We are the only chartered membership organisation for the project profession

The *APM Body of Knowledge* is a foundational resource, providing the concepts, functions and activities that make up professional project management.

The seventh edition expands beyond the concepts of time, cost and quality, through projects, programmes and portfolios to embrace project management as integral to the delivery of strategic change.

It seeks to reflect the developing profession, recognising project-based working at all levels, and across all sectors for influencers, decision makers, project professionals and their teams.

Key features:

- A structure that extends from the strategic case for projects to the delivery of benefits.
- Chapters for senior leaders who need to build and shape teams to deliver meaningful change.
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- Over 200 recommended reading materials, including APM publications, that professionals can use to expand their knowledge.
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"As a foundational resource, written by the profession for the profession, we hope you find the content informative and useful in guiding your endeavours to deliver beneficial change through the management of projects, programmes and portfolios."

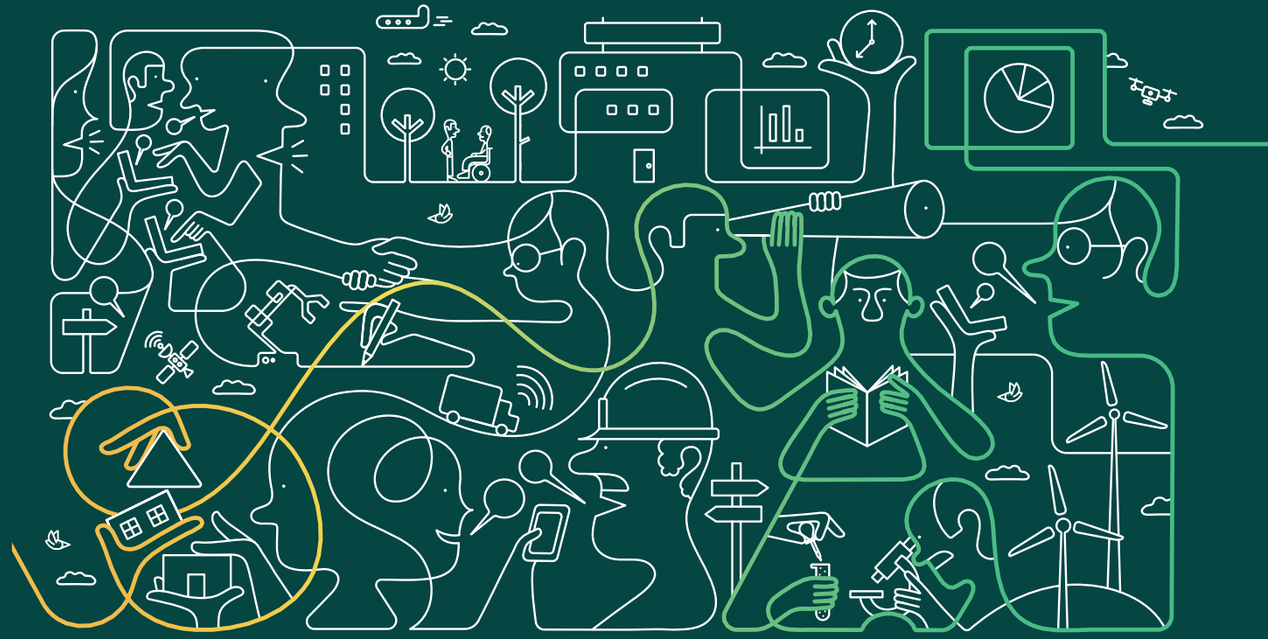
Dr Ruth Murray-Webster,
Editor, APM Body of Knowledge
7th edition

APM Body of Knowledge 7th edition

Association for Project Management

APM Body of Knowledge

7th edition



Because when projects succeed, society benefits

APM Body of Knowledge

7th edition

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Foreword

The Association for Project Management (APM) was awarded its Royal Charter in 2017 and has quickly established itself as the chartered body for project professionals in the UK and overseas. In support of chartered, the *APM Body of Knowledge* has taken on greater significance, providing an authoritative statement on project management and the foundation on which the profession is built.

The *APM Body of Knowledge* represents our core beliefs – an ethos – upon which we believe projects can not only be delivered successfully, but also to the benefit of society, the economy and the environment.

The seventh edition is the foundation for the successful delivery of projects, programmes and portfolios across all sectors and industries. It forms the basis for qualification syllabuses and a common language which strengthens the concept of a progressive career path for project professionals. As a taxonomy, it acts as a common framework for debate allowing our profession to develop as the demands on us change and grow.

For some, the *APM Body of Knowledge* is a starting point providing knowledge and understanding of key concepts, for more experienced professionals it serves as a valuable reference and a method to share the language of project management more widely among teams and key stakeholders.

The *APM Body of Knowledge* will play a key role as we evolve as a chartered profession. It reflects emerging and established ideas – a common bond across all project types. From governance and organisational cultures to the realisation of benefits and concepts of control and agility, the book weaves a thoughtful narrative that brings together all these elements.

The launch of the seventh edition provides an opportunity to take stock and reaffirm our position both in the profession and consider our role in society. We ask you not only to engage with it, but to challenge it, expand on it, bring your experience, knowledge and ideas as we support the profession in realising our long-term vision of 'a world in which all projects succeed, and project management is a life skill for all'.

John McGlynn
APM Chair 2016–2020

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The *APM Body of Knowledge 7th edition* has been shaped by a large number of people through 2018. The editors and writing team are extremely grateful to the hundreds of people who participated in the online consultations for all their help in shaping ideas and challenging early versions of the structure and content. Of the many volunteers who gave their time and advice, we are grateful to those members of Specific Interest Groups (SIGs), who reviewed and challenged the structure and storyboards at SIG clinics in September. We extend particular thanks to Steve Barron, Roy Millard, Judy Payne, Penny Pullan and Amerjit Walia who helped to craft some additional topics following the SIG clinics, and to Sarah Coleman, who provided advice on Chapter 3, 'People and Behaviours'. Finally, we thank the various reviewers of the final text for this book. In a project like this, it is impossible to satisfy all the people, all the time. We have listened to what you have to say and endeavoured to represent the majority view in this latest version of our profession's foundational knowledge resource.

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Introduction

A body of knowledge is a set of concepts, terms and activities that make up a professional domain. The *Association for Project Management Body of Knowledge* has expanded over time to reflect the role of project-based working in achieving objectives for change at strategic and operational levels, involving the development of new or amended products, processes or other capabilities and across private, public and third sectors.

In this seventh edition, we use the term 'project-based working' (or the 'management of projects') to refer collectively to projects, programmes and portfolios, and we deal with aspects of projects, programmes and portfolios across the text, although acknowledging that not all aspects of project-based working apply to projects, programmes and portfolios equally. We have used the term project professional to refer to anyone working in a defined role within a project, programme or portfolio.

A central tenet of project-based work is the need to balance multiple competing objectives and challenges within a defined set of time, cost and quality constraints in order to achieve beneficial change. This makes the concept of the triple constraint or 'iron triangle' as relevant today as when it was first introduced. However, contemporary management by projects is a more developed field than ever before and this gives the organisational leader a wider range of options about how to organise and govern a particular change initiative.

In this version of the *APM Body of Knowledge*, we explicitly acknowledge the ability to choose between multiple forms of life cycle – from one designed to guide the management of deliberate change in a linear fashion to one designed to guide the shaping of emergent change in an incremental, iterative or evolutionary way. Avoiding any simplification of this matter by referring to 'waterfall vs agile', we outline the choices that leaders can make and acknowledge the reality that many project-based endeavours now adopt some sort of hybrid linear/iterative life cycle approach.

The *APM Body of Knowledge* is written for anyone interested in understanding more about achieving beneficial change through project-based working, however the structure of this *APM Body of Knowledge* is designed so that each chapter is written with a primary audience in mind.

Chapter 1 Setting Up for Success: Is written primarily for those leaders within organisations who have decisions to make about the role of projects, programmes and portfolios in implementing strategy. Leaders may be in the 'client' or investing organisation, or in a supplier organisation that exists to deliver project-based work for clients. The ideas in this chapter apply in both scenarios.

Chapter 2 Preparing for Change: Is written primarily for those people charged with leading any project, programme or portfolio, of any size and complexity. It addresses early life cycle shaping and late life cycle transition into use for projects, programmes and portfolios, as well as matters of assurance, learning and maturity.

Chapter 3 People and Behaviours: Is written for anyone involved in projects, programmes and portfolios. Influencing and engaging stakeholders, forming, building and leading teams, and the generic skills and responsibilities of being a project professional are addressed with the objective of making it clear that all project-based work relies fundamentally on the ability of people to work together.

Chapter 4 Planning and Managing Deployment: Is written primarily for those involved in the end-to-end process of delivering a project, whether a standalone project or one that is part of a programme and/or portfolio, and regardless of the life cycle approach taken. Although the professional domain has expanded, the detailed matters associated with defining outputs, integrated planning and controlling deployment remain.

It is tempting and desirable in a body of knowledge to be definitive about terminology used, and, indeed, the Glossary is provided for this purpose. However, project-based working, as experienced by practitioners, is increasingly performed in a context that is volatile, uncertain, complex and ambiguous. As a result, we feel strongly that it does not serve the profession to oversimplify important aspects of project-based working and, in some cases, we use terms interchangeably, for example:

- Business-as-usual – Operations – Steady state
- Client – Owner – Investing organisation
- Outputs – Deliverables – Products

Unlike other bodies of knowledge or guides to the management of projects, APM chooses not to describe 'how-to' in terms of methods, tools and techniques in the *APM Body of Knowledge*, but rather uses it as a foundational knowledge resource, and a pointer to other sources of information.

Within each of the four chapters, we have three distinct sections and each section contains discrete topics (80 in all). Within each topic, there is a set of carefully curated recommended reading that professionals can use to expand their knowledge and practice. Guides written by APM Specific Interest Groups (SIGs) are included in these recommended reading sections alongside other suggested books and papers.

The *APM Body of Knowledge 7th edition* is the first version of these editions to be published since the award of chartered status. As a foundational resource, written by the profession for the profession, we hope you find the content informative and useful in guiding your endeavours to deliver beneficial change through the management of projects, programmes and portfolios.

1 Setting up for success

This chapter is written primarily for those leaders within organisations who have decisions to make about the role of projects, programmes and portfolios in implementing strategy. We assume that in most situations, there is a choice to be made about how best to structure project-based work in order to achieve unique and specific objectives for change.

The main focus of the chapter is on the available options and the strategic decisions required to underpin and enable beneficial organisational change.

Beneficial change results from the strategic intent, ambitions and needs of an organisation. Organisations operate in increasingly uncertain contexts. They identify strategic priorities and set out to bring about meaningful and beneficial change that is described and realised through a set of benefits that justify the investment. The purpose of the investment therefore is to deliver valuable returns. The investing organisation can use strategic portfolios and programmes, incorporating change activities with business-as-usual, and a variety of project mechanisms to structure and pace the investment.

The required speed of deployment, existing knowledge about the nature of the work that needs to be accomplished and the nature of the potential solution, all play a part in determining the most suitable approach to create and embed the new capabilities, systems and structures. The choice of approach determines the life cycle that will be used to realise and deploy the change. Recognising the strategic nature of change is important in fostering a longer-term approach that is cognisant of the need to adopt the proposed change and realise the intended benefits. An extended perspective as promoted throughout this work is also critical to discharging the responsibility to consider decommissioning and disposal alongside the whole-life costs of assets, and the long-term environmental and social implications of our actions.

Choices and preferences need to be scrutinised and examined. Governance and oversight mechanisms are established to deal with procedural and cultural aspects that need to be in place to improve the effectiveness of the implementation of proposed change initiatives and to underpin the realisation of the strategic investments. Projects, programmes and portfolios need to be compatible with the overarching strategy of the organisation and with the day-to-day operation charged with realising the benefits. A structured approach to change management ensures that beneficial changes are embedded within the organisation's operational approach and closely aligned in order to ensure its long-term successful and impactful realisation.

The chapter is composed of three parts:

1.1 Implementing strategy

1.2 Life cycle options and choices

1.3 Establishing governance and oversight

1.1 Implementing strategy

Organisations operate in a dynamic context, full of uncertainty, novelty and turbulence. Projects, programmes and portfolios are introduced in order to enhance performance, bring about change and enable organisations to adapt, improve and grow. Project-work therefore represents intentional investment in development, enhancement and improvement.

The need for investment emerges from the aspirational plans and an overarching purpose that transpire from the strategic intent of an organisation. Project-work encompasses strategic investments that enable assets, structures, systems, activities and capabilities to be formed, maintained or enhanced so that the organisational plans and ambitions can be realised. In the public sector, this strategic intent may be discussed in terms of policy and policy implementation.

Organisational change is introduced through projects, programmes and portfolios in order to deliver business value. The business value is accrued through the realisation of benefits that result from project-work. Benefits are part of ensuring that investments are made to deliver value to the organisation. This normally applies even when the project is being done by a supplier or contracting organisation, or if the work is needed to maintain current capability or in order to conform to new regulations or directives so that smooth business operations can be allowed to proceed.

The successful deployment of change, the support of new behaviours and the utilisation of new capability, resulting in the realisation of benefits, involves engaging with, promoting and working with diverse communities and groups. To ensure that value is created and sustained, organisations need to consider and address the full investment life cycle ensuring that forecasted benefits materialise.

Delivering strategy is enabled through the use of projects, programmes and portfolios. Portfolios structure investments in line with strategic objectives, whilst balancing, aligning and scrutinising capacity and resources. Programmes combine business-as-usual with projects and steady state activity dictated by strategic priorities. Projects are transient endeavours that bring about change and achieve planned objectives. Together, they combine to deliver the beneficial change required to implement, enable and satisfy the strategic intent of the organisation.

This section will be of particular interest to senior leaders and managers in organisations and to project professionals as it addresses:

1.1.1 Organisational environment: Organisations in context

1.1.2 Strategic implementation: Making strategy happen

1.1.3 Organisational change: Enabling beneficial change

1.1.4 Benefits to the organisation: Putting it all together

1.1.5 Structural choices: Projects, programmes and portfolios

1.1.1 Organisational environment

Organisations in context

In many contexts, project-work engages with novelty and uncertainty extending into an unknown future. Projects and programmes therefore entail management under uncertain conditions. Yet, it is widely recognised that traditional business models, focused on efficiency, top-down control and desired predictability, only address a small proportion of a rather complex, uncertain and interconnected landscape.

Uncertainty arises from many sources (Figure 1.1.1). Leaders increasingly face new challenges, including the emergence of new markets, interconnected global competition, new sources of innovation, rising customer expectations, disruptive technologies, the gig economy and the growing diversification of the workforce. Stable and predictable contexts are hard to find and the models and approaches used for managing need to be updated to reflect a world characterised by uncertainty, turbulence, novelty, ambiguity and complexity. Moreover, the combination of economic unknowns with political, social and environmental concerns regarding the proposed actions and their longer-term implications requires new ways of engaging with uncertainty.

The US military coined the term VUCA to reflect the 'volatility, uncertainty, complexity and ambiguity' of general conditions and situations associated with a multilateral world following the end of the Cold War. The term has been widely adopted to represent increasingly vulnerable and unpredictable contexts. The key implication of VUCA conditions is that there is an inherent uncertainty that makes it difficult to predict and plan with great accuracy.

The rigidity that comes from expecting full and perfect knowledge is unsustainable and unattainable in turbulent contexts. Uncertainty defies anticipation and detailed planning. Enforcing detailed planning and fixed-price contracting on an uncertain future can be counterproductive and business-damaging. Change is natural and ongoing as managers learn more about the context they are operating in, enabling them to identify emerging opportunities, respond to new conditions and address shortfalls and differences in outcomes. Embracing and managing uncertainty lie at the heart of good project management and insistence on certainty may unwittingly result in mismatches between plans, models and reality, translating into poor project performance.

Addressing uncertainty entails developing organisational capabilities for dealing with change and fostering readiness to exploit new opportunities, respond and adapt. This is frequently translated into strategic flexibility, corporate resilience or organisational agility. Flexible plans, iterations (see 1.2.3), and prototyping offer vehicles for the experimentation and adaptation needed to inform, adjust and exploit uncertain contexts. These can complement open collaboration approaches and enhanced abilities to innovate and move rapidly and flexibly in order to shape opportunities, change strategic directions and build on adversity in uncertain settings. Organisations that invest in flexible planning, options evaluation and scenario planning are already better prepared to respond to emergent conditions and such preparation needs to be reflected in project-work.

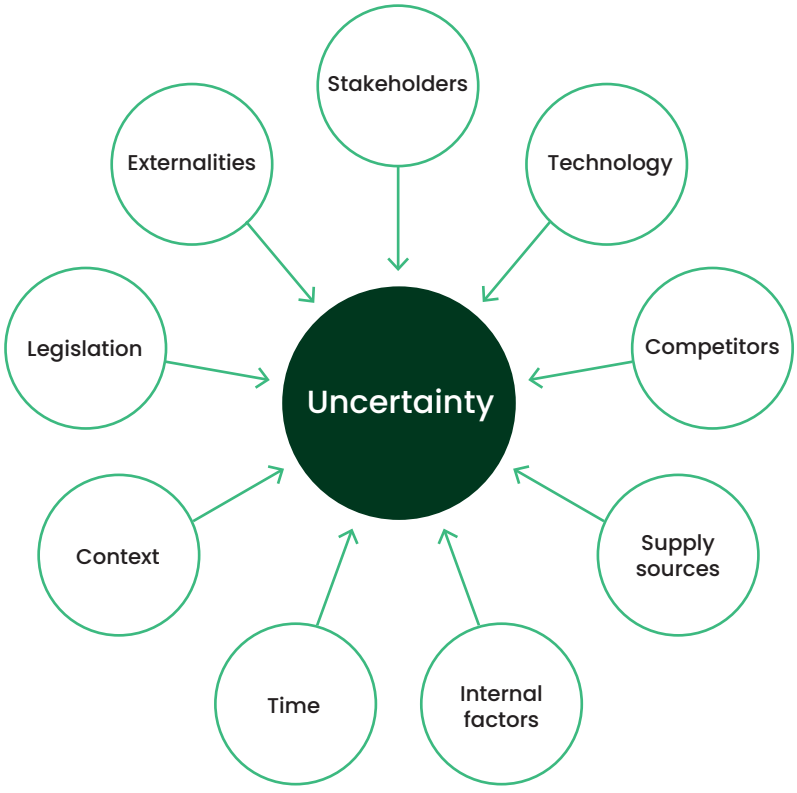

Figure 1.1.1 Sources of uncertainty

Recommended reading

- *Managing the Unknown: A New Approach to Managing High Uncertainty and Risk in Projects* (2006) offers a way of looking at managing projects in novel and unknown environments. The authors propose a combination of trial-and-error learning, with multiple independent trials to identify the best options in novel projects.
- *Managing Project Uncertainty* (2016) focuses on the impacts of novelty in the uncertain world that projects inhabit, providing ways of identifying the symptoms of uncertainty and developing strategies to deal with it. The book offers senior managers ways to improve project and programme strategy by exposing new ideas and concepts that can be harnessed to tackle uncertainty in its many guises.
- *Managing in a VUCA World* (2015) is an edited collection focused on defining VUCA and uncovering the wider impacts on management. It makes the case for broader knowledge and the application of new concepts and frameworks to deal with unpredictable and rapidly changing situations.

1.1.2 Strategic implementation

Making strategy happen

'Strategic intent' is a term used to describe the aspirational plans, overarching purpose or the intended direction of travel needed to reach an organisational vision (Figure 1.2.2). Strategic intent provides the basis for the scrutiny of the continuous alignment of the portfolio of project-work against organisational ambition. While the strategic intent describes the alignment between ambition and resources, it can become a constraint on growth. Recognising the inherent uncertainty, as well as the emerging opportunities and threats, is useful to develop a more dynamic basis for balancing evolving ambition with emerging reality.

Strategy implementation, often recognised as the hardest part of the strategy process, is delivered through the execution of strategic projects and programmes and the realisation of their targeted benefits. From an executive perspective, project-work is an essential part of making strategic investment work. The key focus is on the creation of value through projects that will enable meaningful execution of both deliberate and emergent strategies. This implies extending the scope of interest around projects and programmes to incorporate the realisation of benefits that will justify the investment and fulfil the criteria outlined in the business case (see 1.3.7). Life cycles play an important role in ensuring that the intended benefits and value are delivered.

Investment in change is one effective way of implementing strategy. Projects, programmes and portfolios tend to flow out of strategic decisions made by the organisation and can therefore be viewed as strategic investments that enable other activities and capabilities to be developed. This implies that project-work is concerned with the ability to enact the organisational strategy by enabling benefits to be realised so that the intended value can be accrued. Senior leaders within the organisation are able to demonstrate how each project or programme that they fund contributes to the overall strategy. Where projects or programmes cannot be justified or aligned with the organisational strategy, their continued operation and purpose can be questioned. It is worth noting that supplier organisations managing projects for their clients on a commercial basis may have a different strategic justification for conducting commercial work. Project-work may also be needed as an enabler to maintain existing capabilities or assets, ensure compliance with newly introduced legislation or satisfy other professional requirements or business imperatives.

Corporate leaders are accountable for demonstrating profitability and return on investment (ROI), and therefore view project-work as a critical part of delivering that investment and contributing to the overall benefit of the organisation. Portfolios play an important part in maintaining the alignment between project-work and strategic objectives and in enabling the realisation of the benefits that underpin the successful capture of the intended value and securing the return on investment.

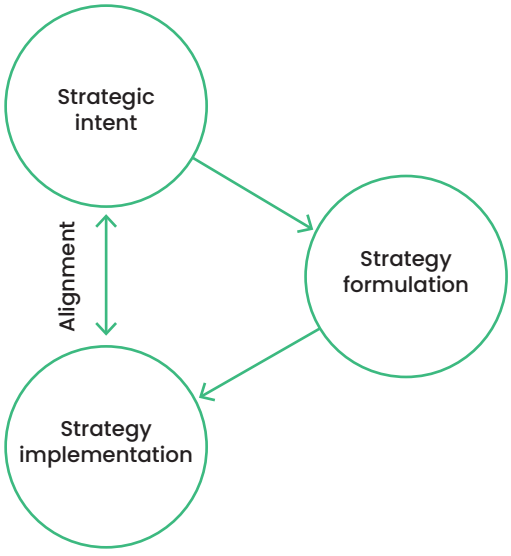

Figure 1.1.2 Hierarchy of strategic intent

Recommended reading

- *Strategic intent* (2005) revisits and updates the original concept of strategic intent established by the same team of authors 16 years previously. In this contribution, the authors compare Western companies to Japanese corporations encouraging a rethinking of strategy and a repositioning of strategic intent.
- *Introduction to Managing Change* (2017), developed by the APM Enabling Change Specific Interest Group, introduces the importance of managing change and sponsoring such efforts. It makes the case for aligning change projects to the organisational business strategy, and supporting the strategy by articulating well-defined benefits.
- *The Evolution of Project Management Practice: From Programmes and Contracts to Benefits and Change* (2018) is an edited volume that makes the case for shifting the focus from the staged delivery of artefacts towards consideration of stakeholders, benefits, value and complexity. The authors offer new perspectives on planning, business cases, benefits, collaboration, sponsorship, strategy execution and overall performance.

1.1.3 Organisational change

Enabling beneficial change

Change is an established part of life, especially in modern organisational contexts, and is often needed to ensure continued survival or business relevance. Avoiding stagnation and maintaining the relevance of strategies, approaches and capabilities often requires processes of renewal and update. Combining change management with the management of project-work offers the best potential for delivering new results and capabilities, successfully embedding the change and enabling the required benefits.

Change management is the overarching approach taken in an organisation to move from the current to a future desirable state, using a coordinated and structured approach in collaboration with stakeholders. The change management process links strategy with execution, and deployment with operation and the ultimate realisation of the expected benefits.

Organisational change is typically introduced and implemented into corporate settings through project-work, however that is only the beginning of the process of embedding change and making it the new normal state for the organisation.

Strategic intent (see 1.1.2) drives organisations to maintain competitive advantage or seek a new one (i.e. change). The strategic intent leads to the development of specific change initiatives within a portfolio structure. Specific initiatives, aligned to the strategic intent, are selected on the basis of available capabilities and resources that can be deployed.

Projects and programmes are designed and implemented in order to deploy new assets, functions, capabilities, processes, structures and systems. However, these are devised to facilitate or enable some change: change management activities are integrated with project-working. Only once the deliverables are adopted and used as intended, can the benefits be realised. Organisational change encompasses the new behaviours that are enabled through project-work, and change management is the facilitating discipline that makes it possible to embed change, achieve buy-in, bring people along and thereby derive and accrue the new benefits that result from such actions in order to satisfy a business case.

Given that successful change management requires changes to behaviours, there is a significant focus on people, culture and behaviours needed to prepare the organisation, demonstrate the change, encourage buy-in and embed new behavioural norms and expectations around the altered conditions.

Organisations respond to change in many different ways. Organisational change management begins and ends with the individuals involved, requiring an understanding of resistance, organisational defence routines, pervading cultures and the engagement processes required to bring people along. One of the biggest barriers to change is knowledge boundaries of various types — including conflicts of interest that (for example) wipe out users' motivation to absorb knowledge about project outputs. A good way of embedding change and achieving buy-in from concerned stakeholders is by exploring the proposed impacts through a series of prototypes, allowing stakeholders to shape and influence the change situation through a series of meaningful iterations.

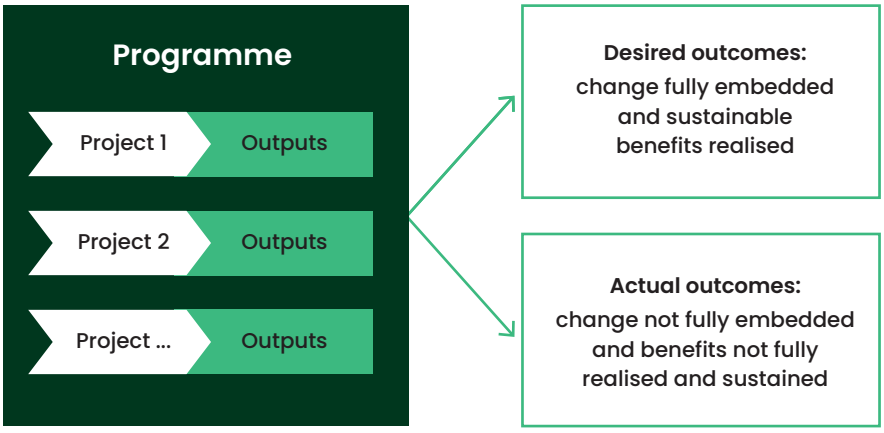

Figure 1.1.3 Outcomes of change efforts

Source: *Introduction to Managing Change (2017)*

Recommended reading

- *Introduction to Managing Change* (2017) developed by the APM Enabling Change Specific Interest Group, offers a dedicated resource focused on the management of change. The book provides a rationale for change management, a list of key factors for successful change, a further distillation of key factors in selecting a change approach as well as a summary of many of the key approaches to change management.
- *Exploring Strategic Change* (2016) engages with the process of delivering strategic and organisational change, offering detailed guidelines, specific strategies, theoretical insights and practical solutions.
- *Managing Projects in a World of People, Strategy and Change* (2019) proposes a rethinking of some of the methods utilised in initiating, managing and governing projects, programmes and change initiatives. The book positions change as an opportunity to reflect and offers new perspectives on ethics, strategic initiatives, governance and change as well as new ideas focused on antifragility, commercial management and ethics.

1.1.4 Benefits to the organisation

Putting it all together

Delivering benefits is the primary reason why organisations undertake change. Given limited resources, there is a need to develop an improved understanding of potential investments and the reasons for undertaking them. Making change work for the organisation entails identifying a viable set of potential benefits and delivering value by realising the promised benefits.

A benefit is a positive and measurable impact of change. However, in some cases, there may be unavoidable measurable declines or negative impacts of change that are acceptable in the context of greater benefits. These are called 'disbenefits' and are treated in the same way as benefits.

The intended benefits are driven by the strategic intent. In a supplier organisation, benefits are likely to be derived from the revenue, profit, opportunities, relationships, gained expertise or market position related to undertaking the work. Benefits can be tangible (e.g. money saved, jobs created) or intangible (e.g. corporate reputation, capacity for change). They may, or may not, also be quantifiable in cash terms (e.g. reduced costs or greater customer satisfaction).

Benefits-driven change requires proactive management throughout the entire life cycle. An organisation identifies the benefits it needs and initiates changes that are forecast to deliver benefits. Projects and programmes are implemented in order to enable new outputs, capabilities and outcomes to be utilised so that the benefits described in the business case can be fully realised. During the change, the organisation needs to monitor performance indicators that can reliably predict benefits realisation.

Benefits demonstrate the value created by investments. To ensure that value is created and sustained from organisational change initiatives, benefits have to be managed throughout the entire investment life cycle. In order to maximise the value from particular investments and avoid value erosion, it is essential to ask if the proposed investments will realise the promised benefits at an acceptable cost over the full economic life cycle of the investment (see 1.2.6). The forecast benefits of a programme or project are the basis of its business case. It is therefore important to engender a shift from a culture of delivery towards an ethos of value.

It is only when the output, capability or outcome is used as a result of a comprehensive change programme that benefits are realised, resulting in delivered value. Benefits-driven projects and programmes support the investment cycle, with portfolios and governance structures utilised to monitor the results and question the continuing alignment with strategy and the realisation of expected and emerging benefits. The sponsor owns the business case and is ultimately accountable for the realisation of the benefits. Governance boards and sponsors have a crucial role in emphasising and accentuating the importance of securing and sustaining benefits.

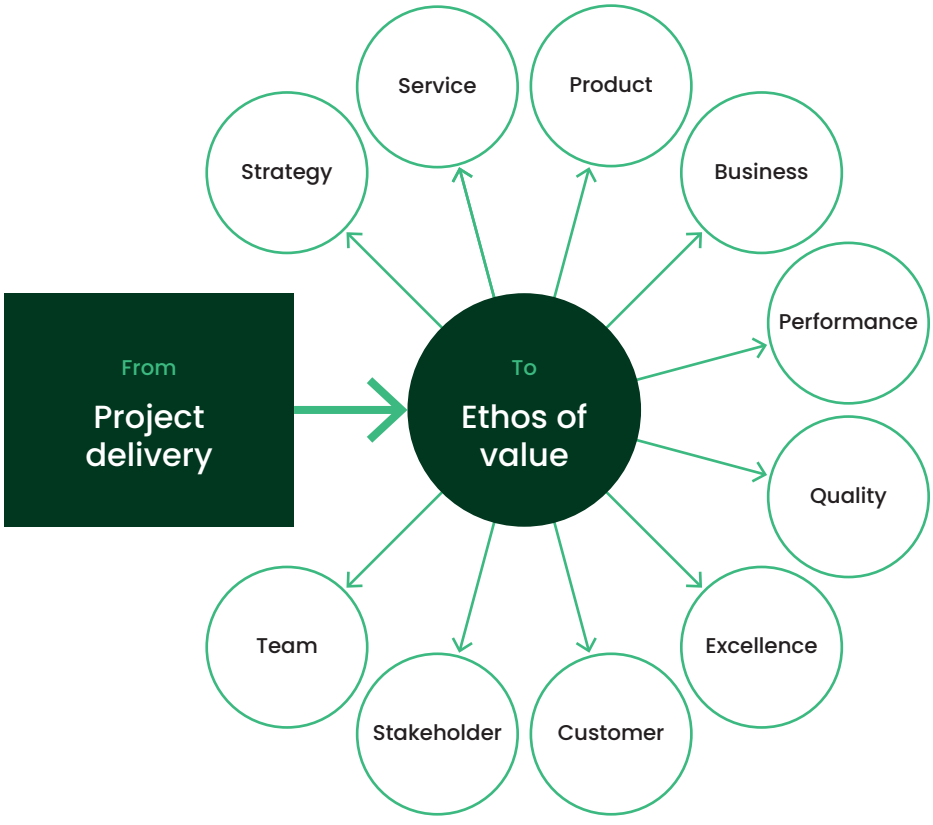

Figure 1.1.4 Change of emphasis

Recommended reading

- *Guide for Effective Benefits Management in Major Projects* (2017) pulls together insights and lessons from significant major projects. The report synthesises the key principles and activities required to successfully deliver benefits in such projects and offers advice and guidance on extending the life cycle.
- *A Guide to Using a Benefits Management Framework* (2019) was compiled by the APM Benefits Management Specific Interest Group. The guide develops an understanding of the need for benefits realisation, offering a framework for addressing contextual factors and developing the capability to realise benefits.
- *The Information Paradox: Realizing the Business Benefits of Information Technology* (2007) is a classic, offering the first detailed treatment of benefits. The book was first published in 1998 and still provides fresh ideas, concrete advice and thoughtful reflection on the role of benefits in project-work and the wider issues regarding a shift towards value-based focus.

1.1.5 Structural choices

Projects, programmes and portfolios

There are multiple options for delivering change and benefits, depending on the purpose and overall desire. The scale, significance and complexity of the proposed undertaking play a part in determining which approach to use. Another distinguishing factor is related to the nature of the objectives, which can be defined in terms of outputs (such as delivering a building), outcomes (such as staff being relocated from multiple locations to a new HQ), benefits (such as reduced travel and facilities costs) or strategic objectives (such as doubling the organisation's share price in three years).

The choice of how to structure investments encompasses projects, programmes and portfolios (Figure 1.1.5):

Projects are unique, transient endeavours, undertaken to bring about change and achieve planned objectives, which can be defined in terms of outputs, outcomes or benefits. A project is usually deemed to be a success if it achieves the objectives according to their acceptance criteria, normally within an agreed timescale and budget. Project-work is conducted across normal organisational functional areas, setting up a temporary organisation, drawing on the skills, expertise and knowledge of the organisation, as well as third parties, where appropriate.

Projects normally use capital expenditure to acquire, upgrade and maintain assets, services, products and capability. Projects need to take into account the ultimate requirements for decommissioning and disposal.

In some settings, it is possible to find arrangements involving multiple projects running in parallel, or related to one another, to provide support or to build additional capabilities. Multiple concurrent projects may require prioritisation in terms of scheduled deployment, importance of primary deliverables or the availability of key resources, skills, or individuals.

Programmes are unique and transient strategic endeavours, undertaken to achieve a defined set of objectives, incorporating a group of related projects and change management activities. They can be defined as coordinated projects and change management activities combined to achieve beneficial change. The distinction between projects and programmes depends on context and the guiding criteria between them often relates to the complexity of scope and the addition of change activities. The need for significant improvement will be consistent with the organisation's strategy, and programmes will help to deliver elements of that strategy.

Programmes typically combine new deployment with some elements of business-as-usual. Consequently, they utilise capital expenditure to acquire assets, services, products and capability, alongside operating expense incurred as a result of performing normal business operations. Programmes are often defined as delivering change, and would typically incorporate the full utilisation of benefits to satisfy the business case. The overall measure of success will be determined by the actual realisation of the expected benefits, which frequently involves the use of capabilities or facilities created by the programme in an ongoing, 'business-as-usual' manner.

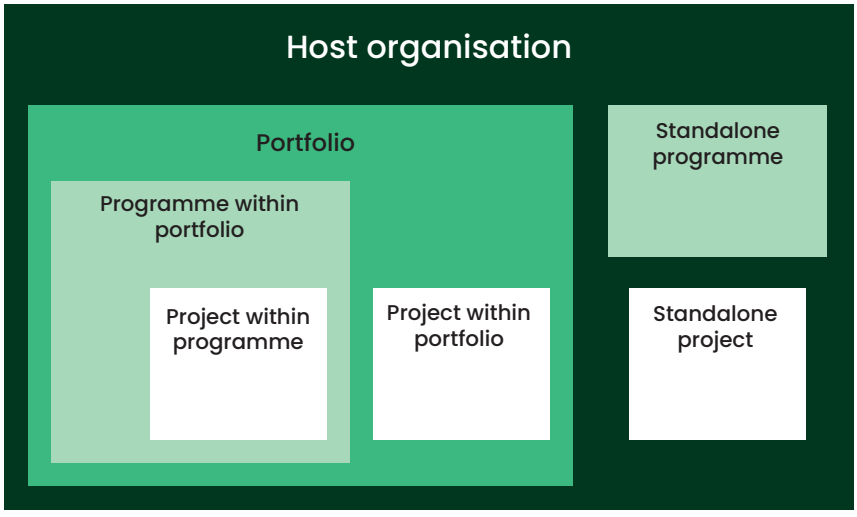

Figure 1.1.5 Projects, programmes and portfolios

Portfolios are used to select, prioritise and control an organisation's programmes and projects, in line with its strategic objectives and capacity to deliver. Their goal is to balance the implementation of change initiatives and the maintenance of business-as-usual, while optimising return on investment.

