: 20 years ago, major universities offered one or two classes/courses in project management (primarily for engineers). Today, most universities offer several project management courses that are geared towards not just

engineers, but also business students majoring in marketing, management information systems and finance, as well as students from other disciplines, such as oceanography, health sciences, earth sciences and the liberal arts. Students often find that their knowledge of project management provides them with a distinct advantage when it comes time to seek employment. More and more employers are looking for graduates with project management skills. RMIT University describes how qualifications in project management may help to 'future-proof' students' careers (Johnson 2016).

The logical starting point for developing project management skills is to gain an understanding of its unique features.

This text aligns with the **Australian Skills Quality Authority (ASQA)** qualifications, Certificate IV in Project Management (BSB41515) and the Diploma in Project Management (BSB51415). ASQA is the national regulator for Australia's **vocational education and training (VET)** sector. VET enables students to gain qualifications for many types of employment, from trade to business and managerial qualifications. Further detail on ASQA is at www.asqa.gov.au. For further information on training programs (including project management training and qualifications) and to search for government-approved training providers (known as registered training organisations—RTOs), visit http://training.gov.au.

One of the authors, Dr Neil Pearson, also offers a five-day project management 'boot-camp' covering a large amount of content from this text. Training can act as springboard to the successful management of projects and offers a great revision opportunity for PMI certification, or the VET Certificate IV and Diploma. For information, visit: www.projectmanagementinpractice.world.

SNAPSHOT FROM PRACTICE Project Management Institute (PMI), Australian Institute of Project Management (AIPM) and other key project management bodies

The Project Management Institute (PMI) (www.pmi.org) was founded in 1969 as an international society for project managers. Today, the PMI has members from more than 125 countries, with a total membership in excess of 500 000. PMI professionals work in almost every major industry, including aerospace, automotive, business management, construction, engineering, financial services, information technology, pharmaceuticals, health care and telecommunications.

The PMI offers an industry-recognised certification for project managers: the Project Management Professional (PMP). This is available only to someone who has sufficient documented project experience, agrees to follow the PMI Code of Professional Conduct and demonstrates mastery of the field of project management by passing a comprehensive examination. The number of people earning PMP status has grown dramatically in recent years. In 1996 there were fewer than 3000 certified project management professionals. By the end of 2017, there were more than 790 000 PMPs across the globe.

Being required to pass the PMP (or an equivalent industry-recognised exam/certification) appears to be becoming a mandatory standard for project managers. Some companies now require that all their project managers are PMP certified. Numerous job postings now indicate that applications will only be accepted from project managers holding an industry-recognised project management certification (and/or qualification). Being PMP-certified therefore potentially offers candidates a 'positive leveraging point' in today's marketplace.

The PMI also offers other certifications, such as Certified Associate in Project Management (CAPM). CAPM is designed for project team members and entry-level project managers, as well as qualified undergraduate and graduate students who want a credential that identifies their comprehension and competency in the project management body of knowledge. CAPM does not require the level of extensive project management experience that is associated with the PMP.

In Australia, the primary professional body for project managers is the Australian Institute of Project Management (AIPM) (www.aipm.com.au). Like the PMI, it has practice-based certification based on three levels of competency: the Certified Practicing Project Administrator (CPPA), which is comparable to the PMI's CPA; the Certified Practicing Project Manager (CPPM), which is comparable to the PMI's PMP; and the Certified Practicing Project Director (CPPD), which is comparable the PMI's PgMP (Program Management Professional) certification.

If certification is required that has *global* recognition, project managers can seek certification through the International Project Management Association (IPMA) (www.ipma.world). IPMA has a network of member associations across 50+ countries.

Table 1.5 indicates some of the key qualifications and certifications found across the globe.