Portfolios are used to structure investments. They can be managed at an organisational or functional level (e.g. including all IT initiatives) to optimise strategic benefits or operational efficiency, respectively. They address a number of major questions:

- Are these the projects and programmes needed to deliver the strategic objectives, subject to risk, resource constraints and affordability?
- Is the organisation delivering them effectively and efficiently?
- Are the full potential benefits from the organisation's investment being realised?

Portfolios are particularly concerned with the interdependencies between projects and programmes, in terms of:

- scarce or limited resources
- balance within the portfolio (e.g. between risks and returns)
- alignment with the strategic intent and main priorities
- timing
- capacity bottlenecks

Portfolio success relates to the soundness of the investment and depends on the ability to address the above concerns and questions. The management of a structured portfolio involves constant review of the balance of investment and benefit, creating and closing projects and programmes as required.

Project professionals get to choose between the different ways of structuring project-work by using projects, programmes and portfolios. Governance, assurance and oversight structures will match the approach selected for organising the work.

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1.2
Life cycle options and choices

There are many different ways of structuring and organising project-work. One of the more important shaping decisions revolves around the choice of an approach and the associated life cycle that matches that philosophy. This section is concerned with clarifying the different options and highlighting their implications.

When organisations decide to deliver beneficial change through project-work, they have a diversity of potential approaches, ranging from highly predictive methods that assume that knowledge regarding the context is well established and stable, all the way to highly adaptive situations, replete with volatility, uncertainty, ambiguity and turbulence that require more dynamic ways of engaging with the environment and continuously involving interested stakeholders. The choice of approach will determine the way projects, programmes and portfolios operate and play a vital part in determining their success. Each life cycle also requires different management capabilities, team skills, knowledge management approaches and governance style.

Professionals are expected to make informed choices and select approaches that match their specific context. This section aims to introduce the richness and diversity of possibilities available to decision-makers. It begins by introducing some of the main philosophical positions and key perspectives, before delving into the different types of life cycles on offer and recognising that given the many compromises, managers unsurprisingly opt for pragmatic hybrid choices, combining the best features from different arrangements.

Project-work is often said to emphasise a short-term perspective through an intense focus on implementation. However, projects are increasingly called upon to deliver benefits, address sustainability considerations and transform organisations. Such expectations imply a need to extend the traditional focus to address more strategic aspects and global concerns. This section offers a glimpse of the fundamental decisions and trade-offs available to decision-makers who need to understand the diversity of options they increasingly find at their disposal.

This section will be of particular interest to senior leaders in organisations as well as to managers and project professionals as it addresses:

1.2.1 Life cycle philosophy: Making sense of life cycles

1.2.2 Linear life cycles: Following a deliberate sequence

1.2.3 Iterative life cycles: Filling in the detail

1.2.4 Hybrid life cycles: Finding the right balance

1.2.5 Extended life cycles: Bringing in the benefits

1.2.6 Product life cycles: Considering usage, evolution and disposal

1.2.1 Life cycle philosophy

Making sense of life cycles

Life cycles are fundamental to the management of project-work: Different approaches can be utilised for deployment, depending on the desired outputs, benefits and outcomes and the expected uncertainty, novelty and risk appetite. The choice of deployment approach will play a key part in selecting the most suitable form of life cycle, and thereby determine the stages involved in organising project-work and indicate how they are interrelated and sequenced.

A life cycle is a framework comprising a series of distinct high-level stages required to transform an idea or concept into reality in an orderly and efficient manner. It offers a systematic and organised way to undertake project-based work and can be viewed as the structure underpinning deployment.

The life cycle acts as an important management tool, focusing on the allocation of resources, the integration of activities, the availability of key individuals, the support of timely decision-making, the mitigation of risk and the provision of control and governance mechanisms matching the life cycle structure. Consequently, it is important that sponsors and executives understand the characteristics and specific features of the selected approach.

Approaches to deployment range between highly predictive and highly adaptive settings and can be depicted along a spectrum (Figure 1.2.1). The choice between predictive and adaptive philosophies is largely influenced by the availability of knowledge. More predictive approaches tend to rely on knowledge known at the start, allowing work to proceed in a sequential manner, whilst adaptive contexts imply that new knowledge is created as the work progresses, which is then used to inform and guide the remaining effort. Adaptive approaches allow more key stakeholders to contribute and shape the development process.

Specific philosophies for deployment include:

- **Linear**: Where the initiative progresses through a sequential series of steps. In a programme, each step would provide only partial capability until the final desired state is reached. This is suitable for stable, low-risk environments.
- **Incremental**: Where the target state is achieved through a staged series of smaller steps. This can be used to deliver 'quick wins', conserve scarce resources or deliver early benefits. It fits with the idea of delivering tranches in programmes.
- **Iterative**: Where prototypes, timeboxes or parallel activities are utilised to acquire new insights, obtain feedback or explore high-risk options. The scope of this activity depends on the level of uncertainty and the organisational risk appetite. The duration may extend throughout deployment.
- **Evolutionary**: Where deployment entails a number of major transitions, each based on user feedback from the preceding transition. This may be applied in innovative or time-critical entry to new markets.

There is no universal best approach. Project professionals select the most suitable arrangement for their context, most often combining features from any of the above into a hybrid life cycle (see 1.2.4).

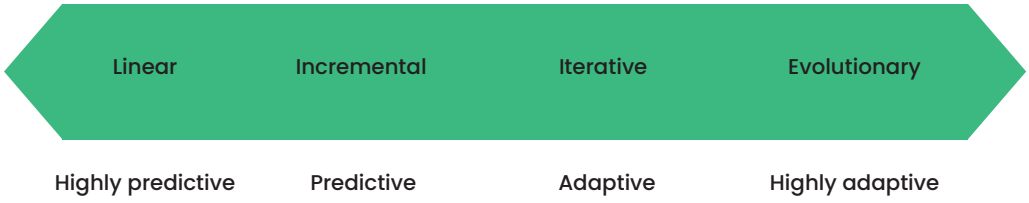

Figure 1.2.1 Selecting a life cycle

Recommended reading

- *The UK's National Standard BS 6079 Project Management – Principles and Guidance for the Management of Projects* (2019) considers the role of life cycles in the management of projects and offers guidance on the components of a project life cycle.
- *APM Introduction to Programme Management* (2016) offers explanations of the various life cycle philosophies in the context of managing programmes and change efforts, addressing some of the major implications of making life cycle choices. It also covers governance issues and provides detailed guidelines related to the major stages included in the programme life cycle.
- *Managing Knowledge in Project Environments* (2019) builds from the assumption that the choice of life cycle is based on what is known. It explains the role of knowledge and uncertainty in selecting different life cycles and approaches. The book offers a knowledge management perspective on project-work, paying particular attention to the implications of selecting specific life cycles and approaches.

1.2.2 Linear life cycles

Following a deliberate sequence

Linear life cycles refer to the completion of project-work within a single pass through the cycle (Figure 1.2.2). Projects are thus sequenced into a set of distinct phases, which are completed serially and typically span from the development of the initial concept to the deployment of an ultimate outcome, output or benefits. This is particularly useful where there is a need to coordinate large teams of people working across companies and departments.

Project-work can be divided into phases that must be accomplished in order to achieve the project goal. Division into phases and intermediate deliverables is useful in planning as it provides a framework for budgeting, scheduling, allocating resources and appropriately assigning team members and experts, as well as a mechanism for arranging milestones and project reviews. This leads to greater efficiency and enhanced organisation, resource allocation and cost control.

In linear life cycles, progress is carried out in sequence, enabling the passing of control and information to the next phase when predefined milestones are reached and accomplished. This approach aims to be highly structured, predictable and stable, providing a transparent format for managing contracts and allowing maximum control and governance over the process. It works particularly well for the deployment of well-understood and clearly defined outputs trading time, cost and risk to achieve the right scope and quality. On the other hand, it assumes the availability of relatively perfect knowledge upfront, whilst being resistant to change and inflexible in terms of corrections and rework. It also implies a long sequence, culminating in the ultimate handover. Urgent or emergent change can only be addressed by exception, requiring major modifications and reorganisation of the cycle. Dividing knowledge into distinct phases can create silos and knowledge barriers between the phases.

A typical linear life cycle encompasses multiple phases:

- **Concept**: Development of an initial idea through initial studies and high-level requirements management, and assessment of viability, including an outline business case.
- **Definition**: Development of a detailed definition, plans and statement of requirements that include a full justification for the work.
- **Deployment**: Implementation of plans and verification of performance through testing and assurance to realise intended outputs, outcomes and benefits.
- **Transition**: Handover, commissioning and acceptance of outputs to the sponsor and wider users, culminating in formal closure.

Life cycles vary according to the nature, purpose and expected use. The basic life cycle can be adjusted to reflect different contexts and local variations, including alternative phase names prevalent within specific industries and business sectors. Smaller projects may apply a shorter cycle, as required. In some circumstances, the delivery of benefits (benefit realisation) can also be incorporated as an additional step at the end of the sequence (see also 1.2.5).

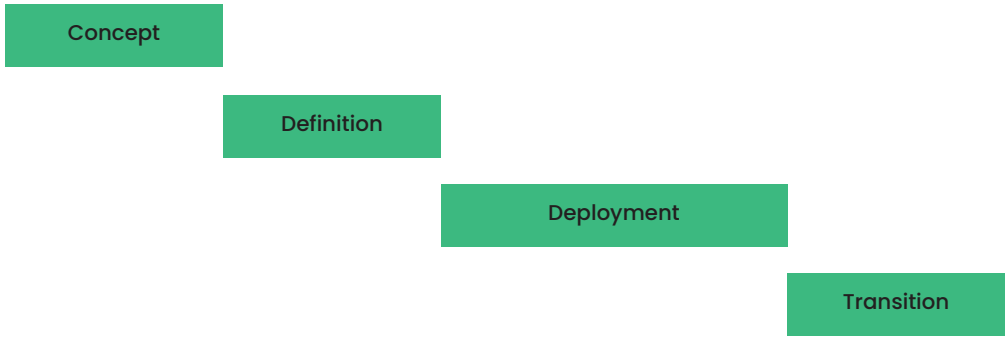

Figure 1.2.2 Linear project life cycle

Recommended reading

- *The Project Workout: Directing and Managing Business-Led Projects* (2019) provides a guide to structuring projects, combining useful advice with practical techniques. The resource identifies many of the key activities required to utilise the 'staged' framework with an extended focus on governance, monitoring and control, information management and the relevant standards.
- *APM Introduction to Programme Management* (2016) offers guidelines on the application of life cycles in the context of programmes. It provides detailed guidance on the key activities related to each of the major stages and on the governance of programme life cycles.
- *Guide to Life Cycles and Life Cycle Models* (2017) covers a plethora of life cycles and approaches identified by a joint task force involving members from the International Council for Systems Engineering (INCOSE) and APM. The coverage includes project and product life cycles with variations from many sectors and disciplines.

1.2.3 Iterative life cycles

Filling in the detail

Iterative life cycles are composed of several iterations allowing the deployment of initial capability, followed by successive deliveries of further value. They are based on the idea of concurrency, or simultaneous engineering, where different development steps are allowed to be performed in parallel (Figure 1.2.3). Iterative life cycles repeat one or more of the phases before proceeding to the next one, and manage uncertainty regarding the scope by allowing the objectives to evolve throughout the life cycle as learning and discovery take place.

Recognising that change is pervasive, iterative life cycles begin by developing a high-level vision, with the finer detail uncovered during the cycles of iteration. Allowing the specification and design to run in parallel 'fast tracks' the deployment. Iterations are thus used to progressively elaborate and improve understanding based on client interaction with learning between the iterations. Iterations are applied when the goals are clear but the means of achieving them are not. The rapid deployment of smaller, partial solutions becomes the basis for gaining fast feedback and new insights about what needs to be done. Iterations are often conducted through working prototypes which stakeholders utilise as the basis for adaptation and improvement.

Iterative work prioritises collaboration and co-creation to address social and political complexity. Iterative approaches address change, innovation, new domains or pioneering technologies as they accentuate velocity and adaptability and reduce uncertainty and knowledge boundaries. However, iterative approaches can only proceed when user feedback is available to be used as the basis for initiating new cycles of development, refinement and improvement. They depend on co-location or regular availability of users to interact with the system and build buy-in. They also encourage users to develop and enhance the proposed solution continuously, and thereby amend the required scope and rearrange the identified needs whilst reducing the overall risk levels.

Iterative ideas are often linked with incremental concepts. Incremental thinking combines elements of linear and parallel life cycles to apply linear sequences in a staggered fashion over time. The overall design or requirements can then become the basis for the deployment of increments to the users at regular intervals as calendar time progresses. Agile development projects combine the two concepts by including a series of iterations prior to the formal release of a product. Many agile methods also apply the idea of timeboxing, an iteration with a fixed end date that is not allowed to change, thereby adjusting the scope and quality to deliver on time and to cost. Multiple timebox iterations are likely to be employed in parallel to develop different aspects of the system. Overall, using iterations allows earlier return on some of the benefits that have already been implemented whilst validating the concepts and engaging users. Similar notions can be explored in the context of structuring and managing programmes, where iterations can also accommodate tranches and chunks of business-as-usual.

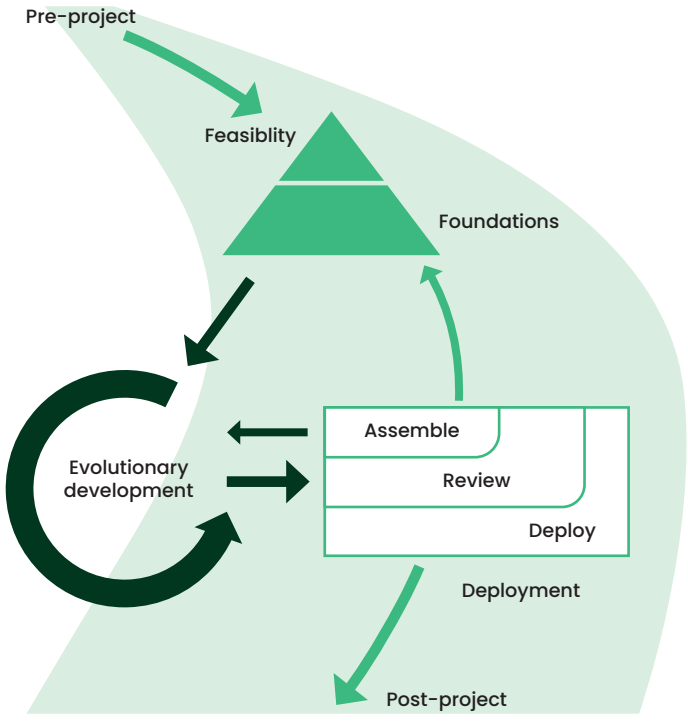

Figure 1.2.3 Iterative development in a dynamic, agile context

Source: *The DSDM Agile Project Framework (2014 Onwards)*

Recommended reading

- *The Project Workout: Directing and Managing Business-Led Projects* (2019) covers concurrent engineering and other life cycle variations in the context of projects. It also offers some guidance on the relationship between agile deployment and project management.
- Guidelines on life cycles related to the management of programmes is covered in *APM Introduction to Programme Management* (2016). This touches on the idea of incremental development and deployment supported through a set of tranches. It also considers the relationship between projects and programmes as implied by the deployment structure. This resource offers useful guidelines related to the use of increments and timeboxes in agile settings.
- *Agile PM: Agile Project Management Handbook*, Vol. 2 (2014) describes the project life cycle in an agile setting. The text explores agile philosophy, highlighting how and where project management can be represented throughout an agile or iterative life cycle.

1.2.4 Hybrid life cycles

Finding the right balance

Context matters: there is no universally applicable one-size-fits-all life cycle. The choice often hinges on what the organisation is trying to achieve and what is important. Managers regularly utilise progressive elaboration, where detail is filled in as development progresses using prototypes and other iterative elements. Engagement with potential users uncovers unexpected new details, hinting at the blending of approaches as a potential way of progressing work effectively. Moreover, given the complexity and uncertainty of many contexts, there is no need to apply any particular approach for the complete duration of a project or programme.

Hybrid life cycles enable a pragmatic mix of philosophies, typically fusing together elements from predictive and adaptive perspectives to create a new model or approach. An obvious example is in utilising iterative or agile methods for early requirements gathering, where the uncertainty is greatest, and following it up with incremental or sequential processes to formalise deployment. The use of prototyping, timeboxing or iterative thinking offers tested methods for experimentation and risk reduction. The tailoring of life cycles allows for predictive aspects to be integrated into adaptive methods, and also for the borrowing of agile concepts and tools to: augment and strengthen predictive deployment; focus on the most useful interim deliverables; and speed up the deployment and realisation of benefits, especially in increasingly uncertain contexts.

Adding iterative elements to 'predictive' projects can enhance deployment in stages, support the generation of insights, underpin the realisation of an early benefit stream and validate some of the ideas much earlier within the cycle. Iterative and agile approaches have developed a discipline of enhancing visibility, determining progress and responding adaptively to enhance the potential deliverable value which is not normally found in linear thinking. Similarly, earlier return on investment on some aspects of a delivered system can be encouraged when sequential constraints are relaxed. Utilising prioritisation and tracking methods borrowed from incremental and iterative deployment and the application of governance approaches adopted from sequential life cycles to agile projects can offer synergistic benefits and allow practitioners in either camp to borrow, overcome traditional limitations and improve current practice. However, it also requires great skills and clarity when involving two different systems of working.

Blending, merging or mashing of life cycles, ideas, principles, practices and methods applies equally to programmes and portfolios. Building agile working into a project or programme investment life cycle can be extremely useful for predictive organisations finding themselves operating in uncertain contexts because it offers sizing for efficiency and flexibility. Transformation and major change efforts can be speeded up through incremental deployment approaches and improved tranche reviews, while agile concepts can also be utilised in categorising, blending and balancing portfolios to make them more flexible and dynamic (Figure 1.2.4).

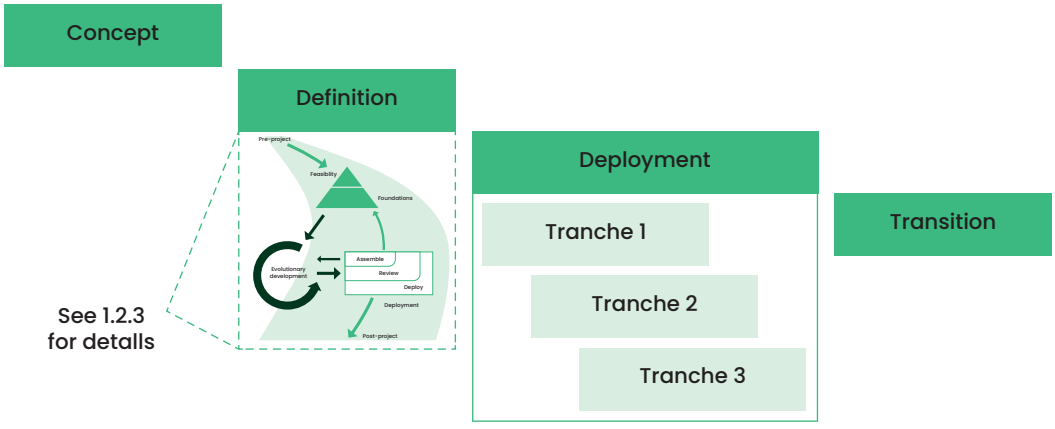

Figure 1.2.4 Hybrid programme life cycle

Recommended reading

- *A Guide to Assurance of Agile Delivery* (2017) was developed by the APM Assurance SIG to add assurance considerations to projects characterised by agile deployment forms. The guide incorporates aspects related to agile projects into the assurance activities offering some specific guidance for hybrid projects, reminding assurance specialists to consider the different constituent parts of the project.
- *Directing Agile Change* (2016) aims to propose guidance in relation to overseeing the deployment of agile projects. The resource was created by the APM Governance SIG. It identifies the distinctions between linear and iterative modes of deployment and acknowledges the implications of utilising hybrid combinations that draw on both perspectives.
- *Agile-stage-gate-hybrids: The next stage for product development* (2016) was written by a product development and innovation expert. The article makes the case for integrating elements of agile product development into traditional gating processes leading to faster physical product releases, better responses to changing requirements and improved team communication.

1.2.5 Extended life cycles

Bringing in the benefits

The typical project landscape is rather diverse. As a result, the scope of a project life cycle can take various forms. Some projects will be part of a programme and will only be concerned with delivering outputs. Some projects will work as standalone projects and would be primarily concerned with delivering outputs. Other projects will be expected to incorporate the management of change and the realisation of benefits and hence require a greatly extended life cycle (Figure 1.2.5). Where a contractor is working for a client, the contractor's 'project' may simply be the deployment and transition phases of the client's project that will include benefits realisation. In these circumstances the client is responsible for operating the outcomes in order to deliver the benefits.

Extended life cycles ensure that accountability and governance of the investment stays with the change teams until the change is fully embedded by offering the missing connection to benefit realisation, whilst preventing the formation of knowledge boundaries between project teams and operations. Recognising that many projects are initiated in order to deliver change and beneficial outcomes to organisations, life cycles incorporate a further phase named 'benefits realisation' that may proceed up to the achievement of the business case.

An additional underpinning phase is also required in order to realise benefits as new outputs need to be made available and accessible to potential users. This may need to be enabled and operated separately. Note that programmes will often include benefits realisation as a core part of their definition and scope. The additional activities included in the extended life cycle, encompass:

- **Adoption**: Operations and sustainment required to utilise the new project and enable the acceptance and use of the benefits.
- **Benefits realisation**: Realisation of the required business benefits.

The principal implication of extending the end of the life cycle to incorporate benefits realisation is that there is a need to start upfront, plan for the supplemental activities and incorporate additional considerations during the concept and definition phases. There are income and operational costs connected to the additional activities as well as spending capex considerations which will be addressed during the concept and definition phases.

Projects that include benefits realisation will have an extended scope that goes beyond the definition of outputs. Thinking about benefits begins before the project has been scoped. Project requirements need to be expressed in terms of benefits and outcomes to enable benefit realisation to proceed. If there are multiple areas of benefits, a programme may be better suited to deliver the different streams of benefits (the scope of programmes typically include benefits realisation). In order to facilitate benefits realisation during the extended project duration, benefits management (incorporating identification, definition, quantification, planning, execution, tracking, monitoring and reviewing) is needed as an additional activity required to translate requirements that have been expressed in terms of benefits and manage them to successful deployment and realisation.

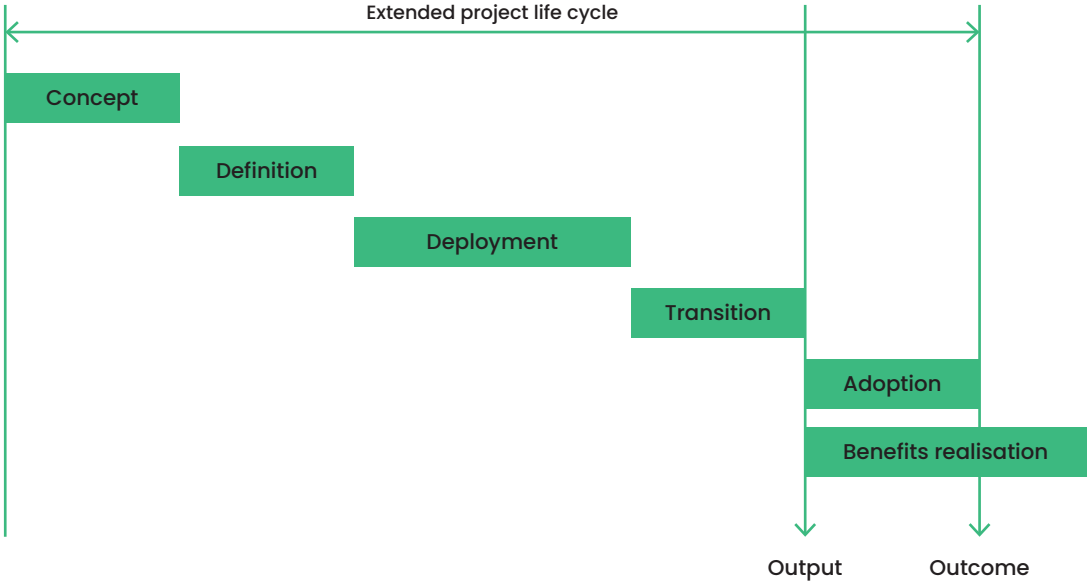

Figure 1.2.5 Extended life cycle

Recommended reading

- *Guide for Effective Benefits Management in Major Projects* (2017) pulls together insights and lessons from significant major projects. The report synthesises the key principles and activities required to successfully deliver benefits in such projects and offers advice and guidance on extending the life cycle.
- *A Guide to Using a Benefits Management Framework* (2019) was compiled by the APM Benefits Management Specific Interest Group. The guide develops an understanding of the need for benefits realisation, offering a framework for addressing contextual factors and developing the capability to realise benefits.
- *Benefits Realisation Management: A Practical Guide to Achieving Benefits through Change* (2010) is a practical guide to implementing benefit realisation in organisations. The book explains the processes required to support benefit realisation practice, identifying the key additions required to supplement projects and programmes and embed benefits realisation practice as a measure of success.

1.2.6 Product life cycles

Considering usage, evolution and disposal

The product life cycle takes a broader view of the full product life span from initial idea, through development, evolution and upgrades to removal from service and ultimate dismantling (Figure 1.2.6). Whilst such considerations extend beyond the traditional project boundary, issues regarding operation, upgrade, decommissioning and disposal are likely to be raised during the early definitional activities and be reflected in the requirements for the product and initial project. Project managers should be aware of these expectations and needs, and develop their projects in ways that will not undermine or contradict the long-term plans for the product and its intended use and disposal. Whilst some projects are designed to operate the outcomes for another project, longer-term or multiple considerations can be accommodated through programmes to provide greater flexibility in structuring and organising such activities.

To enable systems and products to be utilised and perform in accordance with the agreed business case, systems and initiatives need to be adequately supported, maintained, upgraded and improved so that the benefits can continue to accrue. Some applications such as 'whole-life costing' will consider the full product life cycle and the extended life cycle covers the full operation of the service.

Additional phases added to the full product life cycle include:

- **Operation**: Ensuring availability and continuing support and maintenance (of the project deliverables and the potential outcomes and benefits).
- **Termination**: Decommissioning and disposal at the end of the product's useful life.

Utilising the product cycle requires additional upfront preparation: during the definition phase, it is essential to establish the sustainability and environmental impacts of the proposed solution, outputs and outcomes through an assessment of the whole life cycle of the products, including operational, decommissioning and disposal considerations. Many of the decisions made during the early stages may impact not just the operation phase, but also the choice of materials or retirement options that will need to be considered. Experts can be employed to identify, advise, mitigate and plan for the risks associated with future actions.

Decisions about the future of the product or system are incorporated into the requirements management activities so they can be recorded and feed into subsequent activities and trade-offs. Disposal requirements, codified during the concept phase, are increasingly expected to be included in the formal documentation. The product life cycle helps in making sustainable choices and embraces the principles of product stewardship, advocating that everyone who benefits commercially from a product has a shared responsibility to minimise its environmental impacts. Adopting a whole life cycle or a full product life cycle perspective enables executives and managers to responsibly engage with the long-term future implications of their project-related actions, and discharge their increasingly emerging responsibility for proper end-of-life disposal of systems and assets in a responsible, affordable and effective manner.

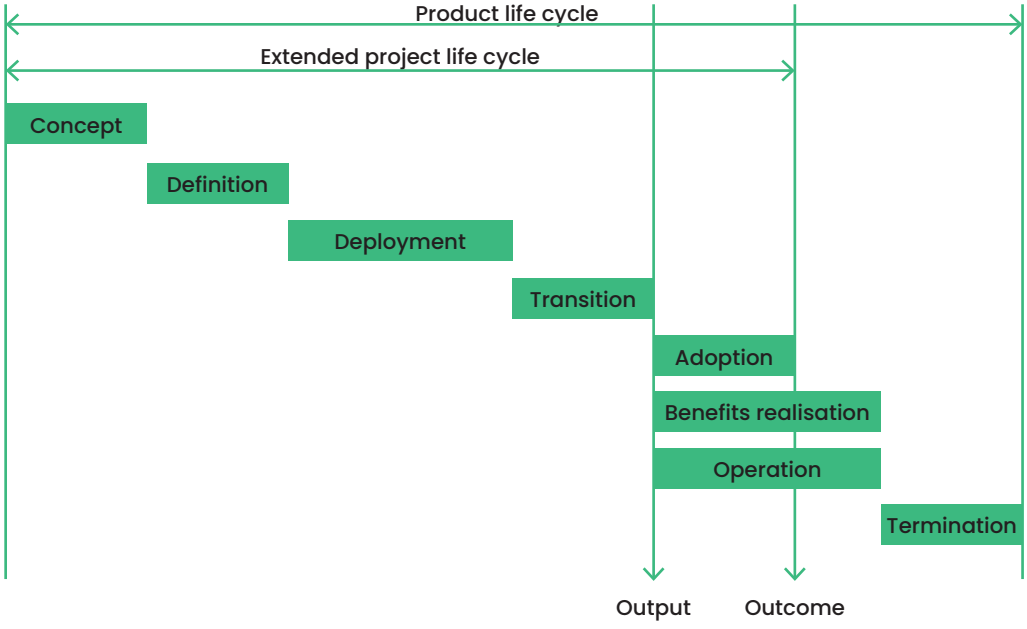

Figure 1.2.6 Product life cycle

Recommended reading

- *Product Lifecycle Management: The Executive Summary* (2018) is concerned with products and their management through an effective life cycle. The book makes the case for understanding the full environment within which products are developed, manufactured and supported from cradle to grave, and combines theory, practical applications through examples and case studies that cover recent developments and trends.
- *Guide to Life Cycles and Life Cycle Models (2017)* explores different aspects of life cycles from a project management and systems engineering perspective. The report compares product life cycle (referred to as 'product span') and the project life cycle, exploring the commonalities and differences between the two.
- *Product Stewardship in Action: The Business Case for Life Cycle Thinking* (2017) makes a powerful case for extended producer responsibility as a business strategy rather than a philanthropic exercise. It highlights the benefit from achieving public and commercial shared value by responding effectively to stakeholder concerns regarding the environment.

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1.3 Establishing governance and oversight

Having identified the approaches for developing and deploying the new assets, capabilities and systems that can address strategic needs, it is essential to create governance, assurance and oversight mechanisms, systems and frameworks to underpin and enable the achievement and support the realisation of measurable beneficial change.

The establishment of business value depends on the arrangements and measures that support and enhance the deployment of the assets and capabilities, their utilisation and the ultimate realisation of the business case. Sound governance and assurance are extended to change projects, programmes and investments to guarantee their outcomes, align achievement with strategy and enable the realisation of benefits and the creation of value that will deliver return on investment.

Success depends on the capabilities to effectively sponsor and champion change and leverage and optimise supply chains, evaluate the expected return on investment, develop business cases that support the change, create dedicated temporary organisations and structures, utilise talent management systems and involve and empower governance boards to sustain and enhance the change initiatives.

This section will be of particular interest to senior leaders in organisations as it addresses:

1.3.1 Governance principles: Establishing control of deployment of projects, programmes and portfolios

1.3.2 Assurance principles: Providing confidence to stakeholders

1.3.3 Sustainability: Environmental, social, economic and administrative considerations

1.3.4 Strategic sourcing: Choosing strategies for obtaining best-value from supply chains

1.3.5 Sponsorship: Championing the work to ensure intended benefits and value are achieved

1.3.6 Investment decisions: Evaluating the return on investment

1.3.7 Business case: Justifying investment in a project, programme or portfolio

1.3.8 Temporary structures: Aligning and balancing temporary and permanent organisational structures

1.3.9 Talent management: Attracting, deploying, supporting and retaining talented people

1.3.10 Governance boards: Putting governance principles into practice

1.3.1 Governance principles

Establishing control of deployment of projects, programmes and portfolios

Governance comprises the framework of authority and accountability that defines and controls the outputs, outcomes and benefits from projects, programmes and portfolios. It is the mechanism whereby the investing organisation exerts financial and technical control over the deployment of the work and the realisation of value.

Governance for project-based working informs corporate governance and, when effective, provides confidence to the board of directors/trustees that investments in projects, programmes and portfolios are being well managed.

Good governance calls for the roles and responsibilities of the team and wider stakeholders to be clearly defined. This is typically achieved through the use of a responsibility assignment matrix that clarifies the roles that are accountable and responsible for activities and decisions, those that need to be consulted during decision-making and those that need to be informed of the outcome.

The benefits of establishing a responsibility assignment matrix early and maintaining this throughout the life cycle are to enable governance to take responsibility for:

- confirming that decision-making is being efficient and effective
- ensuring that the investing organisation maintains the right capacity and capability to deliver the work

Governance empowers project professionals to execute their responsibilities by defining delegated limits of authority and establishing effective escalation routes for issues and change requests.

Projects and programmes are delivered through a chosen and defined life cycle (see Section 1.2). Governance ensures that all the requirements of a preceding phase of the chosen life cycle are met before work progresses to the next phase. The decision points between life cycle phases are commonly known as decision gates (see 2.2.2) and rely on assurance of the work carried out so far (see 1.3.2 and 2.2.4) and competent integrated plans and reporting for the work to come (see Section 4.2).

Adopting these governance principles ensures that:

- project professionals deliver the outcomes and value defined by the sponsor
- implementation of the work adheres to legal, regulatory, corporate, ethical and professional standards

When governance is working well, it provides sufficient reporting and control activities to ensure that the sponsor (see 1.3.5) and other senior leaders/stakeholders are kept informed of relevant progress (see 3.1.1) and are provided with the information they need to make decisions about future investment in the project, programme or portfolio. Where project-based work has multiple organisational owners, governance is designed to offer each investor/stakeholder an appropriate level of influence in line with their stake, and a route to resolution of any disputes.

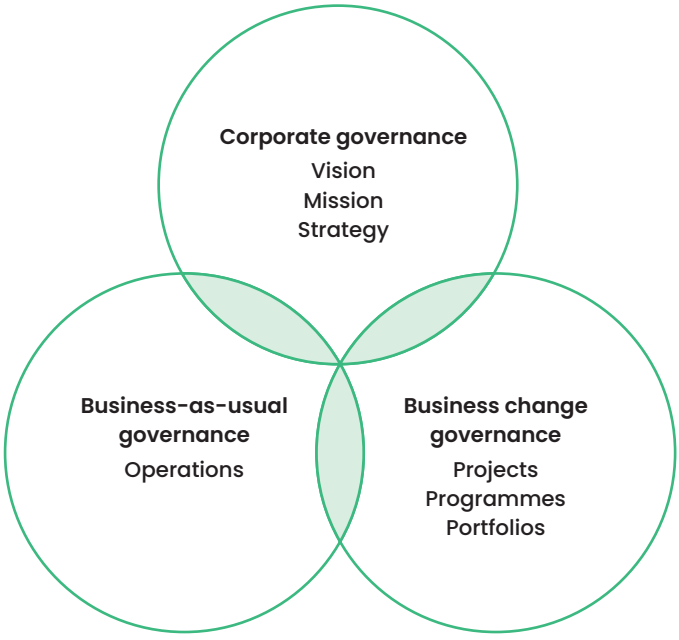

Figure 1.3.1 Interaction of different levels of governance

Source: *Adapted from Directing Change (2018)*

Recommended reading

The APM Governance Specific Interest Group has published a comprehensive suite of guides on a range of governance principles:

- *Directing Change* (2018) provides advice to those with corporate governance roles on how to adopt solid practices for the governance of complex change. It also links change with business-as-usual and corporate governance activities.
- *Directing Agile Change* (2016) explains how good governance of projects that adopt iterative/agile approaches is enabled and suggests collaborative behaviours that can be applied at any level of leadership in the organisation, from the main board/chief executive level downwards.
- *Governance of Co-owned Projects* (2017) offers a succinct guide for boards and their advisors, providing a set of underlying principles that can be assessed and applied when there are multiple organisations investing in a project.

1.3.2 Assurance principles

Providing confidence to stakeholders

The assurance process provides confidence to the governance board that the project, or wider programme or portfolio is on track to deliver the intended benefits.

Effective assurance is objective and independent, working in partnership with governance and risk management. Governance relies on assurance to support sound decision-making and change control. Risk analysis provides guidance to assurance on where the greatest vulnerabilities lie (see 4.2.3). Evidence from assurance improves risk assessment as well as informing decision-making at decision gates (see 2.2.2) and increasing the probability of projects, programmes and portfolios meeting their objectives. Governance, assurance and risk management work together because any weakness in one discipline damages all three.

When setting up governance, the sponsor agrees an approach to assurance with other stakeholders. This may be documented in a formal assurance strategy to be applied across a programme or portfolio.

Where a project exists independently of a programme or portfolio, the assurance approach/strategy and plans are developed by the sponsor from first principles. The project manager and sponsor agree with the owner that the assurance planned will provide the necessary confidence for the outputs of the project to be accepted into use.

The main questions to address when developing an assurance approach/strategy are:

- Who are the stakeholders, and what are their roles in providing and receiving assurance?
- What are the governance arrangements of the organisation/programme/project?
- What are the organisation's project life cycles? (See Section 1.2.)
- How will appropriate levels of independence be ensured?

An assurance plan is considered to be effective if it meets these criteria:

- Assurance is independent, objective and proportionate to the work.
- Assurance is targeted where the greatest risks exist.
- There are clear accountabilities for assurance arrangements, activities and outputs.
- Timings and cycles of assurance activities are planned and coordinated.
- The governance route for reporting outcomes and resolving issues is clear.

In a large project or programme, there may be several different assurance providers, for example internal audit, or external consultant-led reviews. In such cases, the sponsor coordinates the activities of the separate providers and ensures that there are no gaps in the coverage and that the team is motivated to cooperate. The term integrated assurance is often used in such situations and reflects the three lines of defence model that is popular in corporate governance as shown in Figure 1.3.2.

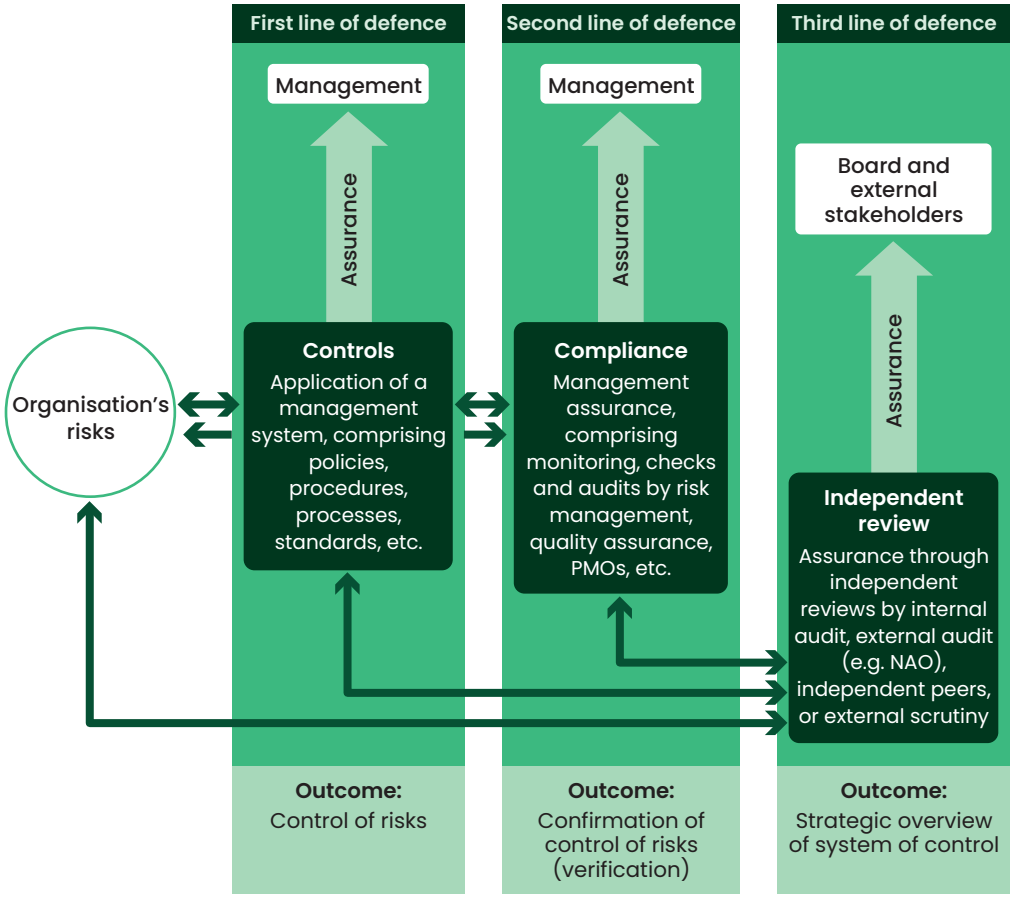

Figure 1.3.2 The three lines of defence model for assurance

Source: *A Guide to Integrated Assurance (2014). Used with permission of Roy Millard.*

Recommended reading

The APM Assurance Specific Interest Group has published a comprehensive suite of guides on assurance which offer practical advice to providers and receivers of assurance in any industry sector:

- *A Guide to Project Auditing* (2018) is intended for the use of auditors in developing an approach to review and assurance.
- *A Guide to Assurance of Agile Delivery* (2017) addresses the different approaches required for agile approaches, where observation, as opposed to documentation, plays a larger role in assurance.
- *A Guide to Integrated Assurance* (2014) explains the benefits of the integrated approach and provides guidance on how to implement an integrated assurance model.

1.3.3 Sustainability

Environmental, social, economic and administrative considerations

Sustainability is concerned with balancing the environmental, social, economic and administrative aspects of project-based work to meet the current needs of stakeholders without compromising or overburdening future generations (Figure 1.3.3).

Sustainability involves both individual and organisational responsibility to ensure that outputs, outcomes and benefits are sustainable over their life cycles and during their creation, disposal and decommissioning (see 1.2.6). The last decade has also seen the emergence of climate change as an urgent global issue. Project professionals have a responsibility to ensure that their work minimises, or ideally positively affects, ongoing sustainability.

When working sustainably, benefits emphasise building lasting outputs and outcomes that are affordable to maintain and relatively straightforward to decommission. Assessment of sustainability aspects is clearer and more identifiable in some domains: large-scale engineering and construction projects will often have an immediate impact on the environment. These are closely monitored and will often be subject to legislative requirements. Another example, focused on the social aspects, is the building of a residential complex that must include social housing for the local community and its key workers. Social impact is often an important benefit measure for local government projects and programmes in the UK.

In projects where the outputs and outcomes are not physical structures, for example, software developed to enable organisational change, there is no immediate environmental impact. However, large-scale IT programmes do have an administrative and cost burden that features in a sustainability assessment, and may include unforeseen social and societal impacts.

Many organisations recognise that the environmental, social and economic dimensions of their business activity need to be factored into their management strategies. This is sometimes referred to as the 'triple bottom line'.

Even minor players in a project-based team can have an influence, however small, on sustainability and may therefore be expected to think creatively and act responsibly in their day-to-day work. This may be something as simple as reducing unnecessary travel or the use of paper. Sponsors and stakeholders, especially those with seniority, can put in place mechanisms to identify, monitor and reward working practices that support sustainability. They can also influence wider stakeholders and challenge aspects of sustainability.

Project professionals seek and follow the environmental guidelines of the commissioning organisation. Once they understand the requirements, they monitor and report team adherence and ensure that their risk strategy incorporates impacts to sustainability. Sustainability is relevant across all areas of project-based working. For example, the procurement team seeking opportunities to buy from sustainable sources and to make the supply chain more efficient. Programme and portfolio professionals need to play a part in analysing and selecting projects to meet sustainability objectives wherever possible. Project professionals provide information and confidence to sponsors and organisational

boards to ensure that environmental, social, economic and administrative practices are as responsible and sustainable as practicable.

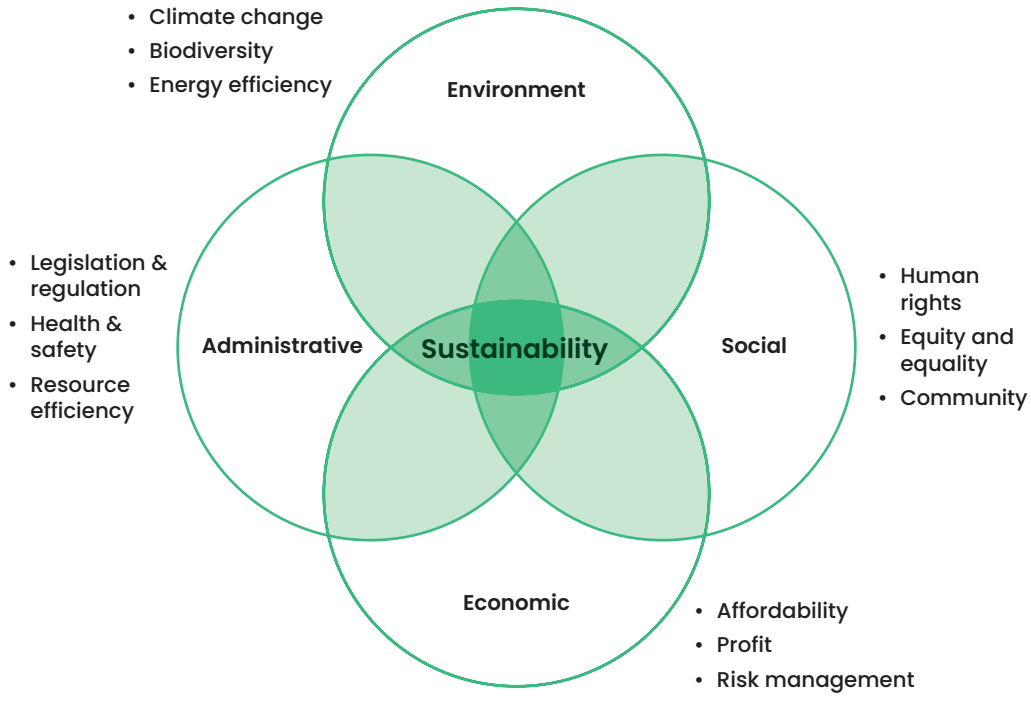

Figure 1.3.3 Sustainability as balancing different concerns

Recommended reading

- *Social Partnerships and Responsible Business* (2014) is a handbook relevant for those who are looking to develop and sustain partnerships for the social good. It provides local, national and global perspectives on the importance and impact that cross-sector collaboration can have on challenges such as climate change, education and health.
- *Sustainability in Project Management* (2012) explores the questions surrounding the integration of the concepts of sustainability in project-work encompassing economic, social and environmental concerns. It also emphasises the role of responsibility, accountability and values in terms of ethics, fairness and equality to enable professionals to 'do the right things right'.
- *Sustainability Interventions – For Managers of Projects and Programmes* (2011) is aimed at project practitioners to aid them in bringing their expertise to bear on sustainability themes and provide leadership to the other respected team members and stakeholders who have their own interests, obligations, responsibilities and contributions on such matters.
- *Climate change and what the project management profession should be doing about it – a UK perspective* (2017) is an essay that argues project management has a potentially significant role to play in reducing the causes and consequences of climate change. This includes managing projects that will deliver new forms of mitigation.

1.3.4 Strategic sourcing

Choosing strategies for obtaining best-value from supply chains

Before engaging with the market to acquire goods or services, analysis is needed to understand:

- the requirements of the intended outputs
- the capacity and capability of the market to meet the requirements

This analysis results in an understanding of buying strengths and weaknesses and helps the organisation investing in project-based work to develop strategies to maximise buying advantages and respond to the risk of supply disruption. The Kraljic matrix (see Figure 1.3.4) is a widely adopted tool used to assist in this process.

Based on the outcome of the analysis, the sourcing strategy for a particular item or service might vary from the simple transactional, 'over-the-counter'-type arrangement for routine commodities, to long-term partnering or alliancing arrangements for high-risk items for examples requiring high-technology equipment or specialist design services. In all strategic sourcing decisions, there is a balance to strike between multiple criteria, including the long-term sustainability of the supply chain and its ability to support ongoing operations once the project is complete, particularly where the organisational context is one of fast-moving societal or technological change.

Choices are also required about the willingness to work closely with the supply chain. Many organisations choose to engage a principal contractor or consultant that they can work with on a one-to-one basis, who will manage other suppliers on their behalf. Suppliers who are managed through a principal contractor are often referred to as second- or third-'tier' suppliers. This decision impacts on the demand for skilled internal resources and the advantages of hiring-in capable subcontractors always needs to be balanced with the ability of the organisation to grow its own talent.

At programme or portfolio level, this decision process would include considering the option of a partner to provide a fluctuating level of technical support throughout the life of the work.

Project professionals balance the competitive advantage gained from frequent tendering against the benefits of long-term relationships, typically supported by commercial/procurement specialists in the organisation. A marginal cost-saving may be easily outweighed by the advantage gained from working with a supplier who has grown to understand the organisation and has structured their operation to align with the project's demands. This consideration is particularly relevant at programme or portfolio level, where there is the opportunity to consolidate individual project demands. In this way, advantage can be gained also by offering the supply-chain continuity, generating efficiencies that can be shared.

Any project or programme needs to be cognisant of the organisation's corporate procurement policies and procedures, where they may be able to take advantage of existing frameworks or, conversely, be constrained by preferential lists.

The outputs of the activities described here will inform procurement strategy (see 2.1.4).

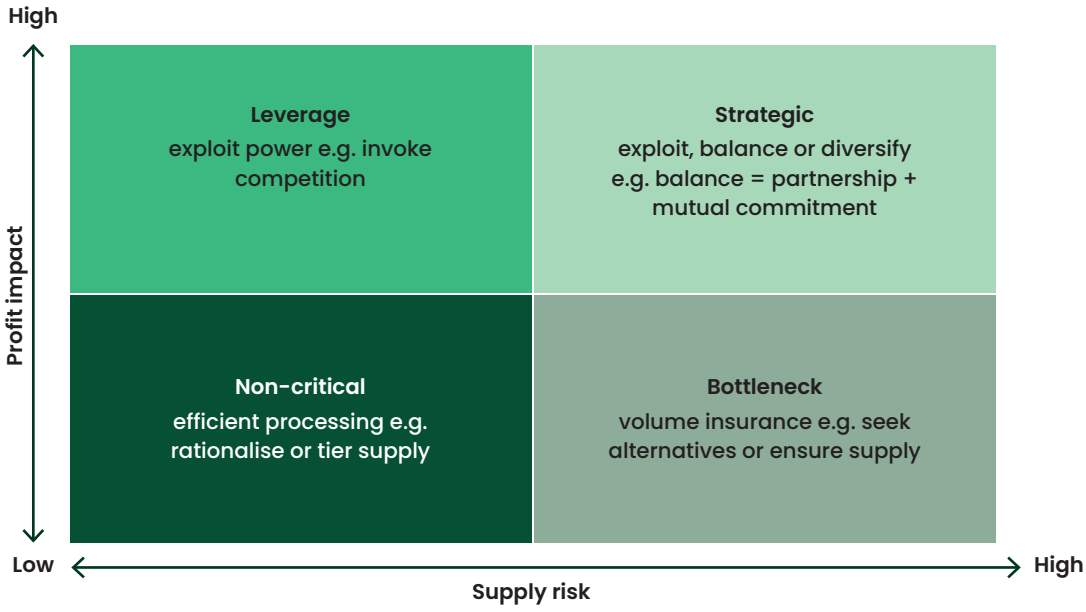

Figure 1.3.4 Supplier-based segmentation using a matrix

Source: *Based on the Kraljic Matrix (1983)*

Recommended reading

- *The APM Guide to Contracts and Procurement* (2017) is an accessible and comprehensive manual for all procurement activity. Section 4, 'Package Contacting Strategy', is particularly relevant to this topic.
- *Improving Infrastructure Delivery: Project Initiation Route-Map* (2016) is an aid to strategic decision-making that, although written specifically from an infrastructure-deployment perspective, contains universal project principles. Section 3, 'Assess Market Capability', includes a useful tool to support strategic sourcing decisions.
- *Strategic Sourcing Management: Structural and Operational Decision-Making* (2016) examines procurement and supply management in detail, covering the three dimensions of competitiveness, effectiveness and efficiency. The book is organised in four parts: strategic decisions; operational management of procurement and related supply-chain; management of human resources; and dedicated information systems to support procurement.

1.3.5 Sponsorship

Championing the work to ensure intended benefits and value are achieved

The sponsor is the person accountable for ensuring that the work is governed effectively and delivers the objectives to meet identified needs (Figure 1.3.5).

Sponsors are business leaders who play a key role in promoting, advocating and shaping project-work. The sponsor oversees the project and programme management functions and remains accountable for ensuring the realisation of the specified benefits over time. It is a crucial role and sponsors need the status and authority within the business to enable them to assert appropriate influence over the deployment of the project or programme. They also need to secure for themselves clear and official briefing from the investing organisation.

The sponsor's involvement is continuous throughout the life cycle, although the extent of their engagement will tend to fluctuate, with peaks at the initial and final stages of the project. At the start, the sponsor leads to identify needs, set requirements, establish the business case and secure funding. In the closing stages, the sponsor takes responsibility for ensuring the work is properly closed out, handing over outputs to operations and ensuring benefits are realised as planned. The sponsor's role in the life cycle therefore precedes and supersedes that of the project or programme manager. It is the role that is the interface between the business and the project or programme.

The sponsor plays a central role in governance, accountable for the continuing validity of the business case. As part of governance, the sponsor leads decision-making processes, particularly in relation to the purpose of the project, the appointment of project and programme managers and the availability of top-level contingency provision, and is the first point of escalation for the project or programme manager regarding issues or change requests.

In addition to the governance accountabilities, effective sponsors also establish supportive working relationships with the relevant project professional and the wider team and it is through this working relationship that the sponsor can add great value, for example, in supporting stakeholder engagement or motivating the team through difficult times.

A successful sponsor is:

- A leader and decision-maker who is able to work across corporate and functional boundaries within the organisation.
- A credible influencer of stakeholders with the delegated authority to act on behalf of the investing organisation.
- An enthusiastic advocate of the work and the change it brings about.
- Prepared to commit sufficient time and support to undertake the role.
- Sufficiently aware of the practices underpinning project-based working to be able to make informed decisions as to whether the work is being managed effectively, responsibly and sustainably (see 1.3.3), whether the business case (see 1.3.7) is being realised and to challenge project professionals appropriately.

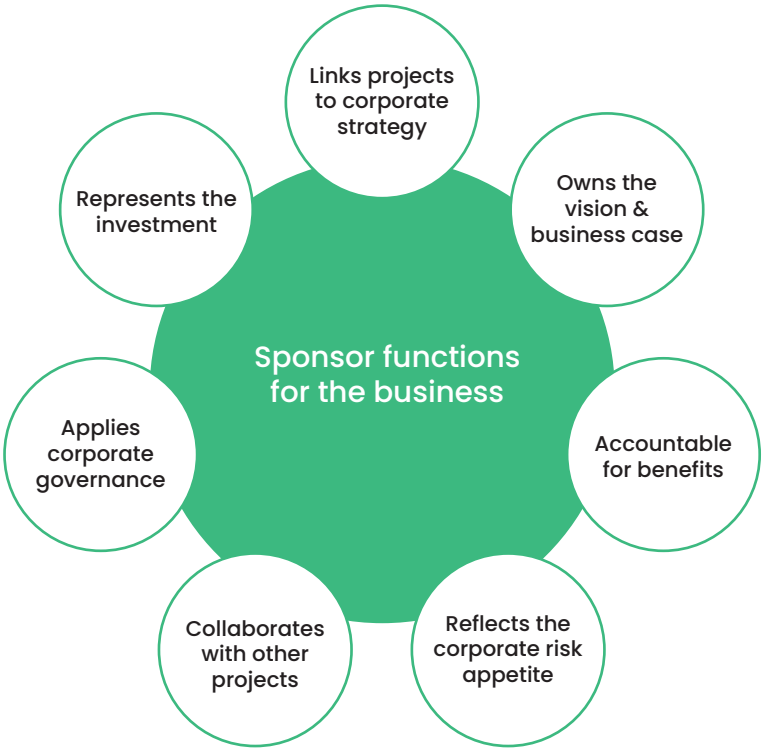

Figure 1.3.5 The scope of project sponsorship

Source: *Sponsoring Change (2018)*

Recommended reading

- *Building Sponsors: Future Project Leadership* (2018) is an APM report based on outputs from a sponsors summit exploring the key themes of the sponsor's role. The event and the report focused on real-world experiences from a wide range of sectors and lay out key themes that drew a broad consensus.
- *Sponsoring Change: A Guide to the Governance Aspects of Project Sponsorship* (2018) by the APM Governance Specific Interest Group, covers areas such as: why projects need sponsors; how the board's support is important for sponsor and project success; the attributes of effective sponsors; what sponsors do for the business; what sponsors do for the project manager; and gives some useful pointers on choosing and selecting sponsors.
- *Project Sponsorship: An Essential Guide for Those Sponsoring Projects within Their Organizations* (2016) offers support for sponsors, with particular emphasis on the business case, governance, assurance and skills needed for effective sponsorship.

1.3.6 Investment decisions

Evaluating the return on investment

Investment decisions are important as they provide the rationale and justification for spending limited resources. Whether the investment is being made in the public, private or charities sector, there is a choice about how to invest funds and capabilities to deliver value and the sponsor makes the case of how best value can be realised by deploying capital, operational expenditure and staff time to project-based endeavours.

Investment decisions balance a number of elements including:

- **Affordability**: Can the benefits be delivered within the available funds of the organisation when viewed as part of the wider portfolio of operational and change activities?
- **Return on investment (ROI)**: Does the investment deliver a suitable return, given the forecasted capital and operational costs and benefits over the economic life of the product. Is this the best way to get a return on the investment of funds?
- **Portfolio effect**: Does the investment fit alongside the wider set of investments in operational and change activities?

Organisations have a choice of financial indicators to evaluate and compare investment decisions, including absolute monetary values such as net present value (NPV) and relative indicators such as the internal rate of return (IRR) or the weighted average cost of capital (WACC). Organisations typically have defined hurdle rates in percentage terms for investments that represent the minimum target return on investment. These concepts are part of what is typically referred to in corporate finance as capital budgeting (Figure 1.3.6).

Private organisations almost always make their investment decisions based on financial consideration due to the requirements for financial self-sufficiency. Public organisations and charities are often concerned with value-for-money service, affordability, non-financial considerations or maximising the benefits for a set budget, with the funding derived either from government or donations.

Sponsors also need to represent non-financial considerations in the investment decision. These can include:

- **Practicality**: Can the project be delivered technically and/or in line with regulatory standards and organisational values?
- **Maturity of definition**: Is the scope and requirements of the work defined in enough detail to have confidence that all costs and benefits have been captured?
- **Decision bias**: Are there psychological biases or blind spots influencing estimates and the ultimate decision? Is this a 'pet project'? Are estimates optimistic to make the case seem more obvious than it should be?

The sponsor brings together financial and non-financial considerations, with a risk analysis for the investment that enables decision-makers to have an indication of the confidence they have in the projected returns and the financial contingency it would be prudent to hold. Assurance is often provided for governance via an independent review and scrutiny of the investment case. Mature governance would recognise a range of possible outcomes, not a single point, especially early in the life cycle.

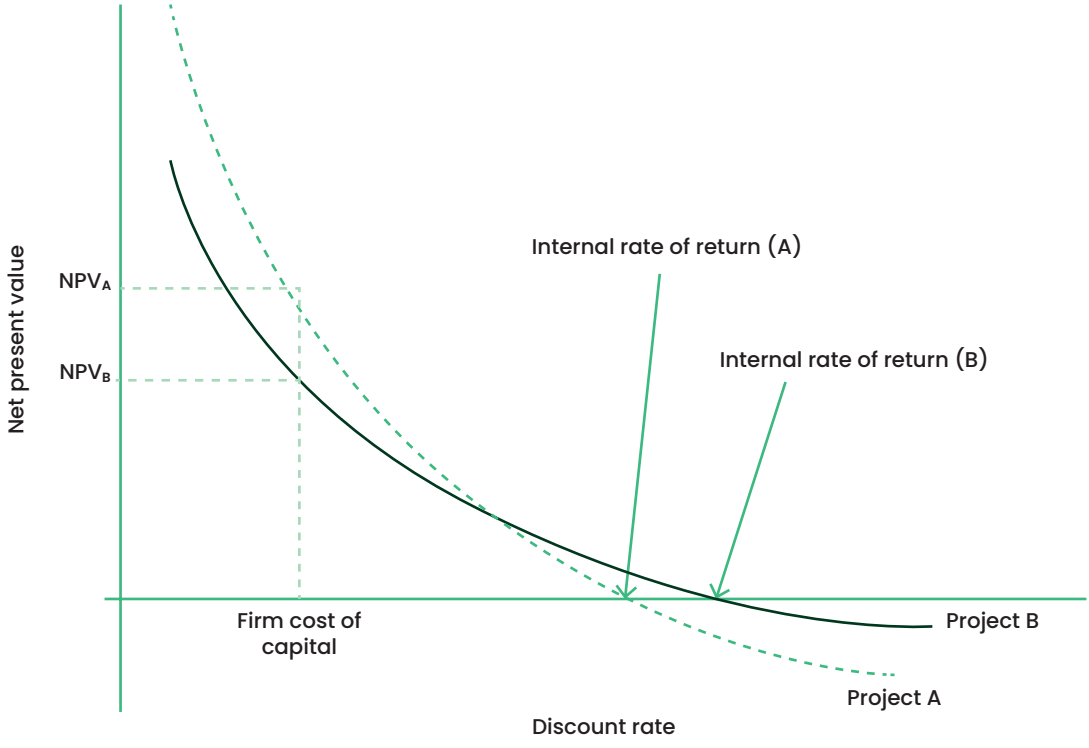

Figure 1.3.6 Comparing options to invest capital

Recommended reading

- *Net Present Value and Risk Modelling for Projects* (2016) explores NPV in detail, suggesting how it can be used during the early stages of project-work to improve forecasts when uncertainty is at its highest and the opportunities to influence are at their greatest.
- *Delusions of success: How optimism undermines executives' decisions* (2003) examines how executives fall victim to what psychologists term 'planning fallacy' when forecasting the outcomes of risky projects. Executive spin scenarios of success while overlooking the potential for mistakes and miscalculations. As a result, managers pursue initiatives that are ever unlikely to deliver the expected returns.
- *The hidden traps in decision making* (2006) proclaims that, although making decisions is the most important job that executives undertake, it is also the toughest and the riskiest. Bad decisions can be traced back to the way decisions were conceived and considered – and sometimes the fault lies not in the decision-making process but rather in the mind of the decision-maker.

1.3.7 Business case

Justifying investment in a project, programme or portfolio

The business case provides justification for undertaking a project, programme or portfolio. It evaluates the benefit, cost and risk of alternative options offering a rationale for the preferred solution. The business case brings together the investment appraisal for the project, programme or portfolio, with a wider evidence-based narrative of how the investment is intended to lead to realisation of the intended qualitative and quantitative benefits.

The information presented in the business case results from work conducted in the early phases of the chosen life cycle. A common way of thinking about a business case is using these five dimensions (Figure 1.3.7):

- **Strategic context**: The compelling case for change.
- **Economic analysis**: Return on investment based on investment appraisal of options.
- **Commercial approach**: Derived from the sourcing strategy (see 1.3.4) and procurement strategy.
- **Financial case**: Affordability to the organisation in the time frame.
- **Management approach**: Roles, governance structure, life cycle choice, etc.

The business case is reviewed and revised at decision gates as more mature estimates and information become available. This enables the periodic reassessment of the viability of the investment and provides a formal input to revisiting plans at key decision points.

The sponsor is accountable for the business case throughout the chosen life cycle, although preparation of the business case is often delegated to other project professionals who gather the data to enable the analysis of the trade-offs between whole-life costs, benefits and risks to be made. There are advantages to the active involvement of the project/programme/portfolio manager in preparation and maintenance of the business case, primarily in having full and shared appreciation with the sponsor and governance structures about what is developed and the agreed conditions for success.

The approved business case provides a record of the decisions made by governance about how to achieve the required return on investment from the work.

As the business case is required early in the life cycle, in early iterations many assumptions are made about what is possible to achieve, in what time frame and for what cost. Sponsors document assumptions made in the business case and these provide a critical input to subsequent risk analysis and contingency determination (see 4.2.3 and 4.2.9).

Many organisations obtain independent assurance of the business case prior to the full review, appraisal and evaluation by governance. Project professionals not involved in the work conduct the business case review to provide a neutral challenge and to avoid any conflict of interest.

The presentation of the business case, if approved, results in the formal start-up of the project, programme or portfolio. A good-quality business case is essential as this is the baseline to take into detailed planning and deployment of any project, programme or portfolio.

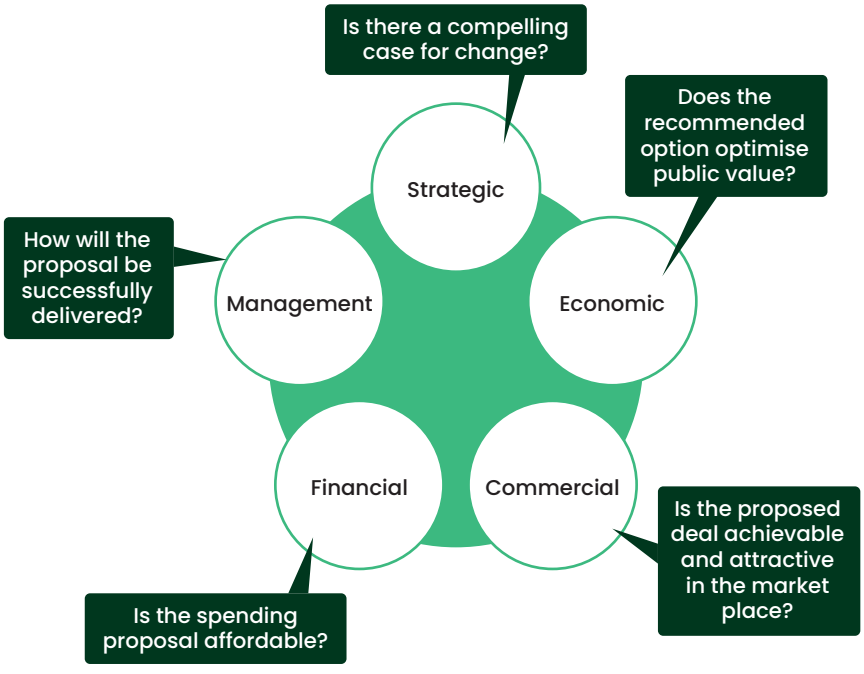

Figure 1.3.7 Five dimensions included in a business case

Source: *Adapted from HM Treasury (2018)*

Recommended reading

- The APM Benefits Management Specific Interest Group has produced *A guide to using a benefits management framework* (2019). The resource includes an insight into the investment decision from the perspective of benefits realisation.
- *The Green Book: Central Government Guidance on Appraisal and Evaluation* (2018) contains up-to-date advice from HM Treasury on public sector investments. The advice has many universal concepts that apply equally across private and charitable sectors.
- *Making the Business Case: Proposals that Succeed for Projects that Work* (2009) is a straightforward guide to writing effective business cases. It offers practical examples and reflective exercises, with advice covering the journey from strategy to options consideration and detailed content related to identifying and defining the benefits, costs and achievability.

1.3.8 Temporary structures

Aligning and balancing temporary and permanent organisational structures

Organisational structures define how roles, responsibilities and power are assigned and controlled to achieve strategic objectives, and how information flows between different levels of management.

For routine/operational work, the chosen 'permanent' organisational structure provides a relatively stable environment to support decision-making and the flow of information across the organisation. Most organisations adopt a matrix-type structure, with individual operational units supported by functions that set policy and manage controls across each part of the operation.

Projects are temporary endeavours and therefore, by definition, have a temporary structure established by the people in the permanent organisation to manage activities and resources to deliver specific objectives within predetermined time frames. Temporary structures adopted for projects, programmes or portfolios typically do not adopt the same structure as the permanent organisation, but need to be coordinated.

Some organisations refer to permanent structures as 'run', as in running the business, and temporary structures as 'change', as in changing the business. Project professionals work across both structures and the ease or difficulty with which this occurs is influenced by the way the organisation aligns and balances its organisational structures and resourcing strategy.

Organisations have functional departments such as finance, information technology, product development and human resources. These functions provide a structure within which resources, processes and technologies are brought together to perform work. An organisation may also have a specific function that is responsible for managing a portfolio of change initiatives. This function can consist of portfolio managers who work with senior stakeholders across the organisation to prioritise change, ensure alignment to strategy and track the intended benefits delivered by the initiatives.

An organisational resourcing strategy identifies how permanent staff are balanced with contractors or other third parties to run and change the business. The resourcing strategy is linked to talent management within the organisation (see 1.3.9). This means using the right resource for the right role and giving opportunity to staff for professional development. In some organisations, for example, a highly complex project can only be managed by a project manager who demonstrates the knowledge, experience and behaviours required to manage such a project and this person may not exist on the permanent staff.

As project-based working spans functions, it is vital that the accountability of both permanent and temporary structures (Figure 1.3.8) is clearly communicated. The sponsor

plays a key role in managing the interface between permanent and temporary structures, ensuring that:

- projects have access to suitably skilled and experienced people without reducing operational performance
- any tensions across the boundary between the temporary and permanent organisations are managed

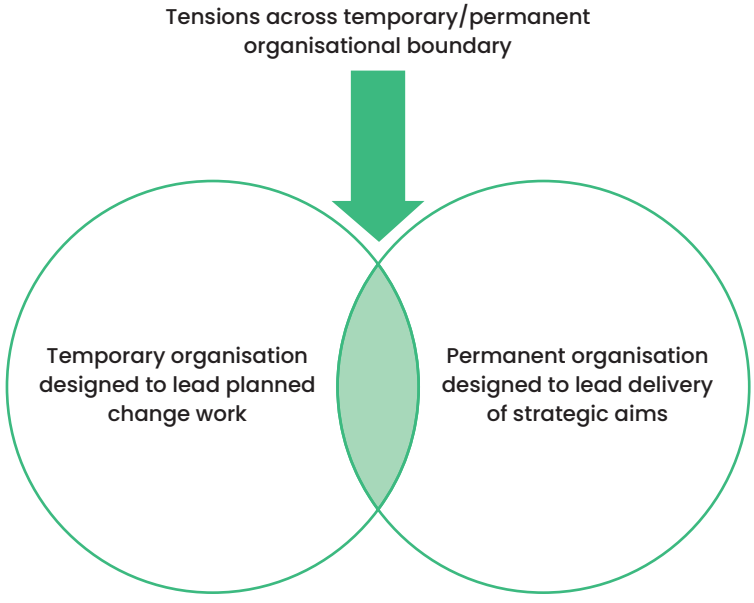

Figure 1.3.8 Relationship between the permanent and temporary organisations

Recommended reading

- *Managing and Working in Project Society: Institutional Challenges of Temporary Organisations* (2015) offers an examination of the challenges associated with temporary project organisations in a permanent society. The authors make a strong case for renewing instituions to ensure that they are able to meet the imperative for and challenges of increasing and accelerating projectification.
- *Advancing Research on Projects and Temporary Organizations* (2014) is an edited volume, bringing together multiple contributions focused on the relationship between modern organisations and project management. The book provides an excellent research-oriented overview of temporary organisations and the importance of understanding project-work as a social process.
- *Temporary organizing: Promises, processes, problems* (2016) is the introduction to a special edition of *Organisation Science*, a leading management journal, and discusses key challenges and opportunities in the study of temporary organising, including methodological issues, how to theorise time and how to relate the temporary to the more permanent.

1.3.9 Talent management

Attracting, deploying, supporting and retaining talented people

Talent management is the ability to attract, motivate and retain high-quality people to deliver the strategic goals and objectives of the organisation.

Successful organisations manage key relationships between corporate business strategies and those of different resourcing strategies such as talent (human resources), technology, finance or information. Proactive management of talent has a demonstrable effect on the successful deployment of project-based work.

Given the constant levels of uncertainty and change in project environments, priorities are also shifting, which does not always allow for effective resource management. Given that people are one of the most important and costly resources in projects, effective talent planning is both necessary and important.