Table 1.5 Key qualification and certifications, global

Role	Qualification	Certifications						
	Australian VET sector	AIPM (Australian Institute of Project Management)	PMI (Project Management Institute)	IPMA (International Project Management Association)	Best Management Practice	Scrum/Agile	Praxis (open source project management approach)	Lean Six Sigma (International Association for Six Sigma Certification—IASSC)
Project officer/ coordinator	Certificate IV	CPPP (Certified Practicing Project Practitioner)	CAPM (Certified Associate in Project Management)	IPMA Level D (Certified Project Management Associate)	PRINCE2 Foundation	Various	Praxis Foundation	Yellow Belt
Project manager/ senior project manager	Diploma	CPPM (Certified Practicing Project Manager) CPSPM (Certified Practising Senior Project Manager)	PMP (Project Management Professional)	IPMA Level C (Certified Project Manager) IPMA Level B (Certified Practicing Senior Project Manager)	PRINCE2 Practitioner	PMI–ACP (PMI–Agile Certified Practitioner) PRINCE2 Agile Scrum Master Scrum Product Owner	Praxis Practitioner	Green Belt Black Belt
Senior program/ portfolio manager and/or program/ portfolio director	Advanced diploma	CPPD (Certified Practicing Project Director) CPPE (Certified Practising Portfolio Executive)	PgMP (Program Management Professional) PfMP (Portfolio Management Professional)	IPMA Level A (Certified Project Director)	MSP Practitioner (Managing Successful Programs) Advanced MSP Also P3O			Black Belt Master Black Belt
Maturity assessment		Project Managed Organisation (award-based)	OPM3® (Organizational Project Management Maturity Model) (https://www.pmi.org/learning/library/grow-up-already-opm3-primer-8108)		P3M3® (Portfolio, Program, and Project Management Maturity Model) (See www.p3m3-officialsite.com)		Praxis 360° capability assessment	

LE 1B

1.2 WHAT IS A PROJECT?

What do the following headlines have in common?

- Free wi-fi to be made available in public parks and in bus, train and tram stations.
- 1000-acre wind farm to replace a coal-fired power station.
- The world's largest lithium battery to be built in 100 days.
- City receives stimulus funds to expand its light rail system after winning the bid to hold the next Commonwealth Games.
- Shopping mall to be constructed—replacing 40-year-old city 'eyesore' buildings.

The answer is that *all of these events represent projects.*

The general definition of a **project** would include such vocabulary as 'temporary' and 'unique', with the aim of producing a product, service or result. (PMI, 2017)

As for most organisations' efforts, the major goal of a project is to satisfy a customer's need. Yet beyond this fundamental similarity, the characteristics of a project differ from other endeavours of the organisation. The five major characteristics of a project are:

1. an established objective
2. a defined life span, with a defined beginning and end (i.e. it is temporary)
3. usually, the involvement of several departments and/or stakeholders
4. typically, doing something that has never been done before (unique)
5. specific time, cost and performance (scope) requirements.

Figure 1.2 Kalgoorlie Super Pit

Shutterstock/Taras Vyshnya

The first characteristic pertains to how projects have a defined objective. For example, this may be to construct a 12-storey apartment complex by 1 January or to release Version 2.0 of a software package as quickly as possible. This singular purpose is often not present in daily 'business as usual' where workers perform repetitive operations each day.

The second characteristic comes into play because, as there is a specified objective, the project will have a defined endpoint (this differs in nature from the ongoing duties and responsibilities of regular work). In many cases, individuals will move from one project to the next (as opposed to staying in one job). For example, after helping to install a security system, a telecommunications engineer may be assigned to commission a telephone switch.

Third, unlike much organisational work that is often segmented according to functional departments, projects typically require the combined efforts of a variety of specialists from across multiple departments of a business. Instead of working in separate offices under separate managers, project participants (whether they be engineers, financial analysts, marketing professionals or quality control specialists) will work closely together under the guidance of a project manager to complete the work as one project.

The fourth characteristic of a project is that it is non-routine and has some unique elements. This is not an issue but a matter of degree. A project may accomplish something that has never been done before, such as building a new type of hybrid (electric/petrol) vehicle, or returning rocket fuel tanks to earth for reuse on another mission. Both examples would typically require solving previously unsolved problems and potentially applying breakthrough technology. On the other hand, even small projects involving established sets of routines and procedures will require some degree of customisation that makes them 'unique'. For example, the refit of one floor of an office would likely be different from the refit of another floor; there may be different requirements from the fit-out (office space vs. meeting rooms vs. training rooms), different stakeholders, different budget, and so on.

Finally, specific time, cost and performance requirements bind projects. Projects are evaluated according to the accomplishment of scope, cost and time. These **triple constraints** impose a higher degree of accountability than is typically found in many jobs. These three also highlight one of the primary functions of project management, which is balancing the trade-offs between time, cost and performance (scope), while ultimately satisfying the customer (quality).

1.2.1 What a project is not

Projects should not be confused with everyday work (operational activity). A project is not routine, repetitive work! Ordinary daily work typically requires doing the same or similar work over and over, while a project is done only once and a new product or service will exist when the project is