Taking a resource-based view of organisations, talent management is about effectively exploiting and developing the knowledge of people by investing in the organisation's core competencies and building capability through effective talent planning and resourcing strategies.

Early conscious managerial and leadership attention to talent principles can enhance and drive the organisation's talent-management strategy. Such benefits include:

- gaining project skills, knowledge and practices
- encouraging cross-functional working and strengthening wider relationships
- generating greater business awareness
- supporting continuous improvement and development
- transferring newly acquired skills sets and knowledge back to their operational roles and functions
- enabling succession planning and future talent pools
- helping to build greater organisational capability and project maturity

Project professionals map the work programme and understand clearly the different role profiles, team structures and competencies required to deliver the goals and objectives of the project. This becomes more complex when applied to a portfolio of projects, where career paths need to motivate and retain talent for the organisation's wellbeing and long-term success.

By deploying talent management practices, the project professional (Figure 1.3.9):

- **Attracts the best talent** with the appropriate skills sets and competencies required for the role (**talent audit**).
- **Deploys** people in the **right team structures with the relevant competencies** (**resourcing high-performing teams**).
- **Applies performance management processes** for assessing effective performance and commitment (**monitoring and control**).
- **Provides effective learning and development** and **knowledge transfer** for nurturing and building future talent for the organisation (**continuous improvement and knowledge management**).

- **Rewards** people according to performance (**talent motivation, commitment and retention**).
- **Assists succession planning** to build project maturity in organisations (**building capability and leadership**).

In Chapter 3, we explore specific people and behavioural aspects of project-based working, including all topics relevant to deploying and developing skilled people who can influence stakeholders, build teams and conduct themselves as project professionals.

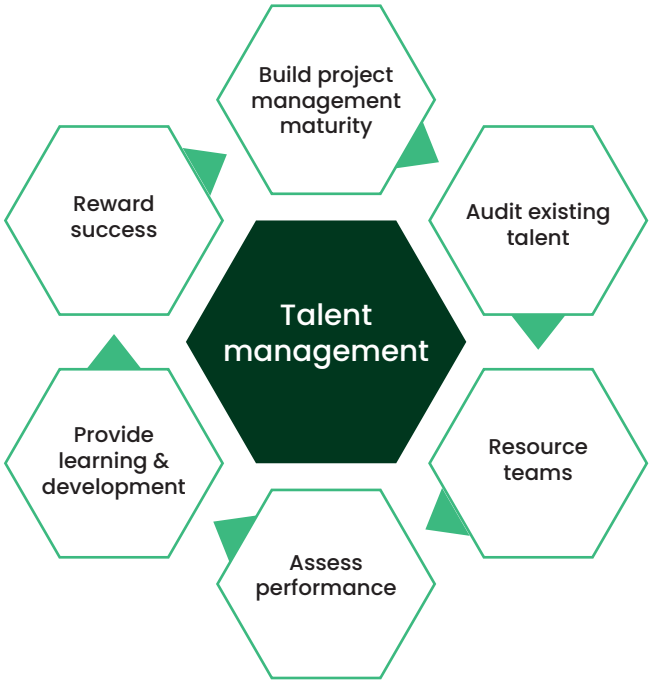

Figure 1.3.9 Steps to building and retaining project-management talent

Recommended reading

- *Resourcing and Talent Management* (2014) offers good depth of coverage of resourcing and talent-management issues for organisations. The human resource management perspective is enlightening to anyone with an interest in resource management.
- *People Resourcing and Talent Planning* (2010) is engaging and provides good examples of resourcing and talent-planning issues in organisations. This book also considers the challenges facing organisations in implementing talent-management strategies.
- *Strategic Human Resource Management* (2007) is a heavyweight textbook that provides an in-depth analysis of strategic talent-management issues from a global perspective. This is particularly important to global project teams collaborating on a range of project portfolios.

1.3.10 Governance boards

Putting governance principles into practice

Governance boards comprise representatives of the functions and departments within the organisation who are investing in, or being impacted by the project, programme or portfolio. The members of the governance board have responsibility for overseeing deployment and making decisions throughout the chosen life cycle in a way that is commensurate with the size and complexity of the work being undertaken.

Governance boards have a variety of titles, including steering committee, steering group, project board, programme boards, etc. The extent and limit of a governance board's authority is defined by a term of reference or a board charter, typically developed by the sponsor (see 1.3.5). Terms of reference make the authority level of the governance board clear, including escalation routes for resolution of issues, or other decisions where the board does not have the delegated authority of the investing organisation(s).

It is important that the membership is sufficiently qualified to discharge the function of the group as set out in its charter. Where projects are co-owned there is representation from each owner, proportionate to their stake.

Wider stakeholder representation on the board may be beneficial to promote engagement and the management of their expectations. The extent of their participation is a matter for the board to decide. If necessary, their attendance can be scheduled to exclude them from confidential discussions.

The sponsor plays a key role in establishing not only the structure of the board, but also its culture and working practices. Sponsors often chair governance boards (Figure 1.3.10).

In most organisations, governance boards are formally conducted in a manner consistent with overall corporate governance, including:

- papers being submitted in advance
- minutes and actions taken and formally reviewed through to completion

The governance board discharges its responsibility for the performance of the project, programme or portfolio by:

- Monitoring progress through reports provided, and wider assurance.
- Measuring progress using metrics that enable accurate scrutiny.
- Agreeing remedial measures if a deviation from planned or forecasted performance threatens the delivery of any defined benefit.
- Agreeing changes that are judged to provide an opportunity for the investing organisation(s) to protect or secure additional value (financial, social, environmental, legal, ethical, etc.) or escalating the change request to a higher authority where required.
- Ensuring that statutory obligations and appropriate professional and ethical standards are implemented.
- Making formal go–no/go decisions at defined decision gates (see 2.2.2).

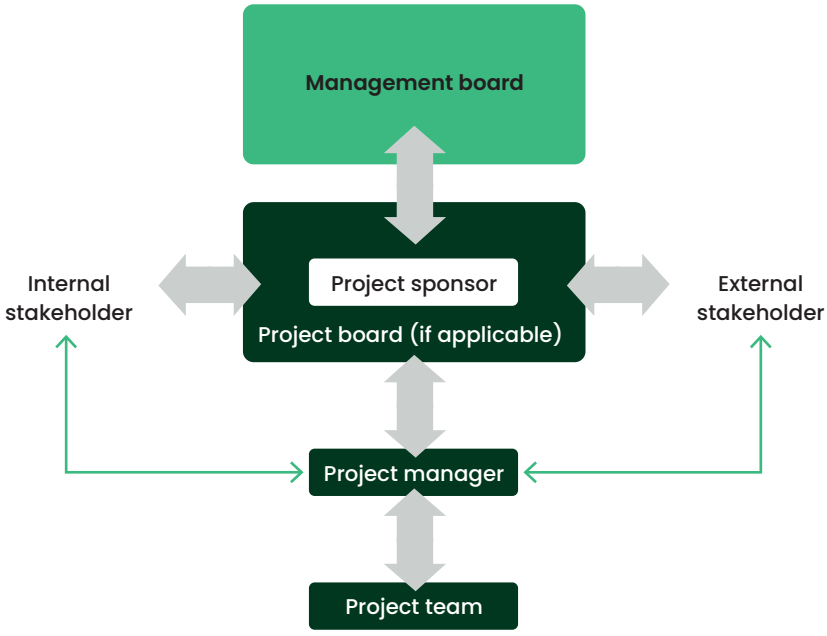

Figure 1.3.10 Generic project governance structure

Source: *Sponsoring Change (2018)*

Recommended reading

- *Project Governance: A Practical Guide to Effective Project Decision Making* (2009) introduces the principles of accountability and effective project governance before providing detailed guidance on building a project-governance model. The project board is prominently featured, with detailed advice on how to build and populate it. There is also detailed coverage on integrated project deployment and the governance relationship between programmes and projects.
- *Project Governance* (2009) focuses on the structures required for effective governance. The project-steering group and its role are explored in detail, allowing readers to engage with two main approaches to governance (namely, transaction and agency perspectives).
- *The Handbook of Board Governance: A Comprehensive Guide for Public, Private and Not-for-Profit Board Members* (2016) is an excellent resource for members of all governance boards. The edited collection offers comprehensive insights, addressing many critical aspects relevant to projects and complex projects and some of the issues that need addressing.

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2 Preparing for change

This chapter is written primarily for those people charged with leading any project, programme or portfolio, of any size or complexity.

The focus of the chapter is preparing for change, in particular to consider in advance the practices that are important in early life cycle shaping, mid-life cycle assurance, learning and maturity, and late life cycle transition into use — whether leading a standalone project, or a programme or portfolio.

Translating strategic priorities into a justified business case for an investment in planned change leads to decisions about how to shape the particular project, programme or portfolio. Focusing on stakeholder needs and the organisation's appetite for risk, early decisions can be made to inform detailed planning. In particular, procurement strategy and considerations of operational adjustments that may be needed during deployment are important topics to consider early as they will influence the scope of subsequent work.

There are some aspects of project-based working that apply in all circumstances and inform the ability of an organisation to improve their capability to deliver change successfully — project by project. All teams involved in project-based working need to make informed decisions and to provide assurance to different stakeholders. Effective project-based organisations are proficient in creating and using knowledge to continuously improve their practices and enhance their maturity. In organisations where the ability to deliver beneficial change reliably and at scale is important, building effective within-project and cross-project support through a project, programme or portfolio management office (PMO) is critical to success.

Ultimately, the organisational return on investment from project-based working is accomplished when the particular outputs of projects are transformed into organisational outcomes of benefit to stakeholders. The approach adopted for transition of project-based outcomes into use in business-as-usual is closely linked to the chosen life cycle, so many variants are possible. In all cases, the ability of a temporary change team to influence the recipients of change in the permanent organisation so that new processes, products, systems or ways of working are adopted, is paramount. And because projects and programmes are transient endeavours, the managed closure of the work — whether as planned or earlier — is an explicit and crucial part of the work to be done.

The chapter is composed of three parts:

2.1 Shaping the early life cycle

2.2 Assurance, learning and maturity

2.3 Transition into use

2.1 Shaping the early life cycle

Shaping projects, programmes or portfolios during the early life cycle depends on expressed and implied needs of stakeholders and the extent of the willingness of the investing organisation(s) to take risk with innovative product development, ambitious timescales or novel ways of working. There is no 'correct' way but the rigour put into the first steps in setting up the work has value as plans develop and are deployed. Emerging insights into how to manage different complexities effectively in project-based working point to the need for the sponsor and manager/leader to come to a common view on how to approach the work in order to minimise downside risk and be in a position to seize the upside benefits of any emergent change.

In most organisations, a dependence on suppliers of goods or services in the supply chain to support project-based working is a reality. Many corporate members of APM and readers of this body of knowledge will work for organisations whose main product is the provision of project-based services to their clients. Following a strategic review of the market, procurement strategies need to be devised so that the investing organisation can deliver their objectives within the constraints of the supply chain and their in-house organisational capability. Supplier organisations will be more successful when they understand the strategic or tactical benefit to the client.

Business-as-usual work, of course, does not stop while project-based work is being planned and deployed. In circumstances where the project is designed to make changes to an existing operation, sponsors and their colleagues in the business need to make decisions about the best place to manage ongoing work, and how to administer the interfaces between 'change' and 'run' work. Operational adjustments are often needed.

Shaping the early life cycle requires risk-based decisions to be made that represent a trade-off between objectives and risk. This works best when sponsors operate in partnership with the managers tasked with delivering the project, programme or portfolio.

This section will be of particular interest to project, programme and portfolio leaders thinking about early life cycle phases as it addresses:

2.1.1 Project shaping: Setting up projects of all sizes for success

2.1.2 Programme shaping: Setting up programmes to deliver the desired beneficial change

2.1.3 Portfolio shaping: Setting up portfolios to ensure efficient delivery of objectives

2.1.4 Procurement strategy: Matching supply-chain engagement to needs

2.1.5 Operational adjustments: Ensuring operational and project-based work is coordinated

2.1.1 Project shaping

Setting up projects of all sizes for success

This topic is about 'standalone' projects, not those that are constituent parts of programmes and portfolios.

Typically, a project's objective is to deliver outputs, for example a software solution, a building, a process or a service. The project team transitions the outputs to an internal or external client to deliver the desired outcomes and benefits.

Sometimes, the project also includes the work required to deliver outcomes and benefits. In such cases, the project team leads more of the work to deliver the changes required by the client to realise the project's intended benefits.

To shape the project — to identify its intended outputs or outcomes — the sponsor ensures the rationale for the investment is defined and documented early in the project's life cycle. Different names for this rationale in common usage include 'problem statement', 'project brief' and 'project charter'.

When the client is external, the statement of the project rationale is often in the form of a formal or informal invitation to bid that reflects some or all of the project's scope. In such cases, the supplier endeavours to understand as much of the client's problem as possible to respond appropriately.

The sponsor, or project manager on the sponsor's behalf, facilitates the creation of the project rationale to capture:

- the high-level needs of the client and other key stakeholders and their assumptions
- how much risk investors are willing to tolerate in achieving their objectives (risk appetite)

In many organisations, the project rationale is an input to an assessment of the project's complexity, for example the degree of technical novelty, stakeholder politics or volatile external conditions. This assessment provides guidance to the sponsor and their team about the approach and controls that are likely to be needed to reduce complexity as far as possible.

A clear rationale for the work is also needed as an input to project scoping and planning and is the starting point for governance to approve the initial investment, so the project can be further defined.

All projects trade the triple constraints of time, cost and quality in achieving the defined scope of the project within the defined tolerance for risk (Figure 2.1.1). An understanding of the relative priorities of time, cost and quality is a vital prerequisite to choosing the life cycle approach (see Section 1.2), for example whether to use a product life cycle and a focus on whole-life costs, or whether an iterative life cycle is optimal to enable agility and rapid development and deployment of solutions.

Funding for standalone projects may be via a single source or through multiple investors. The governance of the project will vary to meet the needs of the investors in the project and the life cycle option chosen.

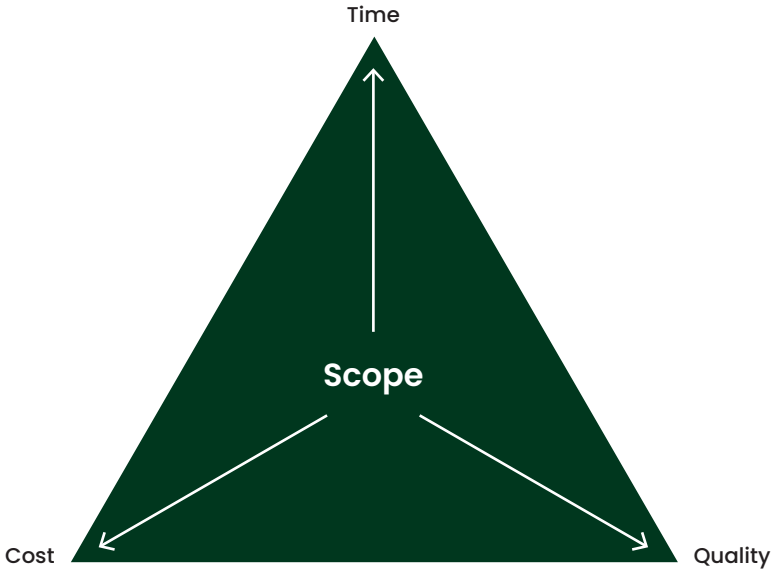

Figure 2.1.1 Trading the triple constraints of time, cost and quality

Recommended reading

- The APM Planning, Monitoring and Control Specific Interest Group (SIG) guide on *Planning, Scheduling, Monitoring and Control* (2015) describes the 'definition' phase of a project to balance the competing constraints of scope, quality, time and cost, using a risk-based approach.
- *A Short Guide to Risk Appetite* (2012) provides practical guidance on understanding risk appetite and how this is expressed by investors and decision-makers.
- *Understand, reduce, respond: project complexity management theory and practice* (2017) describes a method for determining structural, sociopolitical and emergent complexities for a project and suggests different approaches for addressing those complexities. The method is relevant to any type of project.

2.1.2 Programme shaping

Setting up programmes to deliver the desired beneficial change

This topic is about programmes that are standalone, or potentially part of a wider portfolio of work. Shaping and funding a change initiative as a programme assumes that there are greater benefits to be achieved through programme management than would be the case if the constituent projects in the programmes were managed independently.

Programmes are groups of related projects and business-as-usual (or steady state) activities that together achieve beneficial change for an organisation. Shaping programmes requires the selection and framing of projects and other work in business-as-usual into a structure where benefits can be delivered incrementally over time.

To shape a programme, the sponsor works with stakeholders as early as possible to establish:

- a clear understanding of the desired future state — typically described as a 'programme vision'
- how much risk investors are willing to tolerate in achieving their objectives (risk appetite)

This applies whether programmes are standalone or managed as part of strategic portfolios (see 1.1.5 and 2.1.3).

Shaping the programme to accomplish the vision requires the sponsor and programme manager to select and organise projects and other business-as-usual activities into tranches that achieve incremental delivery of benefits. Each tranche is designed to achieve a step change in capability and benefits realisation (Figure 2.1.2). Programme planning is always benefits-led — answering the question 'What is the best work to do next to deliver outcomes and benefits effectively?' rather than 'What would be the best work to do next to deliver outputs/products efficiently?'

A programme deployment approach and life cycle are characteristically iterative (see 1.2.3), to facilitate decisions about the optimal next steps to deliver the vision. In programme governance, the sponsor advises key stakeholders on the deployment of constituent projects within the programme but decision-making is focused on deciding whether the programme as a whole needs to be reshaped based on progress to date with deployment of the work and the attainment of benefits.

Sometimes, governance of projects within programmes is set up independently to programme governance. Where this is the case project sponsors are part of the programme governance structure to ensure a continual focus on programme benefits and the alignment of priorities.

Funding for programmes may be via a single client organisation, or through multiple parties. Where there are multiple investors, the sponsor and programme manager need to stay close to stakeholders to keep the shape of the programme focused on optimal attainment of benefit for all parties.

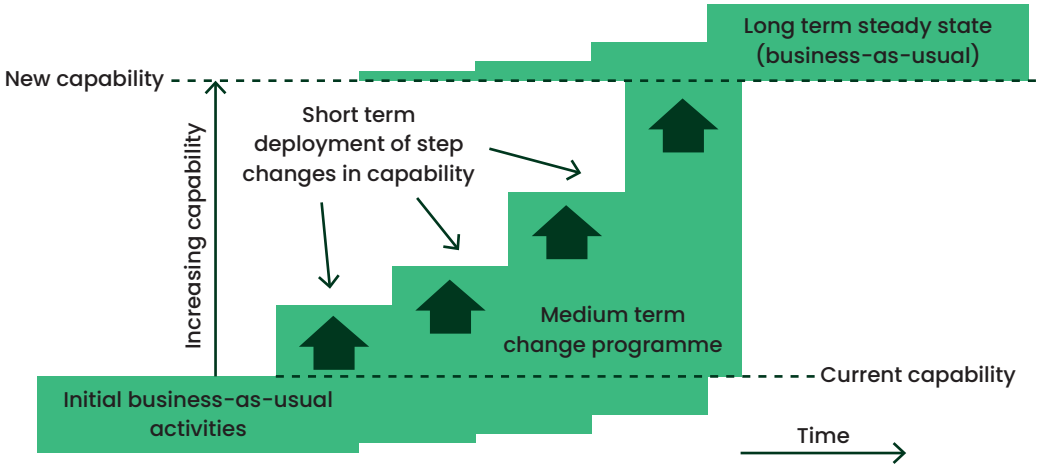

Figure 2.1.2 Increasing organisational capability through programme management

Source: *APM Introduction to Programme Management (2016)*

Recommended reading

- The APM Programme Management Specific Interest Group guide *APM Introduction to Programme Management* (2016) describes a 'definition' phase of a programme and the things that are important to do to set up programmes for success.
- *Program Management* (2015) provides a comprehensive guide to shaping programmes as a link between strategy and projects. It references international standards and guides and provides a practical way to think about the iterative programme life cycle over time.
- *Thinking and Acting as a Great Programme Manager* (2008) provides an in-depth, yet practical way of considering change from a programme rather than a project perspective. It is a very useful tool in the training and development of programme managers.

2.1.3 Portfolio shaping

Setting up portfolios to ensure efficient delivery of objectives

Portfolios are groupings of projects and/or programmes managed at an organisational or functional level in order to select, prioritise and control deployment in line with strategic objectives and the capacity to deliver (Figure 2.1.3). The goal of portfolio management is to balance change initiatives and business-as-usual while optimising return on investment (ROI).

The rationale for a portfolio is fundamentally different to that of a project or programme. Where projects and programmes are focused on deployment of outputs, and outcomes and benefits, respectively, portfolios exist as coordinating structures to support deployment by ensuring the optimal prioritisation of resources to align with strategic intent and achieve best value.

It is common for portfolios to exist as a mechanism for ensuring delivery of organisational strategy when this relies on the deployment of programmes and projects in multiple functions and business units. To shape the portfolio, the sponsor and portfolio manager seek out visibility of plans of the constituent projects and programmes agree how to reshape those constituent parts depending on:

- The organisation's ability to resource the whole portfolio.
- Any changes to strategic direction or pace of strategic implementation.

Achieving optimal prioritisation of work in a portfolio is a complex task. Portfolio professionals typically are balancing:

- the relative priority of corporate goals
- quantitative and qualitative benefits
- short-term gains vs long-term gains
- changing external requirements, for example regulatory or technological
- availability of key resources or the allocation of people
- the risk profile of each project or programme in the portfolio

Portfolios can also exist at lower levels in the organisation, for example to coordinate the deployment of multiple projects in one department where there are scarce resources that need to be prioritised so they are focused on the most urgent and important work. Occasionally, funding for such portfolios is justified on an annualised basis.

In a strategic portfolio, governance may be aligned entirely with corporate governance. Where this is not the case, it is vital to establish clear understanding and buy-in to the portfolio prioritisation process from the executive team. In a portfolio, it is normal for sponsors of projects, who are senior leaders in their own right, to be required to sacrifice their project priorities for the benefit of the wider portfolio. When behaviours and incentives are aligned with the objectives and value of portfolio management and the organisation's strategic intent, this works well.

Funding for portfolios is most likely to be within a single client organisation, where the objective is delivery of strategy in the optimal way. In some organisations, a portfolio will

have its own business case. In others, business cases will exist for the programmes or projects making up the portfolio and the portfolio itself acts as a coordinating mechanism, potentially funded through operational budgets.

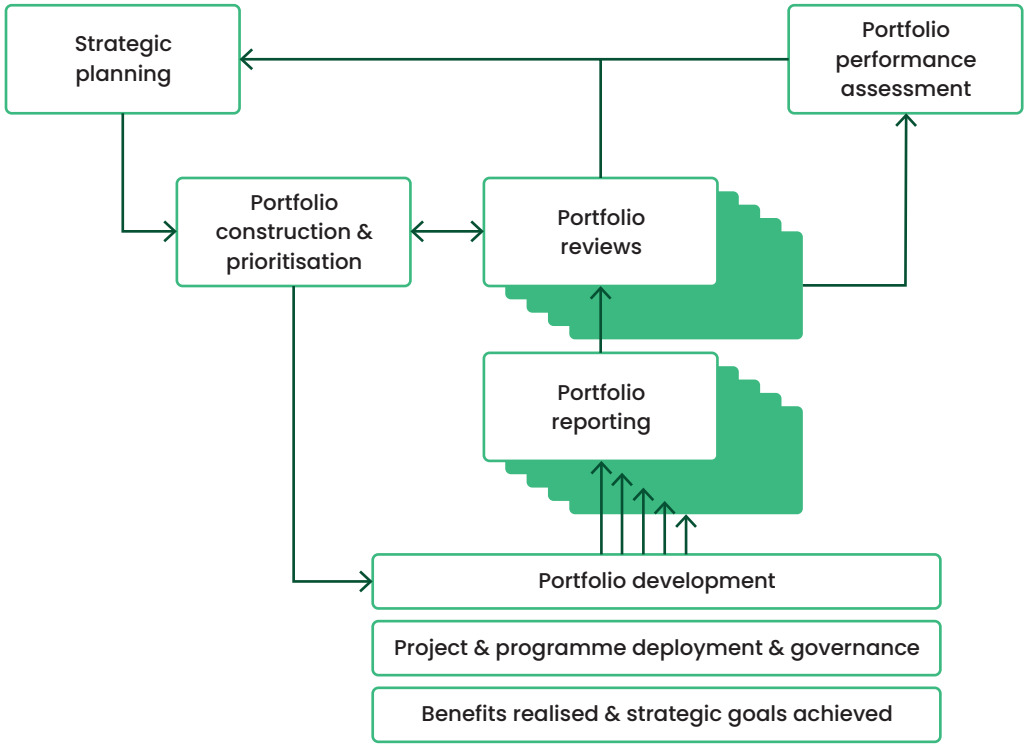

Figure 2.1.3 Portfolio management key processes

Source: *Portfolio Management (2019)*

Recommended reading

- The APM Portfolio Management Specific Interest Group's *Portfolio Management: A Practical Guide* (2019) includes many example templates and tools that the practitioner can use to manage the challenging task of aligning deployment of projects and programmes with organisational strategy.
- *Portfolio and Programme Management Demystified* (2011) is a useful guide that compares the management of multiple projects through portfolios and programmes. It brings together complex topics into one place and discusses them in an approachable and entertaining way.
- *The Handbook of Project Portfolio Management* (2019) is a large edited collection of contributions, addressing many aspects related to the use of portfolio management in practice. Topics range from different types of portfolios and portfolio components to exploring the use of portfolios in different sectors and covering the prerequisites for using portfolios, managing portfolios and developing the relevant capabilities.

2.1.4 Procurement strategy

Matching supply-chain engagement to needs

The procurement strategy sets out the high-level approach for securing the goods and services required from external suppliers to satisfy project, programme or portfolio needs (Figure 2.1.4). It is informed by decisions made on strategic sourcing (see 1.3.4) and leads to the development of the procurement element of an integrated project management plan (PMP).

Decisions to make on questions with the sponsor and wider governance are:

- How much risk to retain in the project or programme and how much to share with suppliers in the supply chain?
- On a continuum from transactional to collaborative, what type of relationship is desired with different suppliers, and why?

The complexity of the work, the capability of the team, the client/owner's appetite for risk and the life cycle approach chosen inform these decisions, as does the analysis of the market in the sourcing strategy.

Where risk is retained in the client organisation, the project professional ensures there is capability to manage exposure to a tolerable level. For example, a project might seek to pass on the risk of activity coordination to a supplier for a price; on the other hand, if activity coordination remains with the project, appropriately qualified resources are needed to manage each contractor and the interfaces between them.

In agreeing the procurement strategy, it is important for the project professional to be realistic that the price paid to share risk in the supply chain is worth it. Competitive commercial management can result in a supplier avoiding obligations that the purchaser assumed it had imposed. The best outcome is most likely to be achieved if risk is allocated to the party that is best equipped to manage it.

Payment mechanisms are a means of achieving the appropriate allocation of risk and of motivating the supplier to perform. Options range from a 'lump sum' or fixed price for a defined scope, where all the cost risk is with the supplier through to reimbursable contracts where the project pays the supplier on an emerging cost basis.

Intermediate arrangements include 'target cost' contracts, where overspend or underspend is shared in a preordained proportion between parties, or 'bill of quantity' contracts, where actual quantities delivered are measured and valued against agreed unit rates. Penalties and bonus incentives are often used to motivate performance in such arrangements.

Some projects or programmes lend themselves to a procurement strategy whereby the supplier finances the development of a product in return for receiving a fee for its operation for a set period of time. An example would be a contractor building a bridge and collecting the tolls for a fixed period in payment.

For long-term projects, programmes or portfolios, partnerships, or alliances such as joint ventures, are procurement approaches where mutual benefits can be realised through longer-term, collaborative relationships.

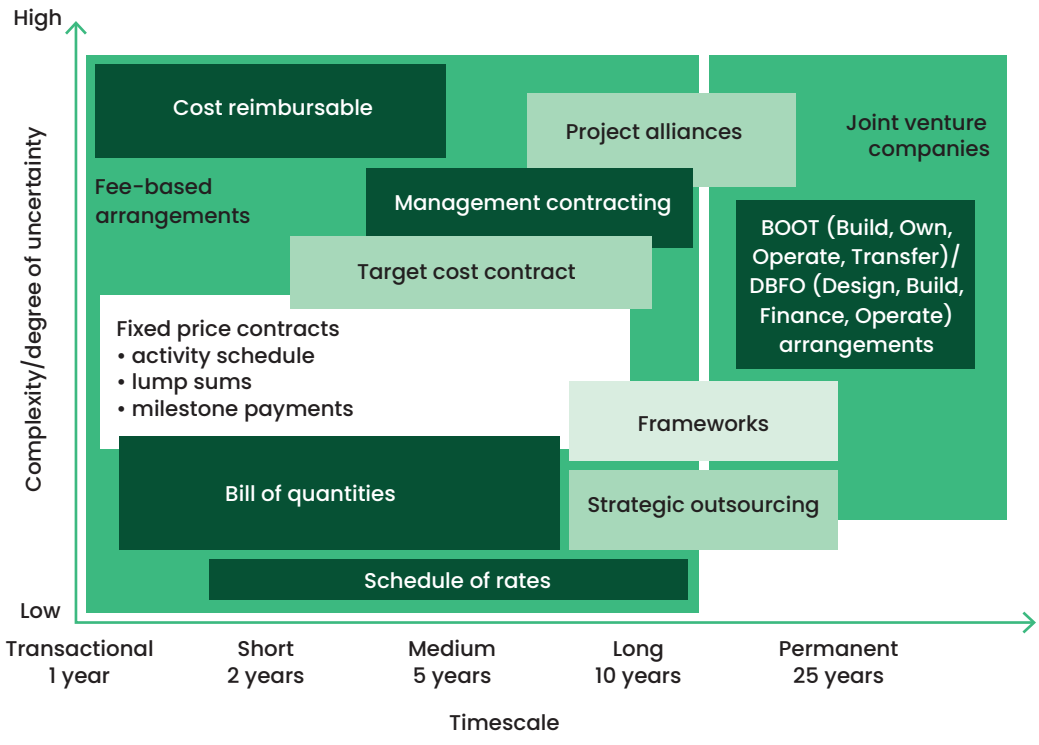

Figure 2.1.4 Choice of contracting strategy

Source: *APM Guide to Contracts and Procurement (2017)*

Recommended reading

- The APM *Guide to Contracts and Procurement* (2017) is an accessible and comprehensive manual for all procurement activity. Chapter 3, 'Project Procurement Strategy', and chapter 4, 'Package Contracting Strategy', offer step-by-step guidance on developing these crucial plans, and subsection 4.4.3 contains concise descriptions of the various generic contracting arrangements.
- *Project 13 Commercial Handbook* (2018) is a guide for developing a commercial strategy. It seeks to develop a new business model — based on an enterprise, not on traditional transactional arrangements — to boost certainty and productivity in deployment, improve whole-life outcomes in operation and support a more sustainable, innovative, highly skilled industry. Although targeted at the construction industry, much of the content has universal procurement relevance.
- *Procuring Successful Mega-Projects* (2015) is a mentor's guide for project directors that distils practical advice on how to set up, develop and negotiate effective major government contracts.

2.1.5 Operational adjustments

Ensuring operational and project-based work is coordinated

When an organisation initiates a project there are often operational adjustments to make in advance, during or after the project has been completed. This applies to standalone projects as well as projects in programmes and portfolios. An example of this would be a temporary cessation of maintenance activities on an asset, or additional controls in place to manage simultaneous project and operational work going on in the same physical space.

To ensure that the project environment is set up for success, sponsors and project professionals establish governance and resourcing arrangements. This enables the change-related work to run smoothly, with minimal disruption to business-as-usual activities while ensuring that the organisation is ready to accept the outputs of the project and realise the intended benefits.

Making decisions about whether work is best managed as a project or part of business-as-usual can be problematic. Some packages of work, for example planned maintenance, may meet the definition of a project in being a unique, temporary endeavour, but be more easily managed as a component of operations management (Figure 2.1.5).

Programmes and portfolios that are implementing business change may conversely have to temporarily encompass some aspects of business-as-usual such as setting up some customer service activities to minimise impact on the organisation and its customers.

Project professionals work with operations to deliver change that provides new or enhanced products and services that are managed by routine activity. Some considerations before a project starts include:

- Which people are seconded to the temporary team and how these are back-filled in the short term.
- Whether some activities need to be ceased temporarily, for example on a refurbishment project some facilities may become unusable, so work-arounds are established.
- How operational budgeting processes and policies are managed while the project is in progress.

Throughout a project or programme life cycle, project professionals and key stakeholders from the sponsoring organisation work closely together to ensure a balance between objectives and operational impacts. A stakeholder engagement strategy identifies the needs of key groups and the sponsor plays a vital role in ensuring those business needs are met. For example, if a new finance system is being implemented, the programme ensures that:

- There is a robust testing approach as part of a transition plan (see 2.3.2).
- Staff are allowed the additional time from their routine work to attend briefing and training events before the system is launched — and are supported once the new system is launched.

- Changes to organisational structures and roles are clearly communicated and managed with support from senior management.
- Initial deficiencies in the new system can be handled, for example by dual running of both old and new finance systems for a set period.

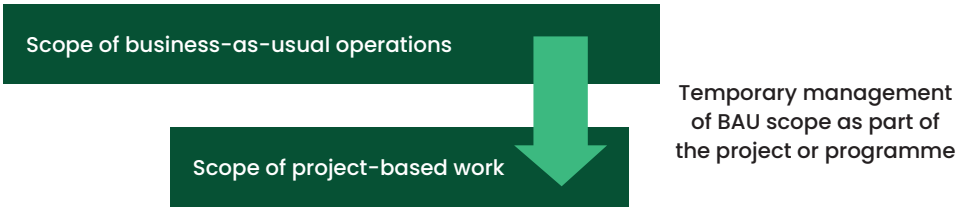

Figure 2.1.5 Temporary operational adjustments during project-based working

Recommended reading

- The APM Planning, Monitoring and Control Specific Interest Group guide on *Planning, Scheduling, Monitoring and Control* (2015) contains a specific section on the handover of projects. It offers practical guidance on planning handovers based on best practices.
- The APM Programme Management Specific Interest Group *APM Introduction to Programme Management* (2016) describes how programmes deliver benefits to the organisation, the typical challenges faced and how a change programme interacts with business-as-usual activities.
- *Operational Readiness & Assurance (OR&A): A Guide for Practitioners* (2012) offers a gentle introduction to the area of operational readiness and assurance, with examples based on oil and gas projects. The book is concerned with building a ready-to-operate capability and the specific activities required to enable such capability.

Full references for section 2.1

2.1.1

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2.2
Assurance, learning and maturity

There are some aspects of project-based working that apply in all circumstances and inform the ability of an organisation to improve their capability to deliver beneficial change successfully.

All teams involved in project-based working need to make informed decisions and to provide assurance to different stakeholders. Whatever life cycle approach is chosen, a managed progression through that life cycle is needed. The use of decision gates (alternatively called 'stage gates') is a critical part of governance of project-based working, where the sponsor and wider governance body make decisions about whether to continue the investment in a project, programme or portfolio. The ability to provide assurance to support such decisions relies on having reliable, traceable information and other evidence on which to base judgements.

Effective project-based organisations are proficient in creating and using knowledge to continuously improve their practices and maturity. In the past, the idea of 'lessons learned' in project-based working was popular but all too many organisations report that although lessons may be documented, they are not reliably learned and practices adjusted to capitalise on the learning. Learning — the creation and use of knowledge — is a people-based practice. One effective way of people coming together to share knowledge, challenge perceptions and create new knowledge is through a community of practice. Learning also enables maturity of practice in project-based working and some organisations choose to benchmark their maturity, or use a maturity model, as the basis for an assurance review.

In organisations where the ability to deliver beneficial change reliably and at scale is important, building effective within-project and cross-project support through a project, programme or portfolio management office (PMO) is critical to success. PMOs come in different shapes and sizes, and serve different purposes. They are increasingly seen as an efficient way to provide leading thinking and practice across a wide range of project-based work.

This section will be of particular interest to project, programme and portfolio leaders thinking about how to manage performance within the context of the organisational capabilities and maturity. It addresses:

2.2.1 The PMO: Support structures for projects, programmes and portfolios

2.2.2 Decision gates: Managed progression through the life cycle

2.2.3 Information management: Capturing evidence to support buy-in, learning and assurance

2.2.4 Audits and assurance: Ensuring decisions are based on evidence

2.2.5 Knowledge management: Connecting people to create insight and use knowledge to improve outcomes

2.2.6 Communities of practice: Investing in people and knowledge

2.2.7 Maturity of practice: Investing in the predictability of delivering results

2.2.1 The PMO

Support structures for projects, programmes and portfolios

Many different names are given to the part of the organisational structure that provides support for projects, programmes and portfolios but there is a growing consensus about the term PMO. The PMO may be a project management office, programme management office or portfolio management office, depending on what is being supported.

Whether projects, programmes or portfolios are being supported, a PMO brings three main benefits to any project-based organisation: deployment support, process improvement and resource flexibility.

Administrative work, for example, diary and travel arrangements for the team, and secretariat services for governance, needs to be resourced on all projects, programmes and portfolios, and this is often offered by a PMO. In addition, PMOs can provide access to services that might never be justified for a single project, for example:

- **Controls and reporting**: Collecting, analysing and presenting progress information and managing interdependencies.
- **Assurance**: Audits, health checks and reviews to support decision gates and change control.
- **Centre of excellence**: Improving processes, tools and techniques; embedding through training and support; and measuring capabilities to review progress and target higher levels of maturity.
- **Specialist support**: Provision of specialist skills such as risk; quality, planning or finance resources as role models to other project professionals.
- **Information management**: Document management and access to information, tools and services.

There are three typical ways that PMOs are organised and funded (Figure 2.2.1):

- **Embedded PMO**: Where the majority of PMO functions are delivered under the control of the project/programme/portfolio manager, with only organisation-wide elements such as processes defined at a higher level. Effective on large projects that need lots of support and can justify the investment.
- **Central PMO**: Where the majority of PMO functions sit outside of the teams, providing a service to multiple projects. Effective when there is a portfolio of small projects, where flexibility is valued more than management control.
- **Hub-and-spoke PMO**: A hybrid form with a central enterprise or portfolio PMO linked to satellite PMOs within individual projects and/or programmes. Effective when there are clear roles and responsibilities between managers and the PMO to ensure processes and information are managed effectively.

Depending on the type of PMO that is adopted, different specialist skills are needed in the PMO team, however there are generic skills that would be useful to have in all PMOs in order to deliver value. These include data analysis skills to support insightful reporting; facilitation skills to support creativity, problem-solving and collaboration; training and coaching skills to help teams develop; and auditing skills to confirm compliance or to challenge and thereby drive improvement.

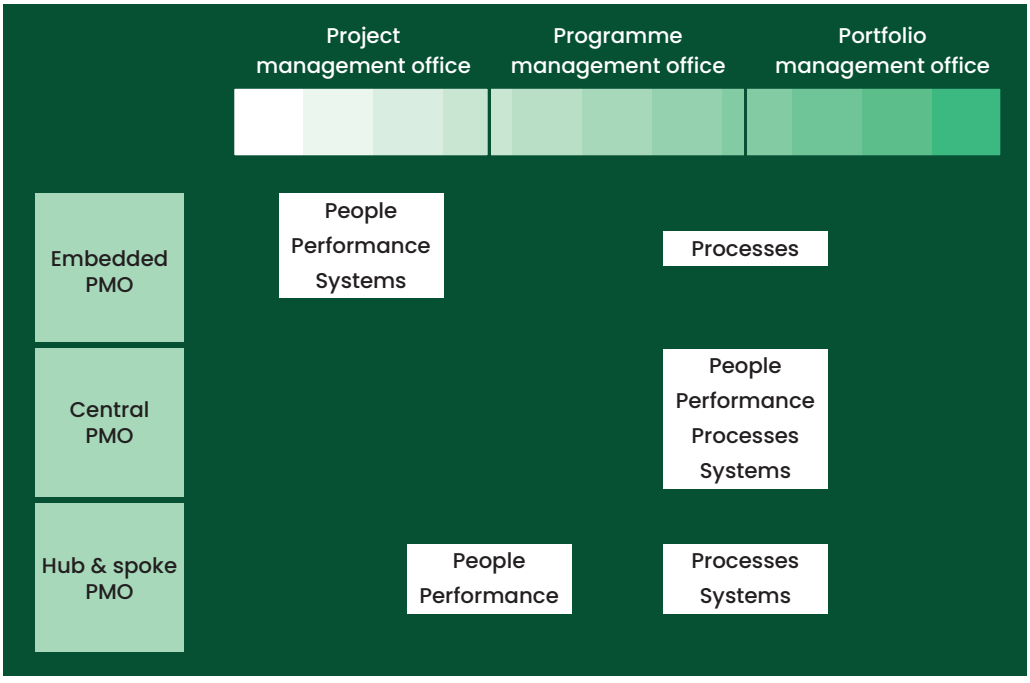

Figure 2.2.1 Different forms of PMO

Recommended reading

- *The Complete Project Management Office Handbook* (2013) is a detailed handbook offering insights and practical advice on how to utilise PMOs to enable the three essential aspects of improved oversight, control and support. The author views the PMO as a business integrator, capable of influencing both project and business outcomes.
- *Leading Successful PMOs: How to Build the Best Project Management Office for Your Business* (2011) outlines the basics of setting up a PMO and clearly explains how to ensure it will do exactly what you need it to do — the right things, in the right way, in the right order, with the right team.
- *The Strategic Project Office* (2010) leverages research to reinforce the use of a Strategic PMO as a 'strategy management centre' to align corporate strategy with the project portfolio. It is a 'how-to' guide, focused on getting the benefit from a PMO at portfolio level.

2.2.2 Decision gates

Managed progression through the life cycle

The purpose of decision gates is to review and confirm viability of the work across the chosen life cycle (see Section 1.2). In a linear life cycle, decision gates are event-driven, at the end of a phase of work (Figure 2.2.2). In the case of an iterative life cycle, they are time-bound. Many projects or programmes adopt a hybrid life cycle with a combination of main decision gates at the end of major phases of work, supplemented by interim review points to reflect the iterative nature of the development. In all cases, the sponsor and the wider governance board is accountable for the decision to continue the work.

Reviews in advance of decision gates ask four key questions:

- What has been achieved?
- What is required for the next stage?
- What are the key decisions to be made?
- Is the business case still viable, i.e. can the desired benefits be achieved for an acceptable level of cost and risk?

Within a standalone project, the decision gate is dealing only with the continued viability of that project's business case. In programmes and portfolios, decisions will include whether to rephase or terminate existing or initiate new projects.

Project professionals also use decision gates to request relevant authorities for the work, such as a financial or procurement authority. Between decision gates, the sponsor is accountable for ensuring authorities are in place to prevent the team working out of compliance and at risk.

Additionally, decision gates provide a key communications opportunity to highlight achievements, influence stakeholders, seek support for risk responses or issue resolution, or generally gain renewed support by being on the 'radar' of senior stakeholders. In iterative project structures, they provide early opportunities to engage, influence, validate benefits, achieve buy-in and mitigate risks.

The project, programme or portfolio manager has the lead responsibility to ensure readiness for a decision gate. This includes making sure the relevant documentation is in place and is circulated on time, supported by evidence from assurance reviews that have taken place. Although it is understandable that the focus on preparing for decision gates is to get a 'go' decision, the responsibility of the sponsor is to make the right decision for the organisation. This may be to pause, replan or terminate the work.

All gates are intended to be go–no-go decision points, although in some cases a provisional or conditional 'go' will be given based on a set of conditions that need to be fulfilled within a set time frame. The timing of the next gate is usually the last decision to be reviewed and confirmed. It is important the governance board understand this in order to ensure all the relevant decisions for the next stage have been taken and recorded.

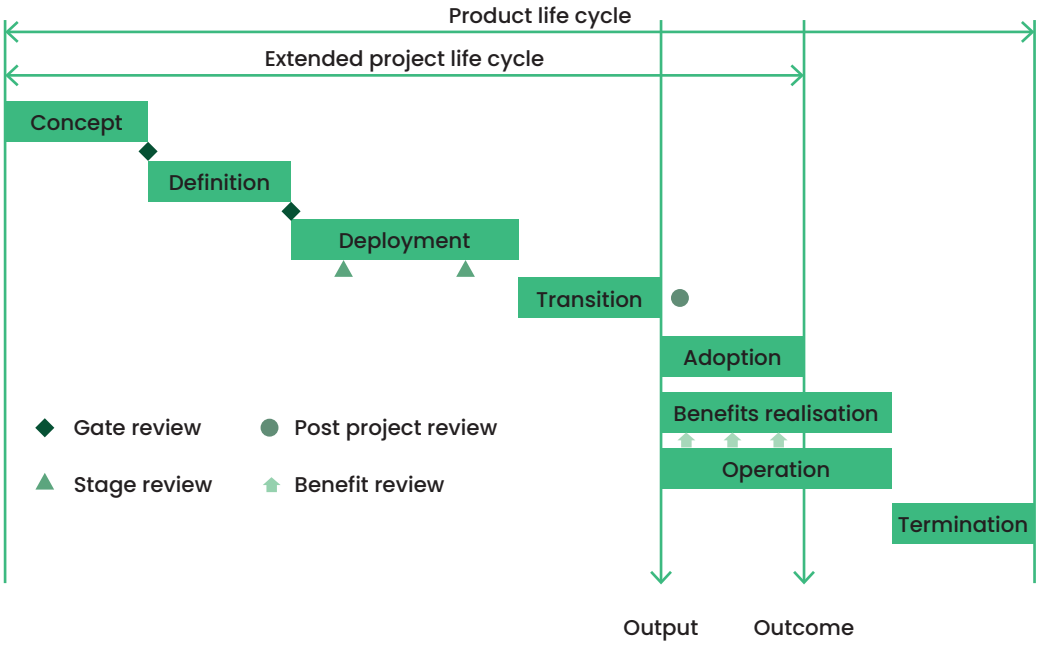

Figure 2.2.2 Typical decision gates and other reviews in a linear, product life cycle

Recommended reading

- *The Project Workout: Directing and Managing Business-Led Projects* (2019) outlines how to identify and overcome common challenges, measure critical success factors in projects and master a staged framework for managing a project, incorporating decision gates.
- *Agile-stage-gate-hybrids: The next stage for product development* (2016) explores the role of stage gates between phases, offering a particular emphasis on hybrid structures involving linear and iterative combinations in the context of innovation projects. The article advocates that combining stage gates with more iterative or agile work methods can offer direct benefits in terms of the process and the resulting outcomes.
- *Measures for Assuring Projects* (2016) was developed by the APM Assurance Specific Interest Group and offers a good set of questions and checks which can inform topics and areas for review at key decision gates.

2.2.3 Information management

Capturing evidence to support buy-in, learning and assurance

Information management is the collection, storage, curation, dissemination, archiving and destruction of documents, images, drawings and other sources of information (Figure 2.2.3). Project-based working relies on accurate and timely information for teams and stakeholders to make informed decisions and fulfil their role in a cost-efficient and effective way.

The management of projects, in its simplest form, is about saying what you are going to do (planning) and then doing what you said you would (executing the plan) in a controlled way. However, project, programme or portfolio documentation provides wider benefits than just a tool to articulate plans. Project professionals need reliable information to communicate with the team and wider stakeholders and to provide documentary evidence for assurance.

Defining information management processes and responsibilities is a key set-up activity. Many organisations have standard forms and tools to use, potentially supported by a PMO (see 2.2.1). Standard templates are useful to help the creator of the document to cover all the key points, and to make it easier for reviewers and those involved in assurance and process improvement.

Project professionals can adapt standard ways of working but adapted approaches need to be documented in the information management section of the project management plan and approved by governance.

As documents and other information are created and subsequently updated, version control is established to ensure that time and money are not wasted with people working with superseded versions.

Project professionals also:

- Establish a mechanism for communicating changes to documents to relevant stakeholders. Where a standard system for document control is not in place, the project professional creates their own way of ensuring that stakeholders are consulted or informed.
- Design information storage and retrieval with accessibility in mind. Information that cannot be found is of no value. Establishing access rights for all project information is critical to uphold requirements for data protection and to help people access the information they need efficiently.
- Archive information when it is superseded. Archived information provides an audit trail of changes. Information that is no longer required will eventually be destroyed, subject to statutory requirements or organisational policy.

The actual information required to be produced by any project, programme and portfolio will vary according to parameters such as the purpose and complexity of the work, standard processes in the investing organisation or the life cycle and deployment option chosen. Iterative projects place greater emphasis on the discovery and recording

of emergent information rather than reliance on pre-approved plans and are likely to employ dynamic modes of capturing such new information. Where projects are within programmes and portfolios, a reduced administrative burden for projects may exist because information management controls are implemented at the level of the coordinating framework.

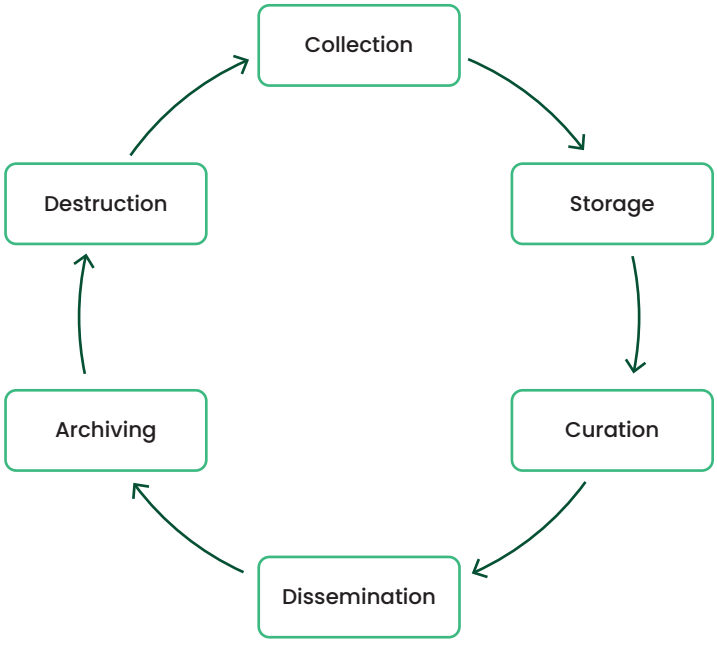

Figure 2.2.3 Scope of information management

Recommended reading

- *Essentials of Management Information Systems* (2016) is a book that sets out why information systems are one of the major tools available to project professionals for achieving operational excellence, developing new products and services, improving decision-making and achieving competitive advantage.
- *Ethical Data and Information Management: Concepts, Tools and Methods* (2018) is concerned with how information is managed, processed and governed in a sensitive and ethical fashion. The book offers practical, actionable methods and tools for implementing information management within organisations. The ethical perspective which frames the concepts and methods on offer is both timely and unique.
- *Records and Information Management* (2018) is an extensive guide to using records and information management (RIM). The key principles advocate a focus on articulating the useful life of information and getting rid of it as soon as there is no longer a legitimate reason to hold on to it.

2.2.4 Audits and assurance

Ensuring decisions are based on evidence

Assurance is the process of providing confidence to stakeholders that projects, programmes and portfolios will achieve their objectives and realise their benefits.

Assurance focuses on ensuring that the governance, processes and controls that are planned are fit for purpose, and that they are implemented as planned. Assurance is a complementary practice alongside quality planning to control and assure that project outputs meet requirements (see 4.1.2 and 4.1.5).

Assurance is most effective when a risk-based approach is taken, with the riskiest aspects of the management processes and environment being subject to the most rigorous assurance processes (Figure 2.2.4). For example, assurance may be required to validate that the project manager and team have the right experience, or that the organisation has appropriate systems in place to provide the necessary management information for investors.

An important tool to provide assurance is audit. A key principle is that the auditor is independent of the area being audited. Auditors are commonly deployed from a project, programme or portfolio management office (PMO), from a wider organisational internal audit function or from a third-party provider (typically, a consultancy or an accreditation body).

Agreeing the scope of the audit with relevant stakeholders is critical before work commences. The auditee is the person who will have responsibility for responding to audit findings.

Thereafter, auditors seek evidence of compliance with the planned arrangements that are in scope. Findings may include major or minor deviations from plan, observations of procedural irregularities or observations that the auditor believes will help the auditees to perform more effectively in future.

Typically, organisations will have a way of reporting audit findings by grading the severity of deviation from planned arrangements. Reporting systems based loosely on traffic lights are commonly used with major non-conformances classed as red, intermediate as amber, minor as green and, sometimes, observations as blue.

Audit findings are documented and agreed with the auditee, who commits to respond to agreed findings within an agreed timescale. Assurance is not a decision-making function in its own right.

Actions may include replanning the work, putting in place new controls or adjusting the team. Follow-up audits to confirm suitable action has been taken is typical prior to closeout of the audit.

Assurance can also involve reviews that are not classed as formal audits, but that gather information to inform decision gates (see 2.2.2) such as a design review, or other requirements of the relevant governance board (see 1.3.10). The principle of using independent reviewers remains. To achieve this, many organisations deploy teams of reviewers that are peers of the delivery team, for example a project manager or a cost estimator from a different project or department.

	First line			Second line				Third line		
Risk description	Management actions and reporting	Programme boards and reviews (inc 'the plan')	The management system	Risk management	Quality assurance	HSE assurance	Project assurance	Internal audit	External scrutiny	External audits
Risk 1	✓	✓	✓	✓			✓	✓		✓
Risk 2	✓	✓		✓				✓		
Risk 3	✓	✓	✓	✓				✓		
Risk 4	✓	✓		✓				✓		
Risk 5	✓			✓				✓		
Risk 6	✓	✓		✓				✓		
Risk 7	✓	✓	✓	✓			✓	✓		
Risk 8	✓	✓		✓			✓	✓		
Risk 9	✓	✓		✓			✓	✓		
Risk 10	✓	✓		✓				✓		✓
Risk 11	✓	✓		✓				✓		
Risk 12	✓			✓				✓		

Figure 2.2.4 Adopting a risk-based approach to planning assurance

Source: *A Guide to Integrated Assurance (2014)*

Recommended reading

- *Measures for Assuring Projects* (2016) is a toolkit developed by the APM Assurance Specific Interest Group. It is designed as a reference for assurance practitioners. It provides a generic basis for the assurance of projects, programmes and portfolios.
- *Project Performance Review: Capturing the Value of Audit, Oversight and Compliance for Project Success* (2018) develops a new approach for conducting effective performance reviews and audits. The approach is concerned with identifying important improvement opportunities, shaping the environment by stakeholders and the technical team and leading project and organisational management practices in order to give stakeholders confidence in the control and deployment of their projects.
- Auditing agile projects can introduce new challenges. *Agile Governance and Audit: An Overview for Auditors and Agile Teams* (2014) attempts to bridge the gap offering practical auditable suggestions related to each major phase in agile development projects, including initiation, requirements, building and testing, handover to business and governance.

2.2.5 Knowledge management

Connecting people to create insight and use knowledge to improve outcomes

Knowledge management is a holistic, cross-functional discipline and set of practices concerned with the way organisations create and use knowledge to improve outcomes (Figure 2.2.5). It can be applied within and between projects, programmes, portfolios and organisations and across extended and product life cycles.

Working with knowledge, project professionals can add value by, for example:

- anticipating, understanding and responding to changing conditions
- avoiding repetition of mistakes
- generating options and solutions
- supporting decision-making processes
- enabling benefit realisation

To use knowledge successfully to improve outcomes, there are some principles that are important for project professionals to remember:

- Knowledge is intangible and complex and encompasses much more than documents or information. It exists in people and can be tacit and difficult to express (e.g. insights) or explicit and easy to express (e.g. formulae).
- Because knowledge is intangible, it cannot be managed directly. Knowledge management focuses on supporting people to share what they know, learn from others and contribute ideas.
- It is important to be clear about the objective of knowledge management interventions, and to determine whether the focus is on creating new or using existing knowledge. Both involve sharing knowledge, but each is enacted and managed in different ways.
- Knowledge creation requires an environment of shared purpose, trust and autonomy.
- The use of existing knowledge works best in an ordered and controlled environment. Codifying knowledge is rarely enough to create shared understanding.
- There is no one-size-fits-all knowledge management solution. Knowledge management is tailored to the needs and contexts of specific projects, programmes, portfolios and organisations.
- Although knowledge management needs to be planned throughout project and programme life cycles, it is also an iterative, evolutionary and adaptive process driven by feedback.
- Technology can support and enhance interactions between people. This implies active use of technology to enrich interactions rather than passively collecting lessons learned in databases.
- A supportive culture in which knowledge and learning are valued is essential for effective knowledge management. Leadership, diversity, structure and governance all affect this culture. Knowledge management benefits from tangible and explicit support. Although knowledge management is everyone's responsibility, it is most effective when actively championed by the sponsor and supported by a PMO.

These principles highlight that knowledge management is reliant on connecting people, sometimes with the support of documents and other information. Methods include peer 'assists' or reviews, facilitated problem-solving workshops, ideas generation sessions and communities of practice (see 2.2.6).

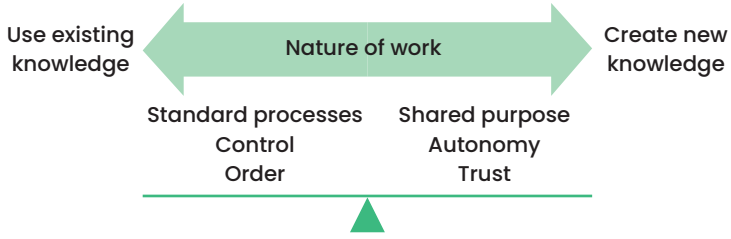

Figure 2.2.5 Nature of work and the working environment

Source: *Managing Knowledge in Project Environments (2019)*

Recommended reading

- *BS ISO 30401:2018 Knowledge management systems. Requirements* (2018) is the international standard for knowledge management. It sets requirements and provides guidelines for establishing, implementing, maintaining, reviewing and improving an effective management system for knowledge.
- *Managing knowledge in project environments* (2019) is a definitive short guide to knowledge management in projects, programmes and portfolios. The book presents knowledge management as a series of principles, choices and contextual factors — providing readers with a framework for understanding and thinking about what knowledge management means for their context, projects and working environment.
- *Managing knowledge work and innovation* (2009) is a comprehensive, fairly academic guide to knowledge work. It connects knowledge and knowledge management theories to work practices, using multiple perspectives and case studies. Good for readers who want to understand the complexity and theoretical underpinning of knowledge management.

2.2.6 Communities of practice

Investing in people and knowledge

Communities of practice are a type of learning network, widely used within and between organisations to maintain, develop and share knowledge (Figure 2.2.6). As they both create and support the use of knowledge, they are often considered to be the most effective knowledge management method.

Three characteristics distinguish communities of practice from work teams, networks and other types of community. In a community of practice:

- There is a focus on knowledge in a specific domain, for example risk management or thin-film solar panels.
- Members form a community through regular interaction that builds relationships that provide the social basis for learning, and for creating and sharing knowledge, including tacit knowledge.
- Members are active practitioners in the domain. They have a shared practice: shared experiences, shared language, shared stories and shared approaches to solving problems.

Shared practice distinguishes communities of practice from communities of interest, where it is not necessary for members to be active practitioners. Regular interaction and strong relationships distinguish communities of practice from looser networks.

Communities of practice membership typically spans organisational boundaries, hierarchies and other organisational structures. They can be formal or informal, emergent or planned and of any size. Some communities of practice have sponsors, objectives and targets; others are left to their own devices. In most communities of practice, members fill defined leadership, management, coordination and technical roles. Facilitation and leadership are key to communities of practice success.

In project-based working, communities of practice bring continuity and stability across and between temporary teams. This doesn't mean their knowledge or membership is stable: both are dynamic, but because communities of practice knowledge is collective (it exists in the network of relationships), the community of practice is a resource for temporary teams to draw from.

Examples of the way in which project professionals can contribute to and use communities of practice are:

- as guardians or stewards of domain knowledge
- as a hub mechanism for sharing knowledge between projects and programmes
- to prevent knowledge loss when project teams are disbanded or people leave the organisation
- as a source of advice and guidance for project and programme teams
- to solve problems, including troubleshooting and resolving issues
- to manage knowledge-related risks, such as unforeseen knowledge gaps
- to develop and improve project management processes
- process and product innovation
- as a source of motivation and professional satisfaction and continuing professional development (CPD) for members (see 3.3.6)

Communities of practice are an investment in knowledge. Supporting and encouraging them is a good investment in the success and maturity of project-based working. As a result, time allocated for members to manage and engage in communities of practice activities and for people to use communities of practice resources is a good investment.

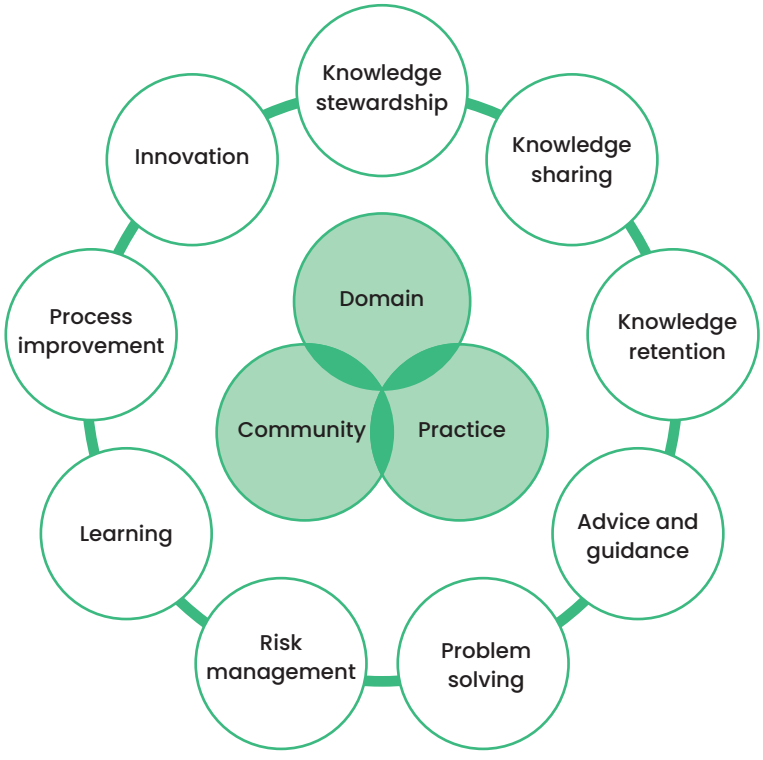

Figure 2.2.6 Single community of practice showing potential benefits/functions

Source: *Created by Judy Payne for the APM Body of Knowledge.*

Recommended reading

- *Introduction to Communities of Practice* (2015) is a comprehensive and accessible introduction co-authored by Etienne Wenger, the originator of the term 'communities of practice'. It includes examples, answers to frequently asked questions, links to additional resources and a further reading list of Wenger's highly respected books and articles.
- *Harnessing your staff's informal networks* (2010) summarises the way communities of practice have developed from informal, unstructured groups into a formal mechanism for coordinating work across organisational boundaries. A good, quick read, with examples and practical tips.
- *Buzzing Communities: How to Build Bigger, Better, and More Active Online Communities* (2012) is a detailed, practical guide based on experience and research. Although the book is about managing online communities of all types, many of the principles and concepts also apply to face-to-face communities. Good for community managers.

2.2.7 Maturity of practice

Investing in the predictability of delivering results

Organisations that invest heavily in project-based working to create value want all their investments to succeed. The reality is that some projects fail to meet some or all of the intended objectives and benefits. Developing project-based maturity is about understanding current capabilities, processes and behaviours and identifying a structured path to increase the efficiency, effectiveness and predictability of success.

An assessment of maturity typically involves the use of a benchmark in the shape of a maturity model. Most models are based on the Capability Maturity Model (CMM®) originally developed at Carnegie Mellon University for measuring supplier capability and assuming that processes for project-based working can be defined and controlled (Figure 2.2.7):

Level 1 – Initial: The deployment of capability is ad hoc and occasionally chaotic. Few processes are defined and success depends on individual effort and heroics.

Level 2 – Repeatable: Basic processes are established and the necessary discipline is in place to repeat earlier successes.

Level 3 – Defined: Processes are documented and standardised. All projects, programmes or portfolios use an approved, tailored version of the documented processes.

Level 4 – Managed: Metrics are gathered on process performance and used to control future performance.

Level 5 – Optimising: Continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies.

An organisation's maturity can be defined separately for projects, programmes and portfolios. For example, an organisation may be at Level 3 for the management of projects but only at Level 2 for the management of programmes.

To get a richer assessment of maturity, practices can be further divided into key process areas, or perspectives, such as risk, benefits, stakeholder engagement, project culture, scheduling, etc. Each perspective will have its own attributes that are indicative of a particular maturity level.

Focusing on addressing particular practices can be a good way of driving improvement in a manageable way, for example to move risk management from a bureaucratic and 'tick-box' exercise to one that contributes directly to decision-making.

Organisations that aspire to deliver projects, programmes and portfolios effectively and efficiently tend to aim to achieve and sustain Level 3 as a minimum. Achieving higher levels of maturity requires significant investment in time, resource and formalisation of process, so a formal investment decision to evaluate the cost/risk/benefit trade-off of higher levels of maturity is warranted in most organisations. Often, the decision to invest in increasing maturity tends to be driven by competitive demands. Many maturity models on the market enable benchmarking across sectors.

Continuously improving maturity of practice requires sponsorship and commitment from senior leaders and is usefully managed as a project or programme in its own right.

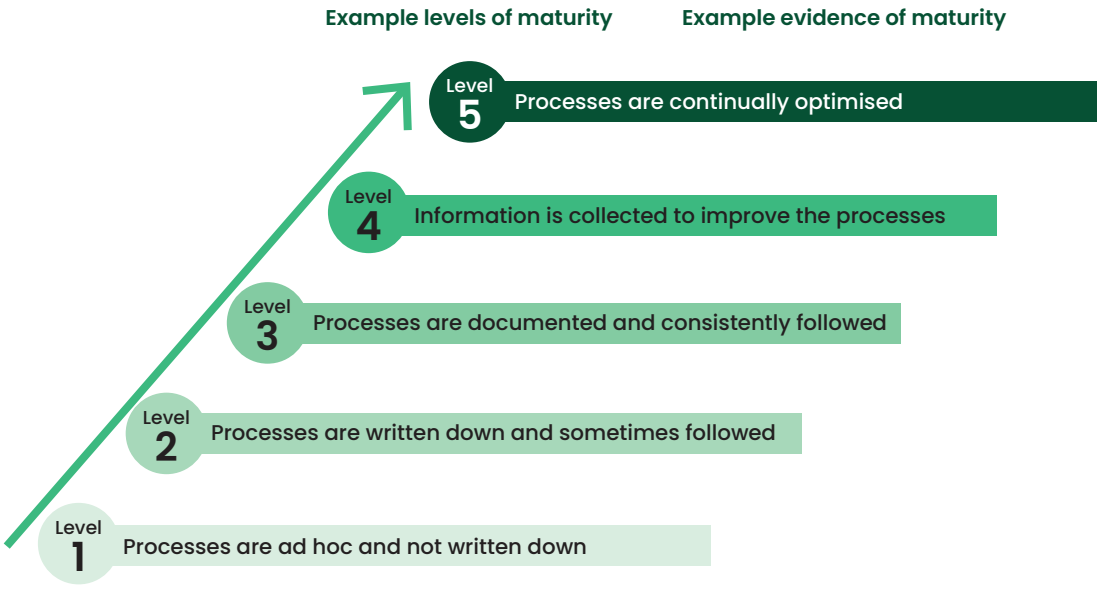

Figure 2.2.7 Five stages of maturity

Recommended reading

- *Models to Improve the Management of Projects* (2007) compiled by APM provides a short guide to the history and benefits of maturity models and offers pointers to a number of alternative approaches that organisations can take.
- *CMMI® Development, V2.0 Driving Performance through Capability* (2018) describes practices that help organisations to improve their processes and business capability. This technical report and maturity model developed by the Software Engineering Institute (SEI) based at Carnegie Mellon University provides a comprehensive integrated set of good practices required to improve capabilities, products and processes in order to drive business results and optimise business performance in an increasingly demanding business setting.
- Chapter 38 of the *Gower Handbook of Programme Management* (2016) is dedicated to assessing and improving programme management maturity. It offers a six-level indication of maturity across different aspects of programme management including strategic alignment, sponsor's and project manager's competence, benefits, stakeholders and governance.

Full references for Section 2.2

2.2.1

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2.3 Transition into use

Ultimately, the organisational return on investment from project-based working is accomplished when the particular outputs of projects are transformed into organisational outcomes of benefit to stakeholders. The approach adopted for transition of project-based outcomes into use in business-as-usual is closely linked to the chosen life cycle, so many variants are possible.

In all cases, the temporary change team is challenged to influence the recipients of change in the permanent organisation so that new processes, products, systems or ways of working are adopted. People, either within the project-based organisation, or in a business-as-usual role, work throughout the life cycle to prepare the ground for successful handover of project outputs and adoption of those outputs to realise benefits.

Sometimes, project-work does not end as planned. Early closure of projects, rather than being viewed as bad, is more suitably considered as a good organisational decision to prevent further investment into work that is unlikely to yield the desired benefits. In some sectors, this is vital and a positive organisational capability. Other unplanned endings are also possible and need to be managed creatively.

And because projects and programmes are transient endeavours, the managed closure of the work — whether as planned or earlier — is work to be done to bring the investment to a tidy close. This administrative aspect of bringing projects, programmes or portfolios to a managed ending is work of fundamental importance for a whole range of reasons from future learning to talent management to the avoidance of ongoing contract claims or conflict in the supply chain.

This section will be of particular interest to project, programme and portfolio leaders thinking about how to manage the end of projects and transition from the temporary team to the permanent organisation. It addresses:

2.3.1 **Business readiness:** Preparing the ground for successful handover and adoption

2.3.2 **Transition of project outputs:** Ensuring that outputs enable the intended benefits

2.3.3 **Adoption and benefits realisation:** Creating the 'new normal' in line with the business case

2.3.4 **Unplanned project endings:** Knowing when closure of the original project is the right business decision

2.3.5 **Administrative closure of projects:** Shut down of all deployment activity and corporate acceptance of completion

2.3.6 **Closing programmes and portfolios:** Retiring coordinating frameworks for projects when they cease to add value

2.3.1 Business readiness

Preparing the ground for successful handover and adoption

All projects and programmes, whether managed within portfolios or not, have a singular purpose of bringing about changed capabilities within one or many organisations, or across wider society. Where a project is positioned in a supplier organisation, its purpose, nonetheless, is to deliver benefits to the investing organisation/client. Although there are differences in the amount of business change that is needed to deliver the benefits defined in the business case, business readiness is applicable in most cases.

Business readiness is best thought of as a continuous activity through the chosen life cycle — not a phase near the end. This is because the recipients of change, the people who the organisation wants to 'receive' and use the project outputs, and do things differently to realise benefits, can make or break an otherwise 'successful' project or programme. A change impact analysis is therefore a useful exercise for project professionals to start in early life cycle, ideally before the major investment decision point, where funds are committed, and expectations of value are set (Figure 2.3.1). Business readiness activities are sometimes carried out from within the project team. More often they are carried out from within a programme team or by business-as-usual people. Such people may be referred to as the 'business change lead/manager'.

Techniques such as change impact analysis are used to understand:

- physical or process impacts of the project on the wider system
- gaps in knowledge and skill that needs to be addressed
- feelings about the change in operation

One of the distinct advantages of an iterative life cycle is to build stakeholder buy-in on an ongoing basis, whether this be collaborative input to a design or ideas from business-as-usual about the implementation schedule.

Assessing and improving the readiness of people in the business for change requires project professionals to:

- proactively engage with people to understand the processes and routines performed in business-as-usual
- listen to and appreciate the perspectives of dissenting voices — not reacting to perceived 'resistance' to change as if it is illogical or illegitimate
- identify, empower and motivate champions for the 'new normal' — ideally, people with highly developed skills of engagement and influencing, facilitation and conflict resolution (see 3.1.3, 3.1.4, 3.1.5)

The relationship between the people responsible for deployment of new capabilities and those responsible for business readiness and adoption in business-as-usual is carefully managed as part of governance to ensure both sets of activities are aligned in order to secure the promised benefits. The sponsor is a key champion of this work to align the temporary project/programme team and the functional and operational teams in the business.

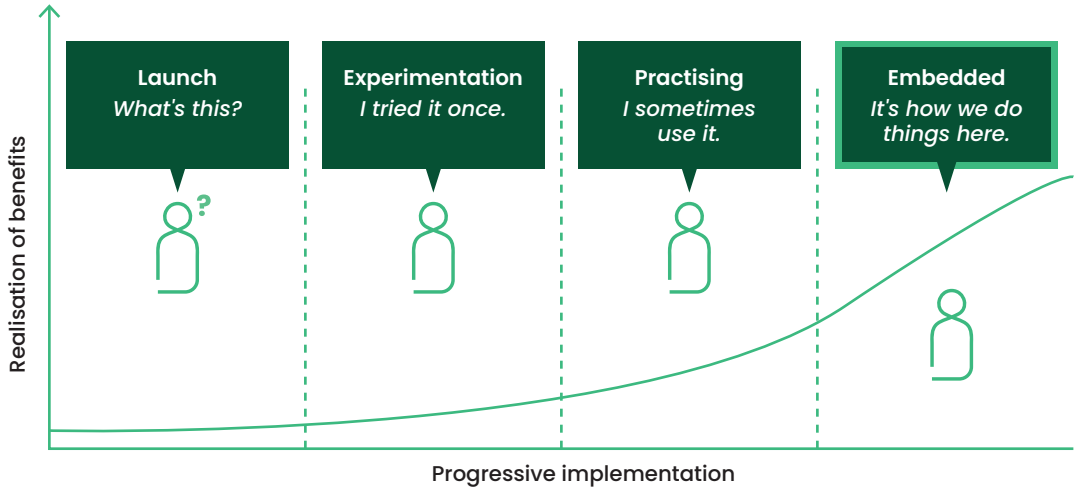

Figure 2.3.1 Enabling progressive commitment over time

Source: *Introduction to Managing Change (2017)*

Recommended reading

- The APMs Enabling Change Specific Interest Group guide *Introduction to Managing Change* (2017) includes specific advice on business readiness. Inside, readers will find key principles and practices, as well as guidance on the appropriate application of different change management methodologies.
- *Leading Change* (2012) is the extended version of John Kotter's classic work, first published in *Harvard Business Review* in 1995. It is both a visionary guide and practical toolkit on how to how to approach the difficult, yet crucial work of leading change in any type of organisation.
- *Change Ready: How to Transform Change Resistance to Change Readiness: A Manager's Guide to Managing and Sustaining Change in the 21st-Century Workplace* (2011) provides managers with a practical step-by-step guide to implementing and sustaining change. Readers will gain insight into the personal reactions that cause resistance to change and learn what to do to minimise resistance, maximise readiness and create a change ready culture.

2.3.2 Transition of project outputs

Ensuring that outputs enable the intended benefits

The transition of project outputs happens when the project team have delivered what they were supposed to, and the sponsor and business users are ready to accept those deliverables (Figure 2.3.2). This typically occurs in the final phase of a linear project life cycle. In an iterative life cycle, the handover of outputs can occur as and when they are deemed acceptable by the sponsor or product owner. In all cases, transition triggers the beginning of adoption, use and benefit realisation (see 2.3.3).

Transition planning starts at the beginning of a project. Information provided by the investing organisation is used to shape solutions and plans, including details of what needs to be 'handed back' to the organisation at the point of transition. Information provided to the project team could include artefacts such as user manuals, operating procedures, asset registers and architectural drawings that will be changed as part of the project before returning to operational use.

As part of the transition process, the deliverables, with assurance evidence (see 1.3.2 and 2.2.4) are prepared for passing over to the sponsor and the user. The project manager organises testing of component deliverables as part of implementation in a safe, non-operational mode. These tests may be of physical items, software, documentation or less tangible deliverables such as coaching for the business-as-usual team to help them adopt changed behaviours. Following successful off-line testing, the complete set of deliverables is carried out in an operational mode, usually with the people involved in the business-as-usual activities. If the deliverables meet the acceptance criteria, the project outputs are formally accepted by the sponsor.

The sponsor may want to adopt different transition strategies, depending on the project output, situational context, strategic priority and the capacity of the organisation to accept the transition. For example, there could be a phased adoption of a new IT system that requires significant training, knowledge transfer and changes to job roles. In all cases, plans for acceptance and transition are prepared and agreed in the project management plan.

The transition process may also include:

- acceptance of all pertinent documentation (containing all prescribed information related to the deliverables, including guarantees and warranties)
- acceptance certificate(s) signed by the sponsor
- transfer of responsibility for the deliverables from the project team to the sponsor or users
- formal transfer of ownership

On high-risk projects, the project team and sponsor also develop contingency plans, in case the initial transition does not proceed as expected. Contingency could form part of a post-implementation support or warranty arrangement between the project team and sponsor organisation, or as part of a wider programme or portfolio.

As outputs are handed over successfully, it may be a while before the full benefits are realised. Work to monitor and track benefits realisation through to completion is owned by the sponsor.

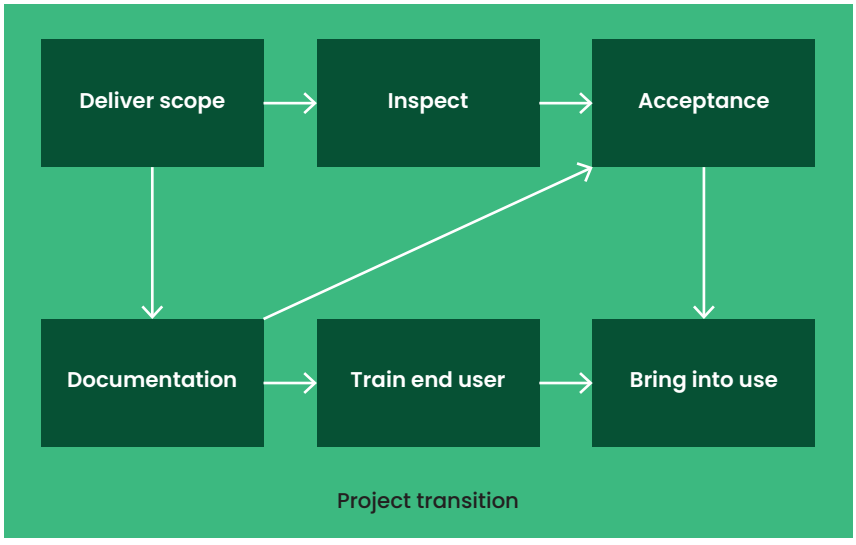

Figure 2.3.2 Activities involved in project transition

Source: *Adapted from Planning, Scheduling, Monitoring and Control (2015)*

Recommended reading

- The APM Governance Specific Interest Group guide on *Sponsoring Change* (2018) explains the importance of the role of the sponsor and their accountability for the realisation of desired outcomes and benefits from any investment.
- The APM Specific Interest Group for Planning, Monitoring and Control guide on *Planning, Scheduling, Monitoring and Control* (2015) contains a specific section on the transition of projects. It offers practical guidance on planning transitions based on best practices.
- The APM Earned Value Management Specific Interest Group *Earned Value Management Handbook* (2013) describes some of the issues in the management of transition of project deliverables.

2.3.3 Adoption and benefits realisation

Creating the 'new normal' in line with the business case

Every project, whether managed alone or as part of a programme or portfolio, reaches a point where the outputs have been handed over or transitioned into business-as-usual, and these need to be used to realise the benefits that the organisation invested in (Figure 2.3.3). This may be at the end of the work, or during the work in the case of projects and programmes that use an iterative life cycle and are able to deliver intermediate benefits early and incrementally, potentially by concentrating on creating a minimum viable product.

Adoption is dependent on the recipients of the change being ready to accept and use the outputs in the intended way (see 2.3.1).

Ongoing support is usually also needed to ensure that new routines are established that use the new process/system/product/ways of working in the intended way. Some organisations manage this work through their normal business operations. Others choose an 'extended life cycle' deployment approach for a single project or programme that ensures that accountability and governance of the investment stays with the change team until fully embedded.

Organisations that are committed to driving through the realisation of benefits devise methods for tracking and measuring the benefits that were promised at the last decision gate and included in the business case. It is at the point of adoption that any failure to keep the business case up to date in the light of changes during the process will be highlighted — the type or quantum of benefit may well change over time and expectations need to be managed through governance.

Project professionals, together with the sponsor, agree what benefits are tracked and how. This happens in early life cycle to enable the necessary baseline measures to be set up. Some benefits are tracked using qualitative indicators, for example customer satisfaction scores, in addition to financial or non-financial quantification, for example increased revenues, or percentage increase in proposals that are converted into sales.

At portfolio level, the benefits scorecard is likely to closely mirror the overall performance indicators for the organisation, with individual projects or programmes within the portfolio contributing individually and synergistically to the overall change in performance.

For individual projects or programmes, benefits are likely to be a subset of the organisation's performance indicators and it is vital to ensure that the benefit measures established do not drive unintended behaviours, for example increasing operational costs in one area to show a saving that can be attributed to a project.

The sponsor is accountable for ensuring that benefits tracking and reporting is effective as a part of good governance. This applies irrespective of whether benefits are being realised as planned or not.

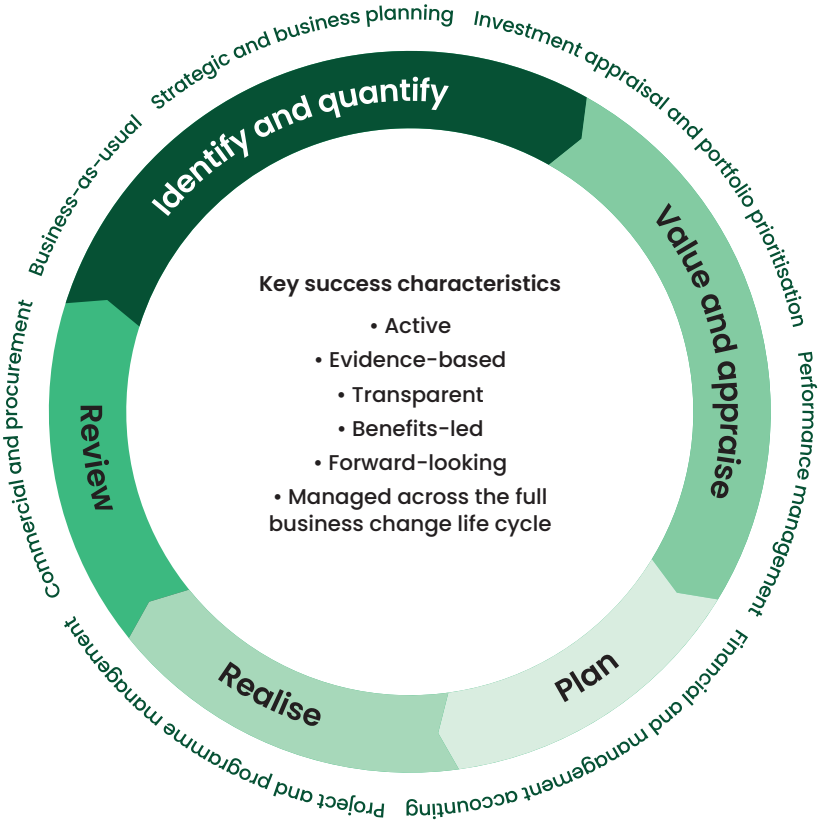

Figure 2.3.3 The benefits realisation cycle

Source: *Adapted from Managing Benefits (2012)*

Recommended reading

- The APM's Benefits Management Specific Interest Group guide *A Guide to Using a Benefits Management Framework* (2019) shares practical ways to manage benefits management from end to end.
- *Managing Successful Programmes* (2011) includes useful advice on the full benefits management process set in the context of managing programmes of projects and business-as-usual activities.
- Harvard Business Review *10 Must-Reads on Change Management* (2011) is a compendium of 10 leading articles on the management of change published in *Harvard Business Review* over the past years. It includes a number of different research-led perspectives on why organisations find it difficult to adopt change, with suggestions about how to address these.

2.3.4 Unplanned project endings

Knowing when closure of the original project is the right business decision

If projects exist to bring about planned objectives, then it follows that as circumstances change over time, not all projects are able to achieve those organisational objectives. In such a situation, it is logical to close the project early to divert investment away from something that is no longer a priority, towards a more useful opportunity (Figure 2.3.4).

The use of decision gates (see 2.2.2) is one way in which the governance process ensures that investment does not continue if there is no longer a viable business case. However, for governance to be effective, the culture of the organisation needs to be one where early project closure is seen as a positive decision, not a failure.

Many sectors understand this and the concept of 'failing fast' is built into planning and decision-making processes, for example in drug development where many promising compounds will enter the portfolio but those that will not make it through full clinical trials and come to market are stopped as early as possible. Many projects may look promising but cease to become so when more information is known. It is not wrong to start something when the outcome is uncertain. It is wrong to continue when the evidence is that sufficient value cannot be created.

Sponsors of projects, programmes and portfolios are responsible for developing governance approaches that help the decision to close projects early.

To enable sponsors and project professionals to do the right thing, senior organisational leaders can:

- create incentives and 'safety nets' for teams
- champion the sharing of knowledge
- look for ways for other teams (in projects or operations) to benefit from the people or other non-human resources that become available unexpectedly
- provide support for managing stakeholder relationships in key suppliers who are affected
- give their name to internal communications, explaining what has happened and why

Within a programme or portfolio structure, projects may be replanned to facilitate wider objectives and benefits, for example:

- to bring forward a capability to build early commitment to change in the business
- to reschedule a project to a time where it can be resourced

In a programme or portfolio, closing projects needs to be seen within the context of the overall change and benefits sought and should not be viewed as failure but as an opportunity for better utilisation of resources. For this to be successful, individual performance objectives for sponsors and managers need to reflect where projects have been closed early in order to support wider organisational objectives.

Conversely, some projects, especially development projects utilising extended life cycles or positioned as part of a strategic portfolio, may require funded extensions or newly defined sub-projects to respond to opportunities, develop new features or extend the scope of intended work.

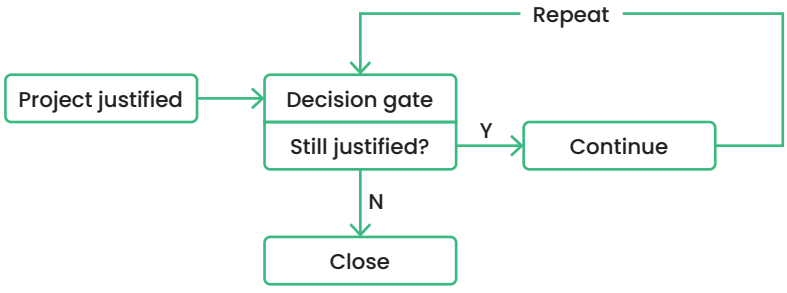

Figure 2.3.4 Closing projects when they are no longer justified is good practice

Recommended reading

- *Project Management* (2013) covers most aspects related to managing projects. Chapter 28 focuses on project closure, including consideration of different reasons and rationales for closing projects and the need for as-built data records for projects terminated prematurely, in case customers subsequently decide to resurrect them.
- *Managing Project Ending* (2009) is dedicated to exploring the different scenarios for project ending, emphasising that ending entails more than simply closing the effort. While the book is focused on developing a project ending as a strategy and a competence, it explores premature termination, late termination and non-termination, in addition to planned termination.
- *Enforcing strategic fit of project portfolios by project termination: An empirical study on senior management involvement* (2012) is a research paper asserting that senior managers should terminate projects no longer conforming to corporate strategy to ensure strategic fit and indicating that such involvement can affect their new construct of project termination quality.

2.3.5 Administrative closure of projects

Shut down of all deployment activity and corporate acceptance of completion

As the project team disperses after the deployment activity is completed, it is vital that the sponsor ensures that administrative closure of each project happens effectively.

Administrative closure typically takes the form of a project closeout report that will be endorsed by governance through a final decision gate approval (Figure 2.3.5). The sponsor is accountable for the report but work to produce the report is often commissioned from a project, programme or portfolio management office (PMO).

A typical project closeout report contains:

- evidence that the project has delivered its intended outputs and has been accepted by the relevant part of business-as-usual
- a statement from the sponsor that benefits in the last approved business case have been realised or there is a plan in place to do so
- evidence that any contracts have been completed
- information about any residual matters that need to be picked up by corporate governance or future business planning

Document archiving requirements are defined through a combination of the project management plan, corporate policy and statutory requirements (see 3.3.4). The sponsor ensures that these requirements are satisfied and that archiving arrangements stipulate retention periods and disposal requirements.

As the project approaches closure, staff need to be reassigned. During their time on the project, team members may have acquired new skills and project professionals facilitate discussions to help individual staff members to update their personal records and to work through how to use their learning in future. Some staff members may be redundant and their exit from the organisation is planned and implemented by project professionals working with human resource colleagues in advance.

Where a project exists within a wider programme or portfolio, the responsible manager is made aware of the opportunity to utilise skills transferring out of closing projects. Where a project is standalone, the wider business (through the human resources/talent management function) needs to be advised of the available transferring skills (see 1.3.9).

An essential part of administrative closure is the finalisation of all supplier contracts. It is the responsibility of the project professional to obtain any post-deployment technical documentation and as-built data that is a requirement of each supplier's contract and to ensure that it is distributed as required within the owner organisation.

Formal closure of contracts in the supply chain also needs to be facilitated. This comprises formal confirmation, in accordance with the prevailing governance arrangements, that all the suppliers' obligations have been met and that the final accounts have been agreed. Any ongoing disputes that prevent final account agreement may be passed to a commercial or legal team outside the project structure in order that project closure is not unnecessarily protracted.

When all project liabilities have been discharged, the sponsor closes the project accounts and returns any surplus funding to the business.

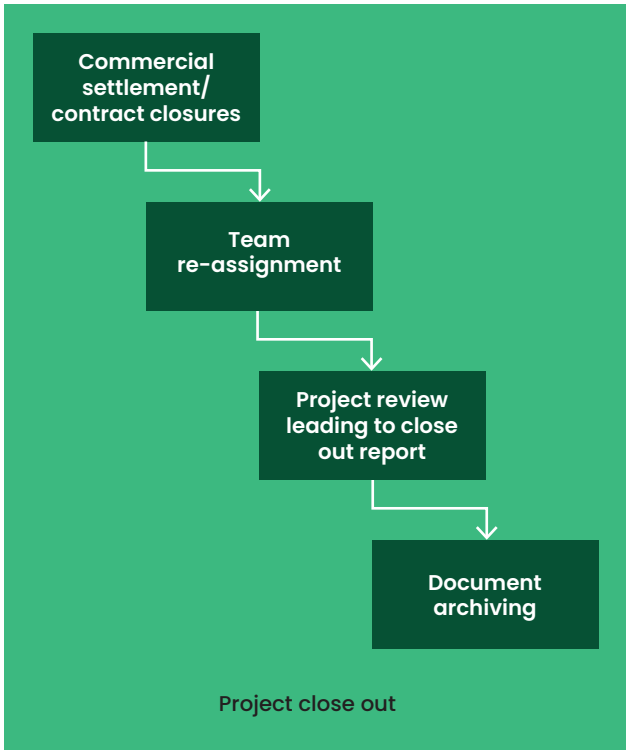

Figure 2.3.5 Key elements of project closure

Source: *Planning, Scheduling, Monitoring and Control (2015)*

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group guide *Planning, Scheduling, Monitoring and Control* (2015), describes handover and closeout activity in section 30 and usefully differentiates between the separate but closely related nature of handover and closeout.
- *Praxis Framework* (2015), published by APM, part 3, deals with competencies for the management of projects. In this section, there is specific consideration of the competencies required for project and programme closure, which includes proposed performance criteria and requisite supporting knowledge.
- *Project Management* (2013), chapter 28, offers advice and guidance regarding project closure, including cost cut-off, disposal of surplus materials, authorising of post-project expenditure, project closure document, final project cost records and other documentation. It also addresses as-built condition of a multiple manufacturing project, security and the management of files and archives.

2.3.6 Closing programmes and portfolios

Retiring coordinating frameworks for projects when they cease to add value

As described in 1.1.5, programmes and portfolios have distinct objectives as coordinating frameworks for collections of projects and other organisational activities. Closure of a programme is justified if:

- all the outcomes required are delivered
- the business case is no longer viable
- residual work would be better delivered as part of another project or programme in the portfolio

In cases where all outcomes are delivered and the programme has fulfilled its intended function, the administrative arrangements for closure are similar to those for administrative closure of a project as described in topic 2.3.5, including a formal review of achievements and organisational learning (Figure 2.3.6).

In organisations where a strategic portfolio approach is used in the deployment of change, it would not be typical to close the portfolio, rather the constituent parts of the portfolio would continue to change over time. There are occasions when a portfolio may close, for example, where an organisation has pursued a period of change under one leader and decides to pause to think about the next phases of its development.

Alternative situations exist where the utility of maintaining a programme or portfolio structure will diminish as their constituent projects reduce in number having achieved completion. A point is reached where the costs of maintaining a management and administrative structure at programme/portfolio will outweigh the benefits. When this point is reached, the structure is disbanded. Assessing when this point has been reached is the responsibility of the sponsor, potentially supported by the PMO. Together, they advise governance, to the authority level empowered, to make the decision to disband on behalf of the business.

The governance and administrative arrangements relating to any continuing projects within the closed programme or portfolio are then reconfigured. Arrangements to consider are:

- Rationalisation of the governance plan to reassign the roles and responsibilities to other elements of the business.
- Reconfirmation of sponsorship or alternative sponsorship arrangements recognising that closing a programme is potentially disruptive to continuing projects so maintaining sponsor continuity might have benefits.
- Replication of any functional support provided by the programme or portfolio to projects, e.g. commercial or finance.
- Stakeholder briefings to advise of the organisational changes that affect them.

Such transition arrangements are simplified if the option exists within the business to transfer still active projects to an alternative, active programme or portfolio. However, the fit of the transferring projects with the incumbents of the programme need to be considered from a technical, process and human perspective.

Such changes can be unsettling to individuals and the teams of the continuing projects need to be comprehensively briefed on the new arrangements and given honest advice on the risks and opportunities to their career that the changes represent.

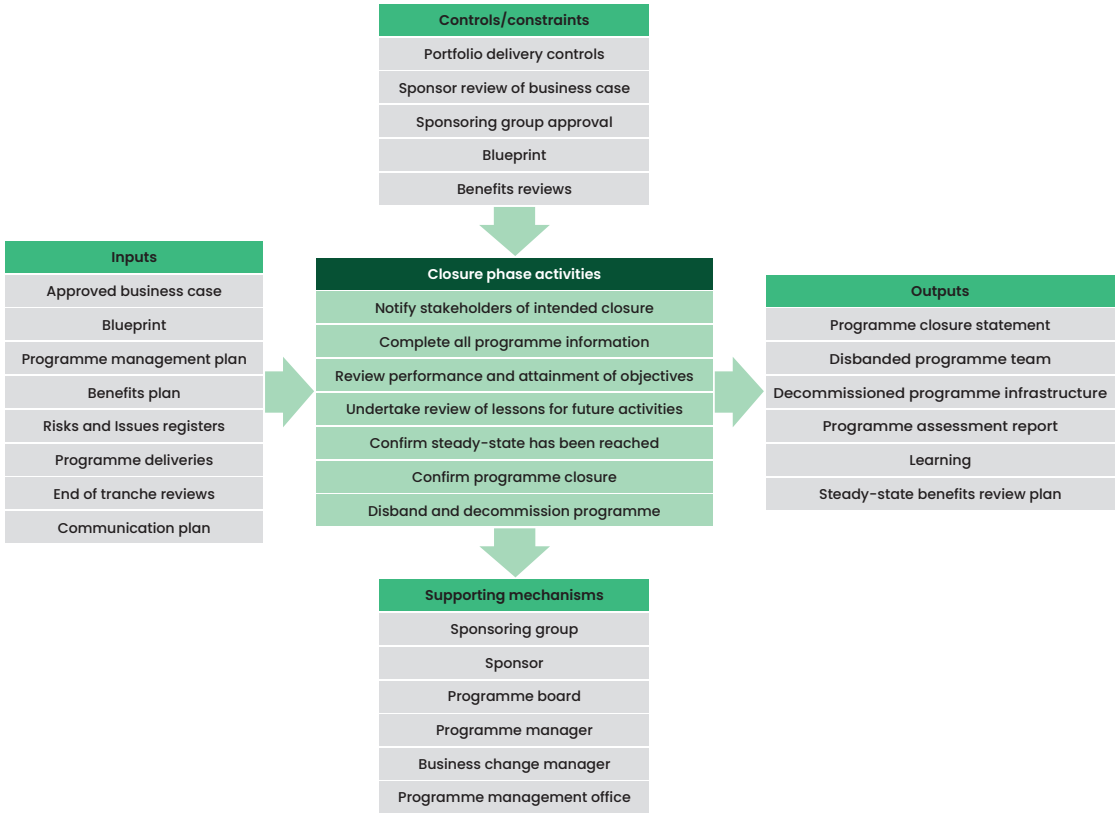

Figure 2.3.6 Programme closure activities

Source: *APM Introduction to Programme Management (2016)*

Recommended reading

- *An Introduction to Programme Management* (2016) is the APM Programme Management Specific Interest Group guide. Section 2.7 covers programme closure and has practical guidance about how to achieve this.
- *Praxis Framework* (2015), published by APM, part 3, deals with competencies for the management of projects. In this section, there is specific consideration of the competencies required for project and programme closure, which includes proposed performance criteria and requisite supporting knowledge.
- *Program Management* (2015) includes detailed coverage of programme management activities and processes. Chapter 11 is dedicated to programme closure and includes value realisation assessment; managing programme completion, including the transfer of assets, residuals and resources to the business and closure report; and finalisation of lessons learned.

Full references for section 2.3

2.3.1

APM Enabling Change Specific Interest Group (2017) *Introduction to Managing Change*. Princes Risborough: Association for Project Management.

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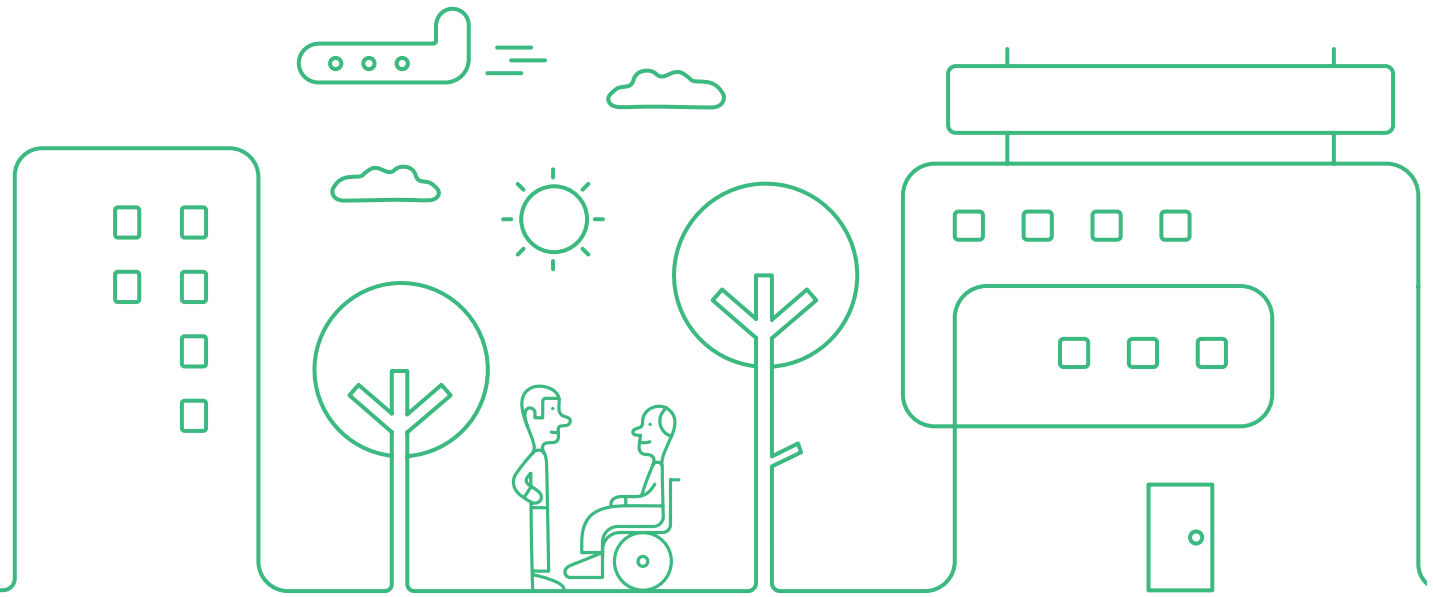

3 People and behaviours

This chapter is written for anyone involved in projects, programmes and portfolios. Engaging and influencing stakeholders, forming, building and leading teams, and the generic skills and responsibilities of being a project professional are addressed with the objective of making it clear that all project-based work relies fundamentally on the ability of people to work together.

Stakeholders, those individuals or groups who have an interest or role in the project, programme or portfolio, or are impacted by it, cannot by definition be 'managed'. Rather, depending on their stake, and the role that ideally they will play, the people involved in the work, from sponsor to team member, are part of the effort to keep the stakeholder appropriately engaged and influenced to do the right things. This is not easy work and benefits from a facilitative approach rather than assuming that 'command-and-control' approaches will be effective. Conflicts may well arise and the resolution of these, or containment if resolution is not possible, is essential for all involved parties.

Groups of people with a common aim are called a 'team' on the assumption that the people will not only cooperate with each other but also collaborate to innovate and perform. Effective project-based working relies on effective teamwork, often carried out in a context where teams are temporary, multidisciplinary and, occasionally, also geographically dispersed. Leading a group of people so they can become a high-performing team is skilled work and some would argue that it is the most important skill that a project professional needs to develop.

Beyond working with stakeholders and teams, there are other aspects of any role involved in project-based working (from sponsor to team member) that is about managing self and working in a professional manner. There are some generic skills that apply to everyone, including effective communication and the ability to manage ones' own time and workload. Project professionals also operate within frameworks designed to uphold the law and professional standards. Doing this ethically and with a focus on continual professional development is a vital part of working as a professional in any field.

This chapter is composed of three parts:

3.1 Engaging stakeholders

There is wide agreement that understanding stakeholders — those influential, interested individuals and groups who are affected by projects, programmes or portfolios — is critical work. However, over the past decades, 'stakeholder management' has become a frequently used term. The term implies that stakeholder behaviours and actions can, indeed, be managed, i.e. predicted, planned and controlled.

This section challenges the position that stakeholders can be 'managed' and suggests the need to think instead about how we understand, engage and influence stakeholders. Identifying and understanding stakeholders is the starting point, but going beyond initial assumptions or generalisations is key, as is understanding stakeholder relationships with each other, as well as with the project, programme or portfolio.

Deeper understanding, including of organisational power and politics, is the basis for effective engagement — an opportunity to build enough of a relationship with stakeholders to influence their perspectives and behaviour.

Influencing stakeholders, usually without any position power, is ongoing work for the project professional. This work is often aided by adopting a facilitative approach. Sometimes, conflict needs to be resolved, or at least managed in order to balance the needs of the project with the needs and expectations of the people involved.

This section, written for anyone involved in project-based working, addresses the following topics:

3.1.1 **Stakeholders:** Understanding who needs to be engaged and influenced

3.1.2 **Social context:** Navigating sociopolitical complexity

3.1.3 **Engagement and influence:** Working with people to build support to achieve intended outcomes

3.1.4 **Facilitation:** Making it easy to collaborate and solve problems

3.1.5 **Conflict resolution:** Facilitating win-win solutions where possible.

3.1.1 Stakeholders

Understanding who needs to be engaged and influenced

'Stakeholder' is the term used in most instances to refer to individuals or groups who have an interest or role in the project, programme or portfolio, or are impacted by it.

Stakeholder theory emerged in the 1960s as a challenge to the idea that share (stock) holders are the only group to whom managers need be responsive. Stakeholder theory focuses on relationships to get the best trade-off of economic and social value. In project-based working, this is the trade-off between efficient creation of a solution or change, and people's support for the design and use of those outputs.

Stakeholders typically exist both within and outside the organisation that is investing in the project, programme or portfolio. Some organisations will include the team who plan and deliver the work as stakeholders; others separate their thinking about stakeholders and how to engage and influence them from their thinking about the team and how to lead them to success. Both approaches are valid.

Identifying stakeholders is important because any person or organisation who is likely to take a keen interest in the design, deployment and impact of the work can be a help (a backer) or a hindrance (a blocker).

It is usual for project professionals to identify stakeholders and then analyse the degree to which they may become a help or hindrance by considering a number of criteria, including (Figure 3.1.1):

- the relative power of the stakeholder to change how things are done
- the degree of interest that the stakeholder is likely to demonstrate actively
- the likelihood of the stakeholder to support the project

These dimensions are not static and stakeholder analysis is a dynamic process through the life of the project, programme or portfolio to ensure that changes to initial assumptions are validated or updated as more becomes known about the context and its relationship to the people involved and affected.

Where the social context for project-based working is complex, more advanced approaches to stakeholder analysis are needed to understand issues such as politics, alliances and shifting sources of power (see 3.1.2).

Stakeholder analysis is of great value when it is used to shape how the work is planned, delivered and governed. The composition of governance boards, the processes for gaining agreement of solutions and benefits, general communication strategies and the risk management process are just some of the aspects of project-based working that need to be designed in the specific knowledge of the stakeholder landscape.

The skills required to engage and influence stakeholders are covered in 3.1.3.

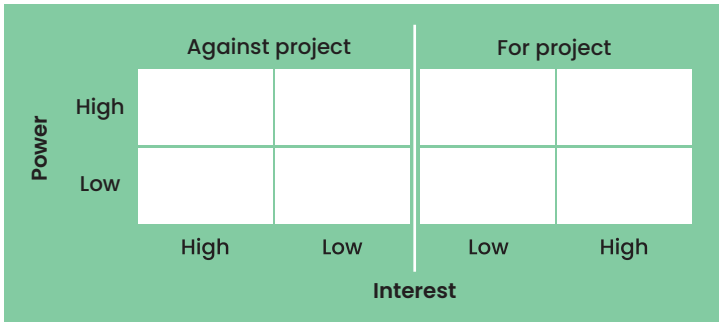

Figure 3.1.1 An approach to capturing analysis of stakeholders

Recommended reading

- *Stakeholder Relationship Management: A Maturity Model for Organisational Implementation* (2016) is primarily a 'how-to' book, providing the fundamental processes and practices for improving stakeholder management in project-based endeavours. It is also a guidebook for assessing current maturity in implementation of stakeholder relationship management with a series of guidelines and milestones for achieving the chosen level of maturity.
- *Advising Upwards: A Framework for Understanding and Engaging Senior Management Stakeholders* (2011) brings together a collection of ideas for engaging senior stakeholders and case studies and stories that illustrate approaches to enable the project professional to 'be heard' at senior levels.
- *A Practical Guide to Dealing with Difficult Stakeholders* (2015) tackles the reality of addressing stakeholder with different needs, objectives, responsibilities and priorities. The book offers detailed guidance for dealing with different types of sponsors, including project sponsors, project team and team members, clients and contractors and internal customers and gatekeepers.

3.1.2 Social context

Navigating sociopolitical complexity

At its heart, project-based working requires an ability for people to work together to develop solutions and solve problems in a constrained environment. Success factors include the ability to clearly define roles and responsibilities for team members, the creation of a coherent project culture and the influence of the sponsor and other stakeholders who have a common and supportive view of the project.

Sometimes, it is relatively easy to establish these success factors. Often, it is not because there are many complexities to navigate in the organisational context, for example, multiple organisations, differing perceptions of priorities and/or different cultural norms and expectations. On many occasions, the complexity relates directly to people and behaviours and can manifest itself in power struggles, misaligned communication and conflict.

In projects, programmes and portfolios where the relationships between stakeholders and the team are complex, it can be useful to build an understanding of the social system at play, i.e. the network of relationships and how the influences between actors work together as a whole (Figure 3.1.2). Social systems recognise that interconnected entities often produce behaviour that cannot be predicted by analysing the system's parts in isolation. Systems are more than the sum of their parts.

In analysing a social system, the project professional needs to go beyond simple ideas of whether a stakeholder has high or low power, for example, and to understand and influence sources of power. In most situations, project professionals do not have position or hierarchical power with respect to stakeholders and need to influence through their personal characteristics and skills. They require as much information as possible in order to work out how to accomplish this.

Organisational politics is also a factor to understand alliances, explicit and hidden agenda and alignment of personal objectives with project objectives. The consideration of the network of relationships and interests is vital to craft appropriate engagement and communication strategies.

Mapping interests and influences in a social network diagram (alternatively called a soft systems diagram in systems thinking) can be a good way for the team to visualise multiple complex relationships and to make sense of who needs to be engaged and influenced and how. Such a technique can also be really useful to identify people and behaviour-based risks.

Where project-based working is socially and politically complex, some of the traditional ideas of planning and control using a linear life cycle are not so effective because there is a low chance of accurately anticipating what is required and when. Iterative approaches that prioritise collaboration between stakeholders and co-creation of solutions can be far more effective because they balance the need for pace and progress with resolving the uncertainty associated with complex social contexts.

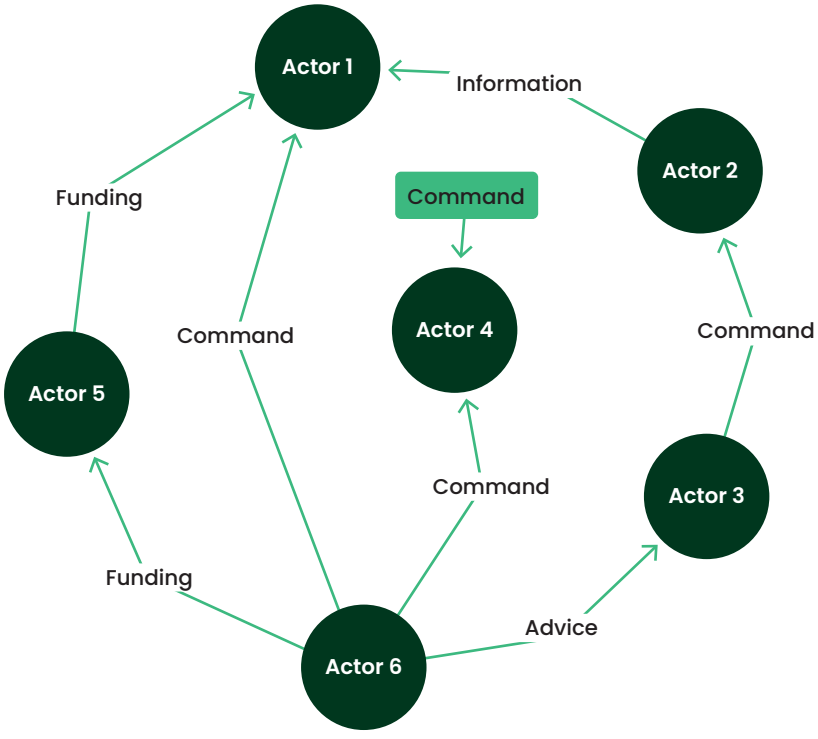

Figure 3.1.2 An example social network diagram

Source: *APM/ INCOSEUK ST SIG*

Recommended reading

- *Systems Thinking: How is it Used in Project Management?* (2018) is the output of an APM Research Fund project conducted by the APM Systems Thinking Specific Interest Group, in collaboration with University College London. It provides broad information about systems thinking in general (not just about social systems) applied specifically to project-based management.
- *Social Network Analysis* (2017) is a classic text, now in its fourth edition, that helps people involved in analysing social contexts to understand how to map and understand relationships between people and groups.
- *The Hidden Power of Social Networks: Understanding How Work Really Gets Done in Organizations* (2004) introduces a visual framework to help project professionals discover how communication and collaboration works within a social network of relationships. This text includes analysis of a large number of information employee networks in different companies to illustrate how influence can be achieved through non-traditional channels.

3.1.3 Engagement and influence

Working with people to build support to achieve intended outcomes

Project professionals interact with a range of individuals, teams and organisations, whose support they need to achieve desired outcomes. In many cases, the project professional will not have the formal authority to direct staff and stakeholders who have an interest and who are influential to the project's success. As a result, successful accomplishment of objectives is reliant on the ability to engage and influence stakeholders without position power (Figure 3.1.3).

Effective engagement improves the chance of achieving objectives by having a positive influence on stakeholders' behaviours to:

- use and sustain positive interest; or
- minimise or remove negative interest

Effective engagement requires the project professional to focus on understanding stakeholder perspectives and to address these in order to achieve the intended outcomes. Putting in effort to explore stakeholder points of view has the dual benefit of building understanding of the issues and building relationships.

Influence relies on relationships being built and maintained. Relationships depend on factors such as respect, shared values and trust. To establish the best possible conditions to be influential, project professionals need:

- **Contextual awareness**: The ability to select the appropriate time, place and contributors.
- **Cultural awareness**: Understanding the background and values of both the organisation and the people involved (see 3.2.5 and 3.2.6).
- **Communication skills**: Flexibility of medium used and clarity in message (see 3.3.1).
- **Conflict resolution skills**: The ability to challenge in a neutral and fair manner, persuade and find mutually acceptable positions (see 3.1.5).

Influence can also be achieved through an understanding of relationships between stakeholders and the politics that shapes those alliances. Stakeholders who support the project can be used to influence stakeholders who do not.

Influence can be attempted formally and/or overtly, through direct communication and action, or may be achieved through more informal and/or covert and subtle behaviour and action, for example by including an influential but sceptical stakeholder in governance and decision-making activities.

Engagement and influence of stakeholders must be coordinated across projects within programmes and portfolios. A particular stakeholder may only be concerned with one project within a programme, but the influence of the stakeholder on that project may have programme consequences. Where a stakeholder is affected by multiple projects, the programme manager will ensure that engagement and influence of that stakeholder is coordinated across the multiple projects. Stakeholder influence at portfolio level typically requires the involvement and support of senior leaders.

The skills required by the project professional to engage and influence are many and varied. A facilitative approach is often useful to demonstrate commitment to attending to the stated needs and inferred expectations of stakeholders (see 3.1.4).

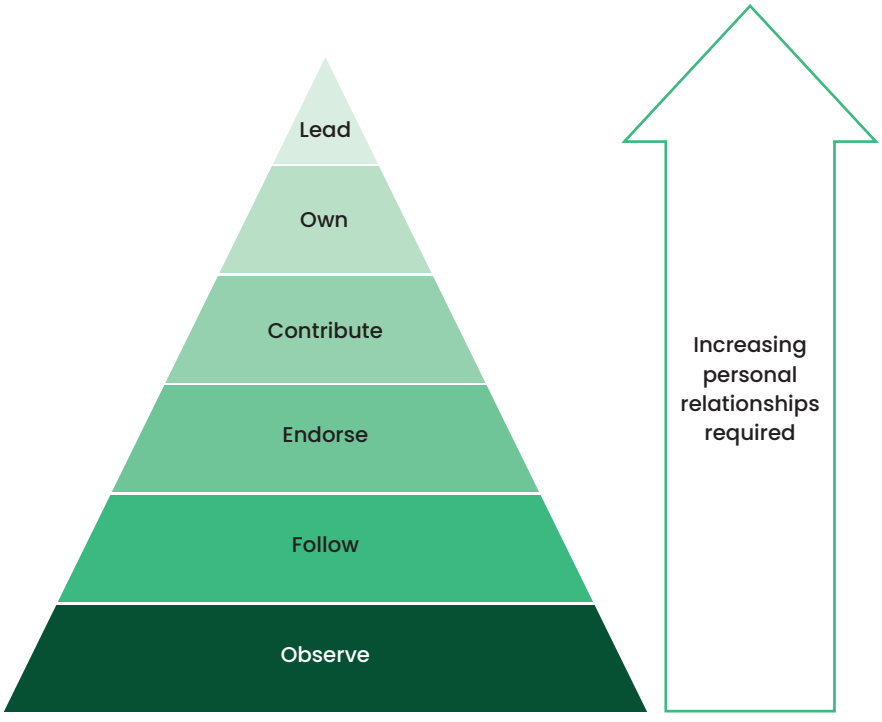

Figure 3.1.3 Matching engagement approach to stakeholder need

Recommended reading

- The APM People Specific Interest Group guide *The Lens Collective* (2010) provides a suite of tools that encourages project managers to reflect and consider alternative courses of behaviour. It prompts individuals to expand their understanding and analysis of project challenges or contexts, provoke dialogue, promote creative problem-solving and enable collaborative teamwork.
- *Practical People Engagement: Leading Change through the Power of Relationships* (2013) provides a rich source of practices and techniques that help the reader get better results from the change they are trying to lead. The book distils the principles of people engagement from the observation of high performers. Different forms of engagement are explored, including those that are effective in supporting agile approaches.
- *Influencing: Skills and Techniques for Business Success* (2006) describes how people can review and reflect upon how they perform as an influencer. This book helps the reader address their own discussion and review skills, influencing styles, approaches and techniques.

3.1.4 Facilitation

Making it easy to collaborate and solve problems

At times within projects, programmes and portfolios, it makes sense for project professionals to be directive, leading from the front, especially at time-critical periods or in crisis. At other times, especially when the aim is to involve, motivate and engage stakeholders to take ownership, it makes much more sense for them to act as facilitators. This means taking a more neutral stance, encouraging collaboration and encouraging people towards their agreed-upon objectives in a way that fosters participation, ownership and creativity. When adopting a facilitative approach, the project professional's role becomes a supporter and encourager, helping everyone to do their best work. A facilitative leadership style suits many team members better than command and control and is more effective in projects that are managed virtually, where the project professional has to work harder to make sure everyone is 'heard'.

As a facilitative leader, a project manager makes it easy for people to be involved, for a variety of views to be heard and understood, and for appropriate stakeholders to make decisions together. For the project professional, this means stepping back from the content of the discussion and focusing instead on the processes that people will follow to get to the results. Sometimes, project professionals find that they are personally too close to the details or that they have a stake in decision-making, and therefore it is not appropriate for them to facilitate a workshop as part of their project or programme. In this case, neutral facilitators are worth the investment so that everyone can participate equally.

Facilitation is particularly useful in these scenarios:

- **Portfolio level**: Exploring how to execute strategy with a facilitated workshop to explore risk profiles of different options before moving ahead.
- **Programme level**: Bringing together a range of stakeholders with different needs and perspectives to come up with an agreed common vision for the programme.
- **Project level**: Using a facilitative style of leadership throughout the project to keep team members motivated, engaged and delivering.

A whole body of useful skills, tools and techniques exists around facilitation and these are invaluable for project professionals. One success factor for effective facilitation is careful contracting with stakeholders and sponsors before facilitating workshops (Figure 3.1.4). Another is the importance of mindset when facilitating. Often, people feel in a 'metaphorical spotlight' when leading a group, which can cause the build up of stress. By ensuring that the focus of the spotlight remains on the group, a facilitator can reduce their stress levels and stay effective as they serve the group.

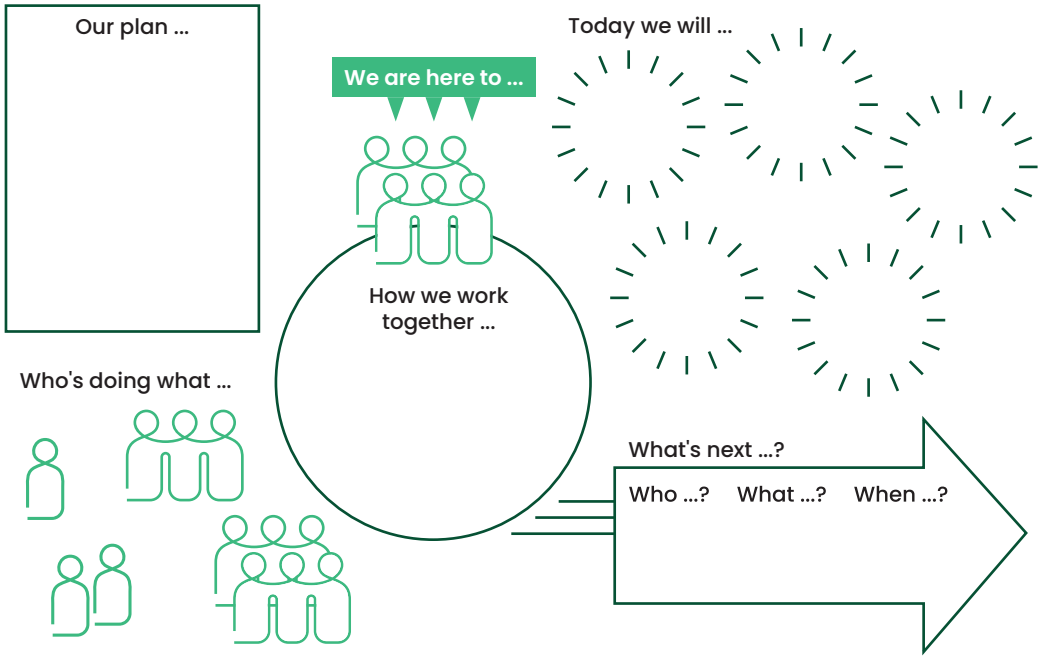

Figure 3.1.4 An approach to contracting with participants of facilitated sessions

Source: *Used with permission of Penny Pullan.*

Recommended reading

- *A Facilitator's Guide to Participatory Decision-Making* (2014) covers decision-making with groups when aiming at consensus. It explores how to come to a sustainable agreement and introduces the idea of the 'groan zone', which groups often get stuck in before they've reached true consensus.
- *A Short Guide to Facilitating Risk Management: Engaging People to Identify, Own and Manage Risk* (2011) looks at the whole risk management process from the point of view of facilitation. It introduces the concept of a risk facilitator and discusses where to focus at each step of the risk management process.
- *Visual Meetings: How Graphics, Sticky Notes & Idea Mapping Can Transform Group Productivity* (2010) explores visual facilitation techniques that work very well for both in-the-room-together and virtual projects. It discusses how to balance the areas of attention, energy, information and operations when facilitating.

3.1.5 Conflict resolution

Facilitating win-win solutions where possible

Conflict arises when there are differing opinions and/or opposing interests between stakeholders that matter to the people involved and are not easily reconciled. Conflict may be associated with the task being undertaken, the process used to perform the task or relationships between people.

Outside of the workplace, people have a choice whether to ignore a conflict or address it. Project professionals do not have the same choices at work as they have in their personal lives. Usually, ignoring the conflict and the people involved is not an acceptable way of safeguarding the success of the project, programme or portfolio.

There are choices that can be made whether to 'manage' a conflict, i.e. prevent it from being an ongoing issue but typically requiring one or other party to lose something of value to them, or to 'resolve' a conflict, i.e. enable a win-win solution.

Taking a conflict resolution perspective, rather than conflict being perceived as negative — an unwanted struggle — conflict is an opportunity to add value, using an 'everyone-can-win' approach.

A common model to use when considering approaches to the management or resolution of conflict is the one depicted in Figure 3.1.5. This model encourages people to think about conflict using two dimensions:

- the desire to achieve own objectives
- the desire to achieve others' objectives

Investing the time necessary to achieve *both* one's own and others' objectives is not always the right thing to do — it depends on how much resolving the conflict matters to achieving the objectives and benefits, and the degree to which it is important to build/preserve long-term relationships between the parties involved.

Where a win-win is necessary, the project professional needs a high level of skill in facilitation to be able to understand and creatively align goals.

Other skills are important, depending on the conflict management/resolution mode that is desired, e.g.:

- **Assertiveness skills**: To stand up for the project and what is required for success.
- **Listening skills**: To understand the perspectives of the people involved.
- **Personal resilience**: When the project context is highly charged with many conflicts to manage.

Sometimes, it is necessary to involve other parties to resolve a conflict, e.g. the project sponsor/other stakeholders as part of governance, a neutral mediator (from inside or outside of the organisation) or an arbitration service to prevent the conflict escalating into litigation or industrial action. Projects need clear protocols for escalating conflicts either to project governance, or to the relevant programme or portfolio level and for deciding when the organisation needs to go straight to litigation, or to alternative dispute resolution in order to de-escalate the conflict.

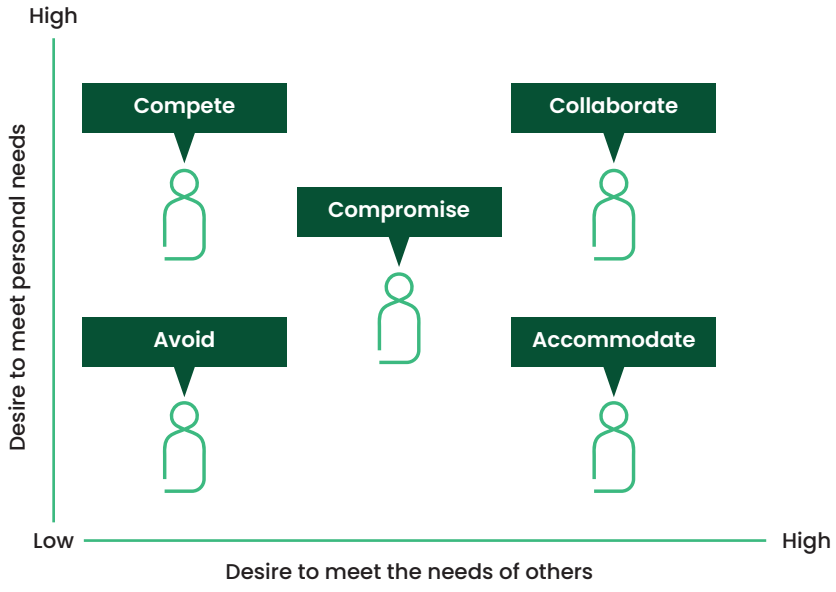

Figure 3.1.5 A common model to consider approaches to dealing with conflict

Source: *Adapted from the Thomas Kilmann Conflict Mode Instrument.*

Recommended reading

- *The Thomas Kilmann Conflict Mode Instrument™* is a frequently used model to explore the options for management or resolution of a conflict. Kilmann's website provides access to reading materials and the self-diagnosis instrument to help develop skills in dealing with conflict.
- *Everyone Can Win: Responding to Conflict Constructively* (2007) is a practical book that provides the essentials for handling personal and workplace difficulties with emotional intelligence including handling clashes of values and toxic power issues.
- *A Practical Approach to Alternative Dispute Resolution* (2018) is a comprehensive and digestible commentary on the ways to resolve conflicts out of court. This is very relevant to some projects where conflicts within the organisation or in the supply chain/between partners cannot be resolved easily.

Figure 3.1.5 'Conflict Situations' based on Dr Ralph Kilmann's version of the TKI Conflict Model, www.kilmanndiagnostics.com/overview-thomas-kilmannconflict-mode-instrument-tki, copyright © 2009–2018 by Kilmann Diagnostics. All rights reserved. (Accessed 8 August 2018.)

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3.2 Leading teams

Project-based working involves people coming together from different functions, disciplines and organisations to work with a common purpose to deliver something of value to the investing organisation.

Groups of people with a common aim are called a team on the assumption that the people will not only cooperate with each other but also collaborate to innovate and perform.

Leading a group of people so they can become a high performing team is skilled work and some would argue the most important skill that a project professional needs to develop. This section explores the concept of teams and the complications and benefits posed by teams separated by geography. Teams do not develop merely by working together — the right context needs to be created for teams to do their best work, and this is not a one-time effort as team members leave or new ones start, requiring constant attention to ensure that things are going well. Team leaders in this respect can emerge from all parts of the organisation.

People are different — they have different experiences, backgrounds, values and skills. Understanding people as individuals and embracing difference is a prerequisite for developing a high-performance team, and for treating everyone with respect and dignity.

Project-based working is typically exciting, fast-paced and full of pressure to deliver good work on time and budget. Sometimes the pressure that was motivating and 'healthy' for people, becomes unbearable with the overload leading to negative stress. Having plans in place for safeguarding self and the team from the effects of unsustainable pressure is a key part of being a professional.

This section, written for anyone involved in project-based working, addresses the following topics:

3.2.1 **Teams:** Establishing teams for projects, programmes and portfolios

3.2.2 **Virtual teams:** Working with people in different places and time zones

3.2.3 **Team development:** Creating the right context for teams to perform

3.2.4 **Leadership:** Providing vision, direction, feedback and support so people can do their best work

3.2.5 **Organisational culture:** Understanding how things get done within the organisation

3.2.6 **Diversity and inclusion:** The benefits and responsibilities of embracing diversity

3.2.7 **Workplace stress:** Safeguarding self and the team from the effects of unsustainable pressure

3.2.1 Teams

Establishing teams for projects, programmes and portfolios

A team is a group of people working together in collaboration or cooperation towards a common goal.

Teams in projects, programmes and portfolios are temporary, formed for the specific purpose of delivering defined outputs and outcomes. Their transitory nature brings challenges not experienced in business-as-usual teams. Project-based working relies on the formation of multifunctional, skilled, temporary teams, and also on the ability of such teams to work with 'business-as-usual' teams to deliver the required capabilities, benefits and organisational value. A key aspect of successful project-based working is to be able to bring business expertise into temporary teams and then return those people to the business with enhanced skills and experience, and without losing out in terms of performance review or succession planning.

A particular challenge for the project or programme manager is the responsibility for delivering the intended outputs and outcomes when they may have had little say about who joins the team and whether the chosen team members have the right skills and attributes. This makes the ability of the project professional to develop and lead teams of vital importance.

The simplest project has people who take on the roles of sponsor, project manager and team members — even if they are part-time roles as part of a wider job. Iterative and agile projects may involve small dedicated teams including a product owner or on-site customer.

As projects get larger, the project manager role is typically supported by specialists in aspects of project-based working, for example, schedulers, cost estimators, risk facilitators, communication specialists or business change leaders. Some organisations have departments that are the home for such specialists (project services, or project controls are two departmental names often used). A project (or programme or portfolio) management office (PMO) (see 2.2.1) is also often used and can perform a wide variety of support roles, from monitoring and reporting to being the custodians of professional practice and development. Programme and portfolio teams have similar options.

Larger projects and programmes are also more likely to have team members that span multiple organisations, for example suppliers, partners or customer/client staff as members of the deployment team. Additional skills to develop and lead the team across organisational and cultural boundaries are needed in this situation.

Some teams are co-located in the same geographic area. Where this is possible there are distinct benefits from the ability to share a physical space where plans and progress can be visualised and close working relationships can be developed. However, virtual teamworking is increasingly prevalent. The particular features and challenges of forming and working with virtual teams is covered in topic 3.2.2.

Topic 1.3.9 addresses some of the organisational level opportunities to develop talent through project-based working.

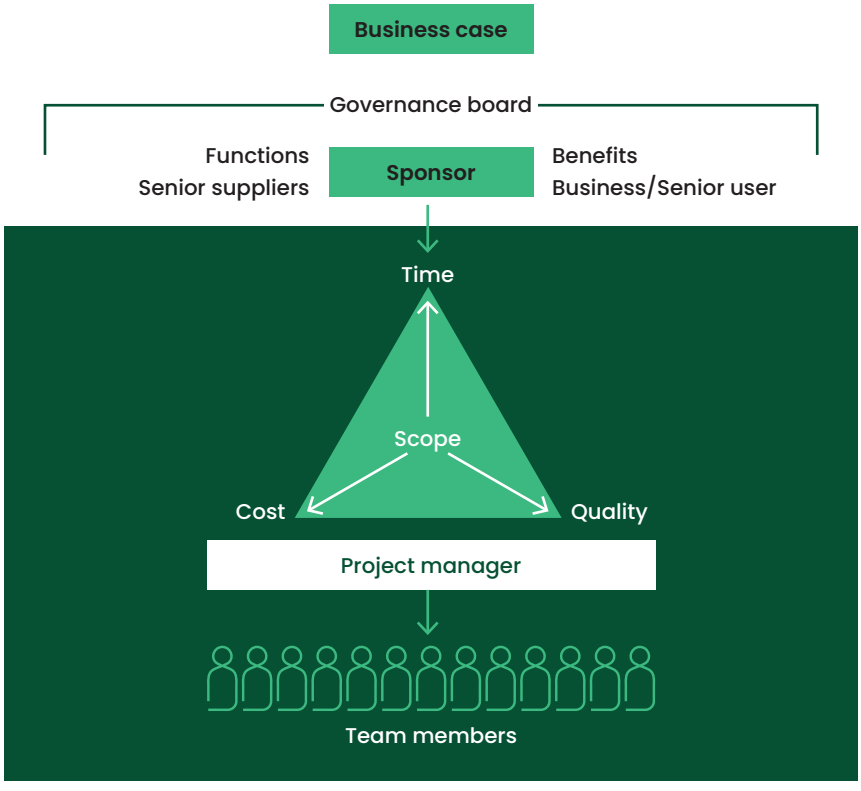


Figure 3.2.1 All projects need at least these roles

Recommended reading

- *Creating High Performance Teams* (2015) is an accessible new academic resource dedicated to teams and how they operate. The textbook combines theoretical concepts with practical tools, real-world examples and case studies to address the working of teams, the challenges they face and their potential for high performance.
- Chapter 6 of *Managing Projects in a World of People, Strategy and Change* (2018) addresses issues related to teams and their effectiveness. The discussion encompasses project teams, high performance teams, and the power of emergence teams able to excel under VUCA conditions, whilst also covering team conversations, crowdsourcing and decision-making in teams.
- *Leading the Project Revolution: Reframing the Human Dynamics of Successful Projects* (2019) is a curated collection of contributions focused on topics related to leadership, perspective, teams, culture, strategy, complexity, shadow working, implementation and connecting. Chapter 3 is focused on team dynamics, agreement in teams and the ability of teams to work together effectively.

Figure 3.2.1 'The Project Organization Chart' by Bernie Roseke, P.Eng., PMP, 14/02/2017, https://www.projectengineer.net. Reproduced with kind permission.

3.2.2 Virtual teams

Working with people in different places and time zones

One of the strengths of project-based working is being able to access the best people with the most appropriate skills. Achieving this can pose challenges when the best people for the team are in different places and separated by time zones. Widespread access to virtual communications technology has led to a proliferation in the number of virtual teams, often with virtual stakeholders. It is becoming the norm in many teams to have at least one person who is remote from the others. Even when most team members are co-located, it makes sense to treat this as a virtual team, so that all have the same access and opportunities as far as possible.

While virtual teams can work really well, there are challenges too. It is more difficult to build deep relationships and trust virtually than in-person. It is much harder to detect the first signs of conflict developing, and then to resolve the conflict. It is harder to gel as a team if members cannot see each other and do not have the sort of informal conversations that happen naturally over coffee or by the water-coolers. All of these are harder, but not impossible. Project professionals leading virtual teams need to consider all of these factors and work out how to overcome them.

To be effective, a successful virtual team will need more than reliable technology. Figure 3.2.2 shows aspects of virtual leadership development. The model starts in the centre, developing a facilitative, virtual leadership mindset, approach and leadership style, then establishing how best to work with remote team colleagues and stakeholders. What are their preferences? What are their skills? How can you quickly build up and maintain trust throughout the project or programme? It is important to agree norms for communication, taking everyone's preferences into account.

After these steps, technology is relevant. The project professional needs to know the pros and cons of audio and video, along with the use of shared screens, so that they can choose appropriately for project meetings. Collaboration tools, chosen to suit all of the virtual team, help with work outside of meetings. Virtual meetings benefit from a facilitative approach (see 3.1.4) and ensuring that the meeting starts off with everyone clear about how the virtual process will work in practice.

The final stage in developing virtual leadership is to master the complexities of virtual teams, for example, working across wide time zones and diversity of culture, mother tongue and generation (see 3.2.6). As ever, understanding the perspective of and listening to each member of the team bears dividends.

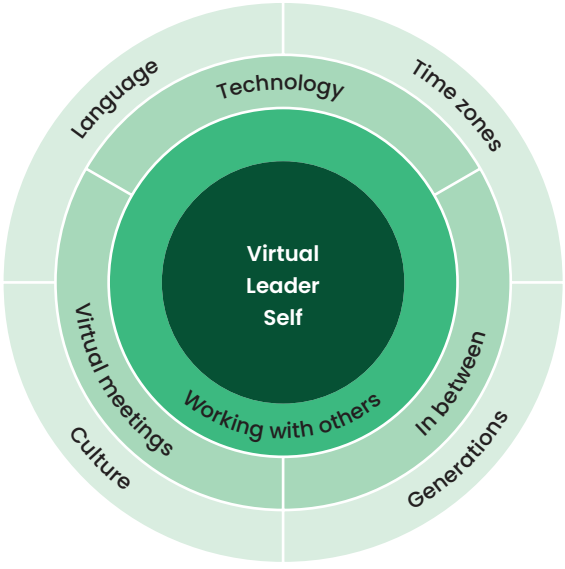


Figure 3.2.2 Steps in development of virtual leadership

Source: *Virtual Leadership (2016)*

Recommended reading

- *Virtual Leadership: Practical Strategies for Getting the Best out of Virtual Work and Virtual Teams* (2016) addresses how virtual working in a fast-paced world requires a new set of skills and a facilitative leadership approach from all team members, to avoid isolation, disengagement, ineffective communication and counterproductive activity. The book contains numerous hints and tips that a project team can apply and stories from those who have put it into practice successfully.
- *Leading Effective Virtual Teams: Overcoming Time and Distance to Achieve Exceptional Results* (2013) contains practical steps for each part of running a virtual team, from setting up communications for collaboration, to troubleshooting tips and managing performance virtually.
- *The Long-Distance Leader: Rules for Remarkable Remote Leadership* (2018) reinforces the importance of virtual leadership starting with self. It is especially useful for leaders who are transitioning from purely co-located teams to work virtually for the first time.

3.2.3 Team development

Creating the right context for teams to perform

The success of project-based working relies on teams working together effectively, whether they are co-located in the same time and place, or working virtually in different places, possibly in different time zones.

For teams to be effective it is important that team members are understood as individuals in terms of their capabilities, their preferences, their cultural norms and expectations as well as the social dynamics between team members. By paying attention to team development project professionals can create positive working cultures that enable high performance of the team and an increased chance of success.

A team will typically go through different stages of maturity over time. The team leader has a key role in helping the team move through these stages as effectively as possible and re-addressing stages as new team members join or others leave:

- Being clear about goals and objectives and creating an inclusive and coordinated environment.
- Enabling differences to be aired and conflict resolved in a positive way.
- Providing process, clear roles and responsibilities and timely feedback.
- Promoting openness, honesty and the development of trusting relationships so the team can perform.
- Ensuring that team members are transitioned back into the business or their organisation (see 2.3.5).

Project professionals need to get the best out of their teams within time, cost and quality constraints. This may involve ensuring that team members perform roles that play to their strengths or assigning them responsibilities where people can learn new skills to provide support or cover for another team member. There is always work to be done that is not exciting or developmental, but ensuring that roles have variety and opportunities for learning helps build and maintain a positive and effective environment.

One way the project professional can provide role variety and also build skills and flexibility within the team is to think about the balance between 'process' and 'technical' work in the team. For example, giving opportunities for a business analyst working on requirements capture to also play a role in facilitating the risk analysis and management process for the project. This helps build a team that appreciates all the work that needs to be done to be successful.

When teams are performing well, they are likely to be focused on their own development, seeking out ways to be collaborative, innovative and productive. In such high-performing teams, the role of a single team leader becomes less important with the team moving into a self-managed mode which can be highly motivating and effective.

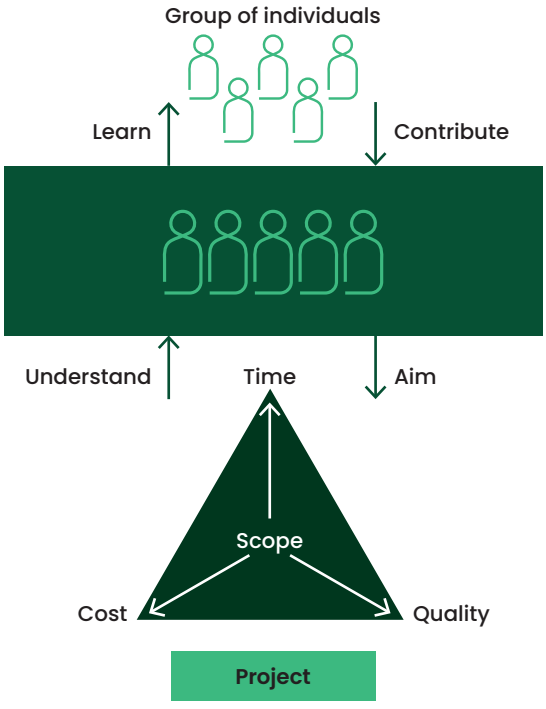


Figure 3.2.3 From groups of individuals to a team

Recommended reading

- *Team Development: A Practical Guide to Understanding Team Development* (2018) is a short, focused book that explores the Tuckman and Hackman models for team development. It addresses the ways to ensure team dynamics remain positive and productive and how the leader can modify their level of involvement depending on the stage of team development.
- *Creating High Performance Teams: Applied Strategies and Tools for Managers and Team Members* (2015) provides a firm grounding in key concepts and the practical tools to become successful team managers and members. Built on a solid foundation of the most up to date research and theory, chapters are packed with case studies, real-world examples, tasks and discussion questions.
- *Everyone Leads: Building Leadership from the Community Up* (2011) explores distributed and pluralistic leadership of teams — relevant particularly in projects and programmes adopting agile ways of working and when there is a need to engage with and mobilise communities.

3.2.4 Leadership

Providing vision, direction, feedback and support so people can do their best work

Beyond the skills to bring people together to form a team and to develop them so they perform together, the project professional needs to be able to lead the team in an environment of change and uncertainty. New members join existing teams, teams expand to deal with a change in scope or reduce to achieve the same work over a longer time-frame. Through such change, the team leader sustains a focus on the vision and provides the direction and motivation for people to do their best work.

Leadership is needed at all levels within a project-based setting. The sponsor communicates the vision to the project team, sets high-level expectations, involves team members in decisions and provides actionable feedback. The project or programme manager understands how to get the best out of each person and provides direction and support for them. Team members share responsibilities and work collaboratively. Leaders provide timely and constructive feedback and are receptive to their own feedback provided by members of the team.

Leaders need to adapt their style and approach to the needs of the team and the work that needs to be accomplished, this is called situational leadership. There are some situations when the leader needs to be directive, for example, to address an issue that threatens the achievement of objectives. A mentoring or coaching style is appropriate when there is time to focus on development of the team as well as goal achievement. For much of the time when the team is established and working well, the leader delegates responsibility for achieving activities to team members, only intervening if evidence arises to suggest that performance is not to agreed expectations. Leadership in a project context is usually performed with limits on the leader's position power requiring them to adopt a style that builds team and wider stakeholder commitment.

Current thinking encourages project professionals to embrace the social and ethical aspects of their role. This puts a focus on the need for leaders to put effort into understanding what different people need in order to perform effectively and to provide the support required. The leadership role is increasingly understood through an authentic, emotionally intelligent, collaborative and 'servant' lens.

Programmes typically involve higher levels of emergent change than projects and require leaders to be able to deal with ambiguity, and to lead larger teams in a context where it is more difficult to plan with certainty. People who need to be led in a programme setting are likely to be leaders (of projects or other teams) themselves putting the onus on the whole team to perform as effective team members.

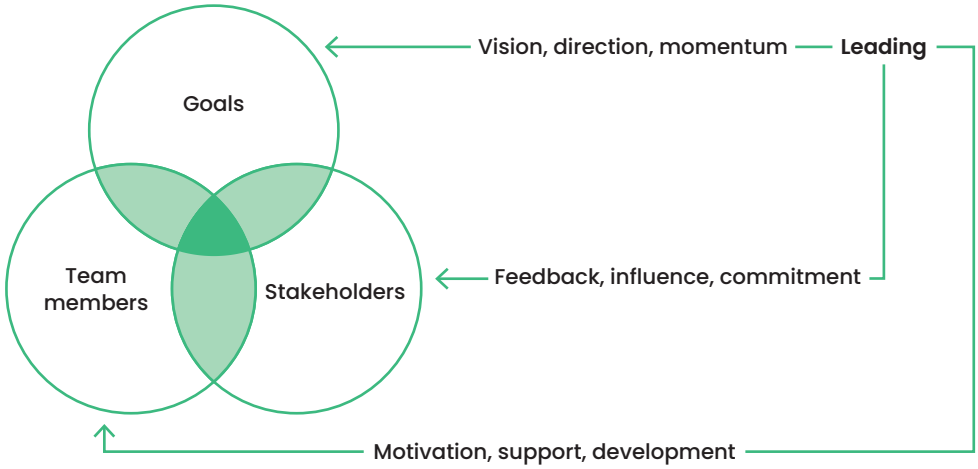


Figure 3.2.4 Leadership focus on goals, team and stakeholders

Recommended reading

- *Leaders Eat Last: Why Some Teams Pull Together and Others Don't* (2017) illustrates leaders putting the needs of others first and creating loyalty and commitment to achieving the vision and goals. Real life examples are provided from the military to manufacturing, from government to investment banking.
- *Project Leadership* (2015) focuses on building personal and organizational project leadership capability including models, tools and diagnostics drawing on experiences of working with projects and organizations from multiple sectors and across the globe.
- The *Power of Project Leadership: 7 Keys to Help You Transform from Project Manager to Project Leader* (2015) encourages a shift in mindset from one mainly concerned with management, towards inspiration, motivation and influence.The book describes what good project leadership looks like and explains how to make the transition by using concrete tools and strategies.

3.2.5 Organisational culture

Understanding how things get done within the organisation

Culture exists at multiple levels — wider society, countries, industry sectors, organisations, functions, portfolios, programmes and projects. In this topic we focus on organisational culture and its impact on project-based working.

Organisational culture can be defined as the way things are done in an organisation, the unwritten rules that influence individual and group behaviour and attitudes.

Factors that influence organisational culture include:

- values, traditions, stories and organisational memory
- organisational structure, systems and processes
- management and leadership styles
- behaviours demonstrated at all levels of the organisation

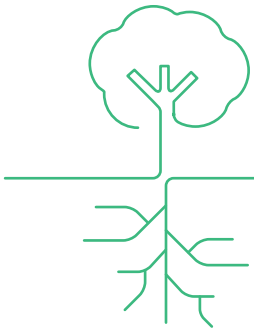
Some aspects of culture are observable or visible — the things that people do, for example, the prevailing style of communication or decision-making. Most aspects of culture are hidden from view — the things that people value, feel or believe to be true yet have influence in shaping 'the ways things are done'.

Taking time to try to understand the prevailing culture in an organisation is an important part of stakeholder analysis and of team leadership. If the project, programme or portfolio is contained within one organisation, or one part of a large distributed organisation, the values, behaviours and norms may be tacitly understood. Where multiple organisations are involved, the impact of any cultural differences will need to be understood and managed from both the perspective of the deployment team, and the people affected by the change.

As a result of their work to understand organisational culture(s), project professionals may need to adapt their approach to maximise their impact on the project or programme and reduce the risk of alienating themselves. However, project professionals should not rely on hearsay, or first impressions to assess culture. Reviewing artefacts, processes, speaking with people and observing behaviour closely is important to build an informed assessment.

It is common in large projects or programmes for the leadership to talk about creating a culture for the project or programme being managed. This can be useful when the team is drawn from different organisations — developing an environment where particular behaviours and characteristics are encouraged can be a useful way of building team cohesion and performance.

Additional complexities arise where stakeholders or members of the team are from different national cultural backgrounds. Behaviours that are taken for granted in one place may be alien to others. At best this can cause confusion and delays; at worst offence and the breakdown of relationships. Further exploration of national cultural differences is included in 3.2.6.



Climate:
The observable habits that characterise life in an organisation

Formal organisation:
- Vision, mission, strategy, KPIs
- Hierarchical structure
- Standards, processes and procedures
- Products and services
- Management and financial controls

Culture:
The values and beliefs that reflect the deeper foundations of the organisation

Informal organisation:
- Values, attitudes and beliefs
- Leadership styles and behaviours
- Rituals, routines and symbols
- Power, politics and influence
- Networks, groupings and communities
- Stories and language
- How conflict and challenge is managed

Figure 3.2.5 The visible and hidden aspects of organisational culture

Source: *Adapted from Ekvall (1996); French & Bell (1984); Johnson & Scholes (1998). Reproduced with permission of Sarah Coleman.*

Recommended reading

- *Organizational Culture and Leadership* (2016), an established classic, analyses how culture begins, thrives, or dies with leadership, how to manage cultural change effectively, and the leader's role in managing disparate groups.
- *How the Way We Talk Can Change the Way We Work: Seven Languages for Transformation* (2001) is a practical and effective guide that provides change practitioners with the tools to plug gaps between what we intend and what we are able to accomplish.
- *Understanding Organisations* (2005) argues that the key to successful organisations lies in a better understanding of the needs and motivations of the people within them. This fourth edition of the classic management text offers an extended 'dictionary' of the key concepts of culture and motivations in organisations.

3.2.6 Diversity and inclusion

The benefits and responsibilities of embracing diversity

Workplace environments are increasingly made up of individuals with different backgrounds, abilities and ways of working. In the project-based context, challenges arise when temporary teams need to come together and perform quickly. These temporary teams are increasingly international, bring diverse skill-sets and perspectives, and can be located across countries and continents.

National cultures have been developed over centuries with influences like religion, wars and geographic location all having an effect in building strong values and intrinsic beliefs about how to behave. These are influential in shaping behaviours in project-based working. As part of stakeholder analysis the project professional may research the drivers underpinning national culture to gain clues about typical behaviours in that culture, but this is not a substitute for getting to know the people involved as individuals.

Academic and empirical evidence supports the view that value is created from difference and diverse teams can bring about higher performance. This is because individuals from different backgrounds and cultures are likely to have had different experiences and perspectives they can bring to the team. There can also be a strong sense of inclusion and community that is fostered when people of different backgrounds and abilities come together for a common purpose. The project professional has an opportunity to improve outcomes by harnessing the diversity of the people available.

Despite the known benefits of diversity and inclusion, human nature is often to favour the people and the things they do that are 'like us' rather than 'different from' us. This can lead to unconscious or conscious bias. Unconscious bias refers to the attitudes or stereotypes that affect our understanding, actions, and decisions in an implicit manner. These biases may encompass both positive and negative assessments of people and are triggered without an individual's awareness or intention. These biases are different from conscious, or known, biases that individuals know they have and may try to conceal.

Even when people are working in the same organisation and from the same cultural background, the project professional has the opportunity to embrace the diversity and capabilities of their team. A positive working environment happens when:

- people feel they can be themselves at work
- ideas and respectful challenge is encouraged
- differences are understood and welcomed

In many countries, it is illegal to discriminate on the basis of age, disability, gender identification, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or sexual orientation. If unsure in any way, it is important that project professionals seek advice on how to treat people fairly.

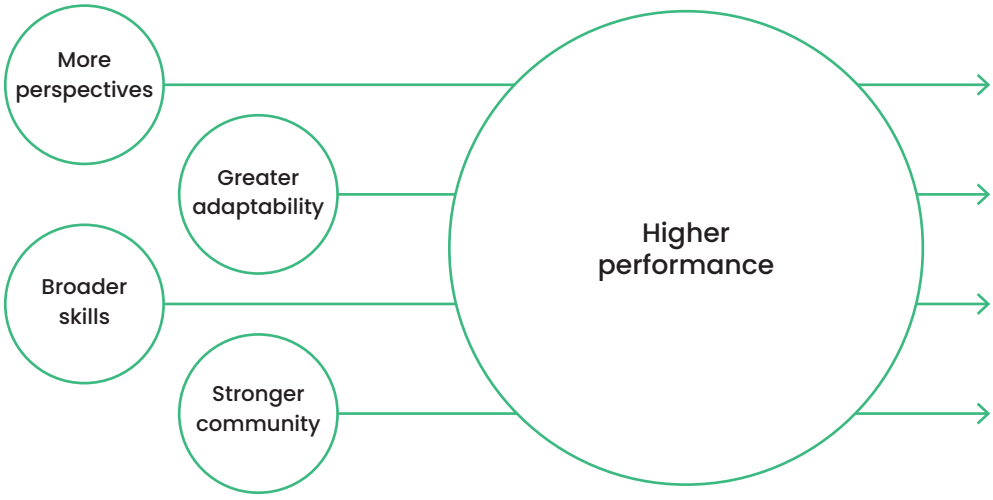


Figure 3.2.6 Diversity leads to higher performance

Recommended reading

- *Riding the Waves of Culture: Understanding Diversity in Global Business* (2016) is a guide to cross-cultural management that takes readers beyond cross-cultural awareness and on to issues to help professionals take strategic advantage of cultural differences in the business environment.
- *The Value of Difference: Eliminating Bias in the Workplace* (2009) aims to build appreciation of what drives human behaviour and explores topics that are very rarely discussed in organisations but are ever present because they are part of our make-up as humans, i.e. prejudice, bias, privilege and power. The book provides practical guidance to organisations on how these complex issues can be addressed in our organisational priorities.
- *Equality and Discrimination: Understand the Basics* (2017) outlines the fundamentals of what employers, and employees and their representatives need to know, and do to make their workplaces a fair environment and comply with equality law in the UK.

3.2.7 Workplace stress

Safeguarding self and the team from the effects of unsustainable pressure

For many project professionals, working in a highly pressured environment with specific objectives to deliver new capabilities and organisational benefits within time, cost and quality, makes work highly motivating and enjoyable. Many thrive on the uncertainty, variety and constant change that comes with project-based working.

Pressure arises when people have work of significance to them to deliver and they perceive they don't have enough time, capability or support to achieve the goal. Most people will have an optimum position where the pressure matches their ability to respond at that time. Many things can affect this balance — from the physical and psychological state of the person involved, to the type of pressure that the work demands; for example, juggling multiple projects at the same time or working on a project for an extended period.

Using the UK Health and Safety Executive definition, workplace stress is the adverse reaction that people have to excessive pressure or other types of demand placed upon them.

Situations that can lead to excessive pressure include:

- perception of having little control of a situation
- volume of work to complete at a particular time
- relations with others in the team, or wider stakeholders
- concerns about job security, or opportunities for advancement
- the culture of the organisation clashing with personal values or beliefs
- commitments outside work

Project-based working will inevitably result in situations where individuals feel stressed and it is a crucial skill for the project professional to be able to notice signs of their own stress and have coping strategies, and to be alert to the signs of stress in the team. Everyone is different, so attention needs to be on individuals and their ability to function and cope.

Workplace stress is a growing hazard and area of concern for many organisations. Regulatory bodies in many countries publish standards and guidance for identifying hazards and managing the effects. Project professionals understand that it is normal for people to feel excessive pressure from time to time. No one is immune from this, but everyone can build personal resilience with support.

Project professionals combine knowledge of the team and the work schedule to manage expectations about pressured time periods and build in contingency should members of the team be struggling. In addition to the professional being aware of the risk of workplace stress and how to mitigate this, a wider focus on wellbeing of people at work is a priority in many organisations. Promoting the benefits of a healthy lifestyle and wellbeing is one way that organisations support people to be in the best possible shape to deal with work pressures and to avoid negative stress.

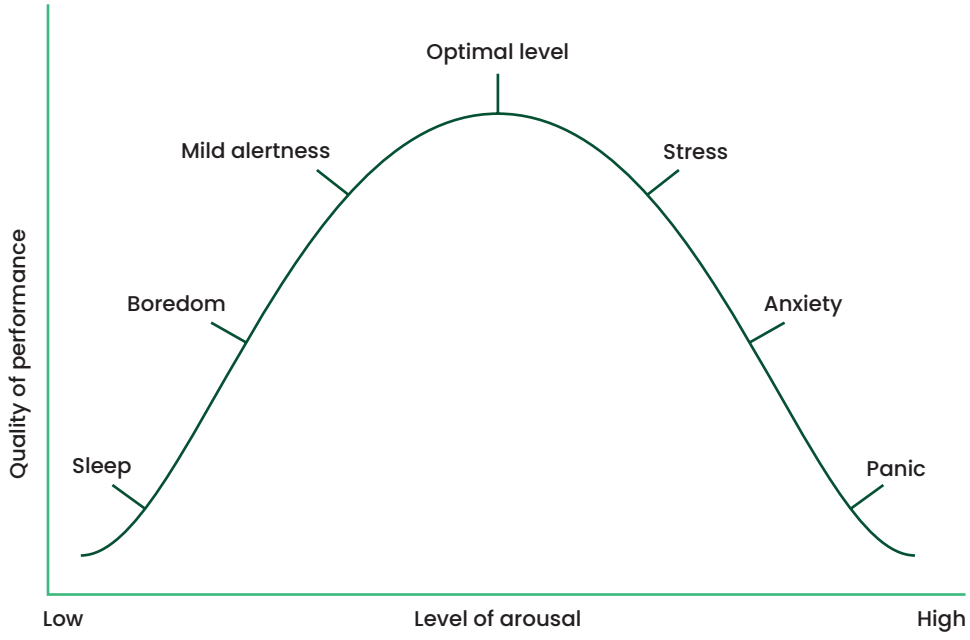


Figure 3.2.7 The balance between performance and level of arousal

Source: *Yerkes-Dodson law, 1908*

Recommended reading

- *Getting Things Done: The Art of Stress-Free Productivity* (2015) is a best-selling book and set of linked products that helps people approach personal and professional tasks.
- *Managing the Causes of Work-Related Stress: A Step-by-Step Approach* (2007) is the UK Health and Safety Executive's guide to using the management standards to tackle the six underlying risk factors associated with workplace stress, i.e. the demands of your job; your control over your work; the support you receive from managers and colleagues; your relationships at work; your role in the organisation; change and how it is managed.
- *Causes and Management of Stress at Work* (2002) is an article that looks at the causes and signs of stress at work, techniques for managing stress and organisational stress management. The article was published in a scientific journal and is available for free download.

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3.3 Working professionally

Beyond the knowledge and skill to be able to influence stakeholders and lead teams there are other aspects of being a project professional that span all the topics in the previous two sections.

Communication, negotiation and time management are basic management skills that apply universally, not just in project-based working — but they have a particular focus in projects, programmes and portfolios that warrants their inclusion. The temporary and constrained nature of delivering beneficial change through project-based working puts particular pressures on these core skills. The communication of relevant information is with people who are not part of the business-as-usual team. Negotiation is not only formal, with suppliers and partners, but also informal, for example to release scarce resource for project-work. Time management becomes particularly pressured when one is juggling multiple urgent and important priorities for different bosses or clients.

As a chartered profession, project-based working requires high standards in terms of ethics, and compliance with all relevant laws and regulations. Where projects are managed across different legal or ethical contexts, the project professional is wise to seek help from specialists who can help them navigate the terrain.

In a context where popular views are that the majority of projects and programmes fail to deliver promises, the role of continuing professional development has a major role to play in building the profession. Continuing professional development is vital for project professionals — not only to keep up to date and enhance their own competence over time, but also to advance the standing of the profession and the trust that society puts into the ability for project-based working to deliver value.

This section, written for anyone involved in project-based working, addresses the following topics:

3.3.1 Communication: Ensuring the exchange of relevant information

3.3.2 Negotiation: Planning, conducting and follow-up on agreements

3.3.3 Time management: Managing personal time to achieve priorities

3.3.4 Regulatory environment: Navigating the legal and regulatory environment

3.3.5 Ethics and standards: Maintaining a trusted profession

3.3.6 Continuing professional development (CPD): Continual development of competence

3.3.1 Communication

Ensuring the exchange of relevant information

The ability to communicate is a core skill for people working in projects, programmes and portfolios to ensure objectives and requirements are understood, plans and benefits are shared, stakeholders are aligned, teams are motivated and knowledge is embedded.

Communication takes many forms and effective communicators consider not only the message they want to pass on, but also the method (medium) for communicating the message. Decisions about communication methods are made in the context of the target audience, the intended impact and the risks/potential unintended consequences of the approach (Figure 3.3.1).

Many factors affect the success of communication, from cultural influences to the 'mood' in the team to the method of communication chosen and the language used. Project professionals have choices to use written words and symbols, voice and non-verbal signals (body language) when communicating. In 'face-to-face' communication (including video and vlogs), non-verbal communication can have more of an impact than the words used, so being able to control non-verbal signals and create a coherent message is vital.

Where face-to-face communication is not possible there are advantages and disadvantages. For example, it can be advantageous to be on a conference call if the group is working through feedback in a document as more focus can be given to the words used and the format of the written information without worrying about visual clues. Disadvantages are that virtual communication runs the risk of the sentiment underpinning what is said being misunderstood.

Project professionals working with virtual teams need particular skills to ensure that communication between team members is efficient and effective, for example the ability to include everyone on a virtual call (see 3.2.2).

Choosing the most appropriate media for delivery of a message is both helped and potentially hindered by the wide range of electronic methods for transmission and collaboration. Evidence suggests that e-forms of communication are increasingly relied upon too much, often leading to misunderstandings and conflicts.

All projects, programmes and portfolios have communication plans that build from stakeholder analysis and outline the who, what, when, why and how of two-way communication between the team and the wider stakeholder environment. Effective communication plans include ways to receive feedback and measure effectiveness so that plans can be adjusted to have maximum impact.

Protocols and standards for communication are developed in many organisations and sectors. Adherence to these can be important to communicate effectively and to reach agreements on time, for example, to get a business case approved by a governance board or to include a project update on the company intranet. If in doubt, project professionals should take time to find out the communication 'norms' in the particular organisation to circumvent avoidable errors and potential conflict.

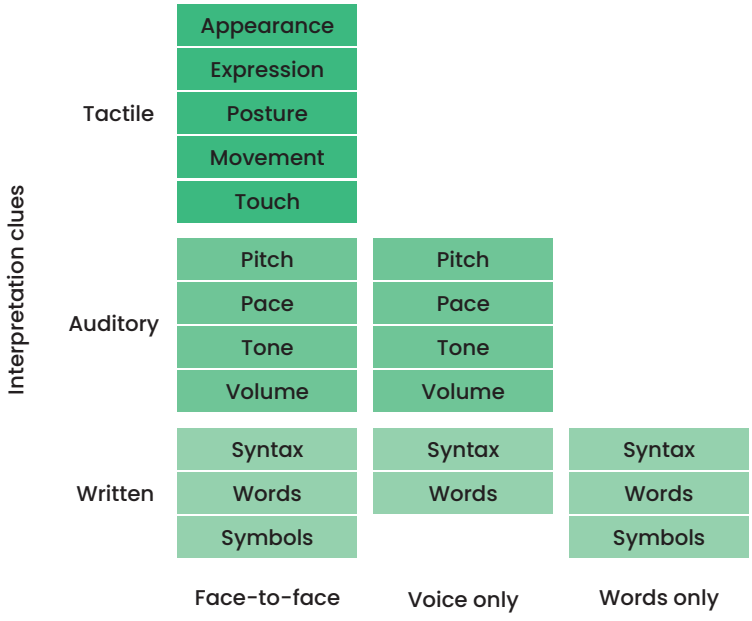

Figure 3.3.1 Considering the medium and the message

Recommended reading

- *Current Practices and Trends in Technical and Professional Communication* (2017) is a practical book, covering the tools and processes we can use to resolve some of the communication issues we encounter. Changes in technology are described, and ways of harnessing that technology are identified, including both current and future possibilities such as artificial intelligence.
- *The Silent Language of Leaders: How Body Language Can Help — or Hurt — How You Lead* (2011) is a useful book focused on effective non-verbal communication as a leader in an organisational context. It has practical advice on how to use the body for maximum effect when leading.
- *Communicating Projects: An End-to-End Guide to Planning, Implementing and Evaluating Effective Communication* (2013) gives project and programme communicators a comprehensive framework for developing an effective strategy that addresses multiple communication aspects in detail and with examples, such as employee engagement, communication theory and persuasion.

3.3.2 Negotiation

Planning, conducting and follow-up on agreements

There are many situations in project-based working where 'deals' need to be made — from agreeing the release of a functional expert to support the project, to negotiating large contracts with suppliers and everything in between. The principles of negotiation and the skills needed to make lasting agreements apply to all these situations. In this topic, we focus on negotiating and gaining formal agreement as a particular practice and skill that is distinct from the more generic skill set of influencing.

Planning is vital in negotiation. The project professional needs objective criteria for what they want to achieve and an understanding of their best alternative to a negotiated agreement. A best alternative to a negotiated agreement (BATNA) is not the same as what you want. It is important in negotiation that people do not bargain over value-based positions (for example, we have never paid more than x for this service before) and instead understand the price that it would be rational to pay for the service being offered. Also, where the negotiation has implications for the wider organisation (or programme/portfolio), the bargaining position reflects this to avoid short-term or local 'good' deals having wider negative consequences. As shown in Figure 3.3.2, understanding the BATNA of the seller and buyer defines the zone of possible agreement (ZOPA).

The actual negotiation may be done face-to-face or in writing. In the past, the negotiating skills that were valued were associated with 'driving a hard bargain' and tactics to put pressure on the other party and 'win over the opposition' were seen as valuable. It is more normal now to see negotiation through a 'win-win' lens. This does not mean that organisations do not seek a competitive price for a service, but the price of the service is balanced with an understanding of the value that is likely to be achieved. For example, the ability of the supplier to offer things of value to the purchaser such as storage of goods on the supplier's site until needed.

Some procurement exercises are also facilitated by an online bidding process, although, depending on the agreement you are trying to negotiate, it may be important actually to meet the people whom you are seeking to contract with.

Follow-up is also vital in order to progress actions agreed and to put in place documentation that will make it clear to all parties of the deal that has been negotiated. This is important to try to minimise future conflict. Where negotiation has been between two legal entities, a suitable commercial contract is needed. The project professional seeks support from their procurement or legal specialists to ensure that negotiated agreements with third parties are defendable in law as well as best value for the investing organisation.

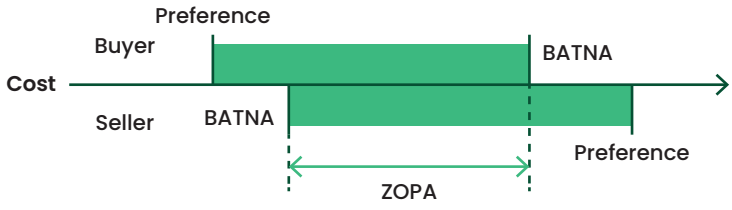

Figure 3.3.2 The concept of a best alternative to a negotiated agreement (BATNA)

Recommended reading

- *Getting to Yes: Negotiating an Agreement without Giving in* (2011) is a best-selling text that has helped millions of people secure agreements by providing a simple but highly effective framework for negotiation. The original source of the idea of BATNA and ZOPA.
- *Successful Contract Negotiation* (1993) is a classic, comprehensive and well-established manual on the negotiation of business contracts. It includes not just the process of negotiation but also the content (prices, payments, warranties, liabilities and claims), looking at the sellers' and buyers' viewpoints.
- *3D Negotiation: Powerful Tools to Change the Game in Your Most Important Deals* (2006) outlines an approach to align set-up, deal design and tactics to achieve superior results. It contains practical steps and engaging examples.

3.3.3 Time management

Managing personal time to achieve priorities

Most project professionals are juggling multiple priorities at any one time. This may be within one large project or programme, where the scope of work and number of team members and stakeholders involved creates a lot of work. Many people working in the profession are deployed to multiple projects simultaneously and this can make the prioritisation challenge even greater.

The ability to manage their own personal time and to prioritise work, balancing what is most important with what is most urgent, is a vital skill for any project professional (Figure 3.3.3).

Some people may be able to hold all the things they need to do in their head, and to prioritise accordingly without forgetting things and missing deadlines. Most people need some sort of personal aide-memoir system for keeping track of actions.

It is normal for people in business to use electronic diary management systems. One challenge for the modern-day project professional is that their diary becomes full of 'back-to-back' meetings, so the only time they have to progress other actions on their 'to-do' list is out of normal office hours. This leads to long working hours and excessive pressure. Leaders have the opportunity to be a role model for a positive working culture on the project with 'out-of-hours' work being the exception to support the achievement of key milestones.

Strategies the project professional can utilise include:

- Building in time in the day to progress personal actions.
- Understanding what part of the day they do their best work, making sure that this part of the day is available for activities that need the most thought.
- Avoiding multitasking whenever possible, so starting and finishing a task without being interrupted.
- Being clear about what tasks are done each day, and which can wait if necessary.
- Sharing information in advance of meetings to ensure meeting time can focus on decision-making.

Risk management is focused on anticipating what might not go to plan and putting in place actions to reduce uncertainty to a tolerable level. In a project-based setting, this discipline is critical to avoid the project professional's day being overtaken with managing unanticipated problems. Although crisis management can be motivating and satisfying for some, project objectives are typically best achieved by not leaving things to chance.

There is good evidence that it is motivating to develop a personal plan and to achieve that plan. Having a realistic action list for each day is a good way to build confidence and self-efficacy. Emergent change and issues will always happen but whether working within a linear or iterative life cycle, the project professional can become more effective by having a clear way of prioritising their effort.

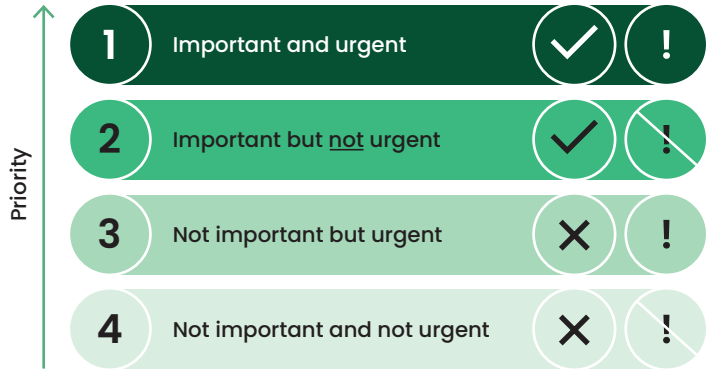

Figure 3.3.3 Prioritising important and urgent tasks

Source: *Adapted from the Eisenhower matrix.*

Recommended reading

- *Make Time*: *How to Focus on What Matters Every Day* (2018) is written by the creators of Google Ventures' 'Design Sprint'. They have packaged the most effective tactics into a four-step daily framework that anyone can use to systematically design their days.
- *Time Mastery*: *Banish Time Management Forever* (2017) helps in understanding how preferences, style and interests impact how time is organised and used. Whether you want to get more done at work, delegate better, manage the priorities at home or just spend more time doing things that bring you joy, this book will help you develop an approach to time that is efficient and fits with your unique personality.
- *Time Management* (2014) is a pocket-sized guide, designed to reveal 21 established time management solutions that can be used to handle interruptions, batch similar tasks together, overcome procrastination, determine what to delegate and use planning techniques to ensure the most important goals are addressed.

3.3.4 Regulatory environment

Navigating the legal and regulatory environment

All project-based work operates within a legal and regulatory framework relevant to the industry and countries where the work is performed (Figure 3.3.4). The project professional is responsible for understanding the regulatory environment. In law, ignorance is never a defence.

Acts of Parliament and associated regulations change over time and a mechanism for monitoring changes is required. Access to suitably qualified and experienced experts is a necessity. Some of these people will be found in organisational functions and will have an advisory role for the project; for example, contract law specialists in procurement. Others may be part of the core project team, for example a health and safety manager as part of a construction project. Ad hoc consultancy advice may also be required where the regulatory environment is changing and there are no suitably qualified in-house people to advise.

Regulations generally fall into two categories:

- Regulations that set out specific action that must be taken, e.g. those relating to the control of substances hazardous to health.
- Regulations that help employers set goals but leave them free to decide how to control the risks that they identify, e.g. manual handing operations.

Many regulations are specific to the type of work being undertaken by the project, for example those relating to construction design and management. Many other regulations are relevant to all work, for example those covering data privacy or safeguarding of people at work.

In some organisations, compliance with an International Standard is sought as a means of putting a focus on both regulatory compliance and continuous improvement, for example ISO14001:2015 to improve environmental performance.

The regulatory environment influences a number of project processes, including:

- requirements capture, quality planning and integrated planning
- risk analysis and management
- issue management and change control
- assurance arrangements

Failure to comply with any regulation can result in advised corrective action through to fines and/or custodial sentences for both individuals and organisations. The severity of sanction will depend on the extent and impact of the non-compliance and whether the failure was due to individual actions or a more systemic organisational failure. Sponsors and the wider governance board (see 1.3.5 and 1.3.10) provide support for project professionals, ensuring legal support is available where needed.

Although most organisations set out to achieve minimum compliance with all the relevant regulations, some go further and aim to achieve the spirit of the law as well as minimum standards. Many organisations have specific objectives and defined appetite for risk relating to areas of compliance, a common example being a focus on 'doing no harm'.

Where projects are being delivered across borders and geographical locations, there may be many conflicting regulations and standards in play. Where this is the case, the relevant governance structure decides what standards to align with, seeking specialist advice if in doubt.

Figure 3.3.4 A hierarchy of legal and regulatory influences

Recommended reading

- *Understanding Regulation: Theory, Strategy and Practice* (2013) is an in-depth and multidisciplinary discussion of an area of public policy crucial to modern government. It is a clear and concise introduction to key issues in regulation and deals with both the theories and practice of regulation.
- *Essentials of Business Law* (2018) delivers a succinct exposition of the core aspects of business law for those seeking an understanding of the legal principles and regulations that apply to business. Topics covered include contracts, misrepresentation, sales of goods, agency, negligence, nuisance, criminal law, employment, partnerships and company-related matters.
- *The Paradox of Regulation: What Regulation Can Achieve and What it Cannot* (2012) takes a deeper and questioning look at the role of regulation and its capacity to reduce risk and enable new activities. Industrial, financial and social risks are handled through regulations but their use opens up new questions about the complex interplay between risk and regulation.

3.3.5 Ethics and standards

Maintaining a trusted profession

A key requirement of any profession is that individual members act ethically. Trust and respect are vital to the success of anyone who wants to be regarded as a professional. Trust is gained by working consistently in a moral, legal and socially responsible manner. It is reinforced by a commitment to act in accordance with organisational and professional codes of conduct.

All leading professional bodies, including the Association for Project Management, have a code of conduct to set standards, guide professionals and raise the level of trust and confidence in the profession.

Professionalism is a demonstrable awareness and application of competences and qualities, including knowledge, and appropriate skills.

The APM FIVE Dimensions of Professionalism provides a framework to set standards and guide the development of project professionals, this includes:

- **Breadth**: Covered by the *APM Body of Knowledge* and defines the knowledge needed to manage any kind of project.
- **Depth**: The APM Competence Framework provides a guide to project, programme and portfolio management competences, mapping levels of knowledge and experience to help progress skills and abilities.
- **Achievement**: Gaining APM recognised qualifications.
- **Commitment**: Continuing professional development (CPD) helps develop project management practice.
- **Accountability**: The APM Code of Professional Conduct outlines the ethical practice expected of a professional.

Accountability and commitment to the APM Code of Professional Conduct ensures that situations such as abuse of a position of trust, loss incurred by clients and/or patterns of poor conduct, competence or regulatory failings do not arise.

Where the standards for ethical conduct are not being met, project professionals have a duty as part of their professional standards to report any wrong doing. This will not only be to their professional body but may have wider legal implications.

There is also a responsibility for everyone to 'speak up' (sometimes called 'whistleblowing') and report when any form of wrongdoing is identified. Organisations are required to have a policy and process to enable individuals to 'speak up'. Many countries also have legislation that protects people who report cases of perceived wrongdoing by individuals, for example fraudulent practices, or by companies, for example failure to safeguard people's health and safety. Protection for people who do 'speak up' extends to situations in the past, happening now or potentially in the future based on evidence now. It also applies to 'speaking up' about a situation in an employee's own company, or in another company that is part of the project or programme or supply chain.

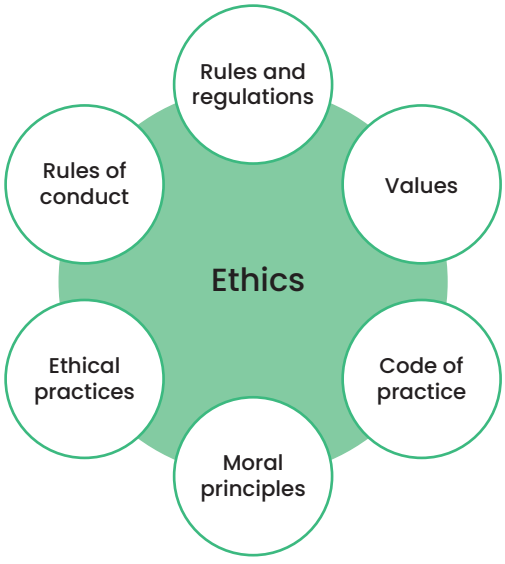

Figure 3.3.5 The scope of ethics

Recommended reading

- *APM Code of Professional Conduct* (2018) outlines the standards of professional conduct and ethics for all project professionals. All individual APM members commit to the APM Code of Professional Conduct, which sets out the standards of conduct expected by those working in the profession.
- *Managing Business Ethics*: *Straight Talk about How to Do it Right* (2017) describes how to manage business ethics at individual, managerial and organisational levels, promoting an understanding of complex influences on behaviour that may be present in the organisational context and/or culture.
- The Public Interest Disclosure Act 1998 is the UK legislation requiring employers to put in place a 'speak-up'/whistleblowing policy and process, and for employees to use it to report perceived wrongdoing.

3.3.6 Continuing professional development

Continual development of competence

Competence is the combined knowledge, skill and behaviour that a person needs to perform properly in a job or work role. Continuing professional development (CPD) is the term used to describe the requirement for any professional to continually develop their competence (Figure 3.3.6).

Ongoing CPD involves:

- identifying current and future needs
- setting specific learning objectives and targets
- planning activities to support development
- recording activities and achievements

In order for professionals to meet requirements for CPD, they need to take responsibility for identifying their own competence gaps and pursuing learning or opportunities to widen experience to fill those gaps. For employees, the employer also has a responsibility to provide support for CPD activities. This may include funded training or paid time off to pursue professional development activities, but the responsibility rests primarily with the individual professional to do what is necessary to meet the CPD requirements of their professional body.

Qualifications and accreditations are one important part of a project professional's CPD. APM offer their own qualifications and accreditations. Many other awarding bodies offer qualifications in project, programme and portfolio management, including most further education and higher education institutions and some other professional bodies. It is often the case that project professionals will be accredited by more than one professional body or academic institution.

The Chartered Project Professional (ChPP) standard is a professional benchmark that demonstrates attainment of a defined level of technical knowledge, professional practice and ethical behaviour. People who attain ChPP status are included on the Register of Chartered Project Professionals.

Learning is more effective if it is wider ranging than formal courses and qualifications. This can be done through various formal and informal publications and information sources. Papers in academic journals, for example the *International Journal of Project Management*, highlight the latest research findings. Articles in a practitioner magazine, for example *Project*, explore the profession in practice. Conferences are good platforms for both sharing and learning. Informal information sources such as blogs or postings on social media are a good way of keeping up with current trends and challenges of being a project management professional. Social media is also a good way of building contacts with others in the profession.

The term 'reflective practitioner' is used within professions to describe people who take time to actively reflect on specific experiences and to engage in the process of continuous learning and development resulting from those experiences. Reflective practitioners do not wait for digested knowledge to be presented to them, for example on a course, but instead engage with learning opportunities that emerge from mismatches, unresolved issues, daily experiences and practices.

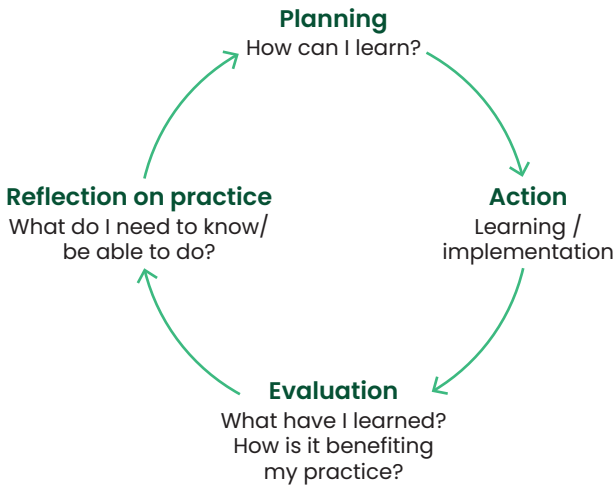

Figure 3.3.6 A typical continual professional development (CPD) cycle

Source: *Continuing Professional Development (2012)*

Recommended reading

- The Chartered Institute of Personnel and Development's *Competence and Competency Frameworks* (2018) examines the history, principles and current practice around competence and competency frameworks.
- APM's Road to Chartered series, Paper 4, *The Growing Significance of CPD: Ensuring Professionalism in a Dynamic and Changing Workplace* (2017), outlines the growing significance of continued professional development within multiple professional bodies and provides insights into the importance of this.
- *Reflective Practice: Writing and Professional Development* (2018) is a popular resource used by professionals in many disciplines to enhance their reflective writing skills and to examine their own practice in greater critical depth in order to improve effectiveness and self-awareness. The fifth edition includes practical tools, examples, case studies and online resources required to facilitate deeper learning and a better informed level of problem-solving in a practice setting.

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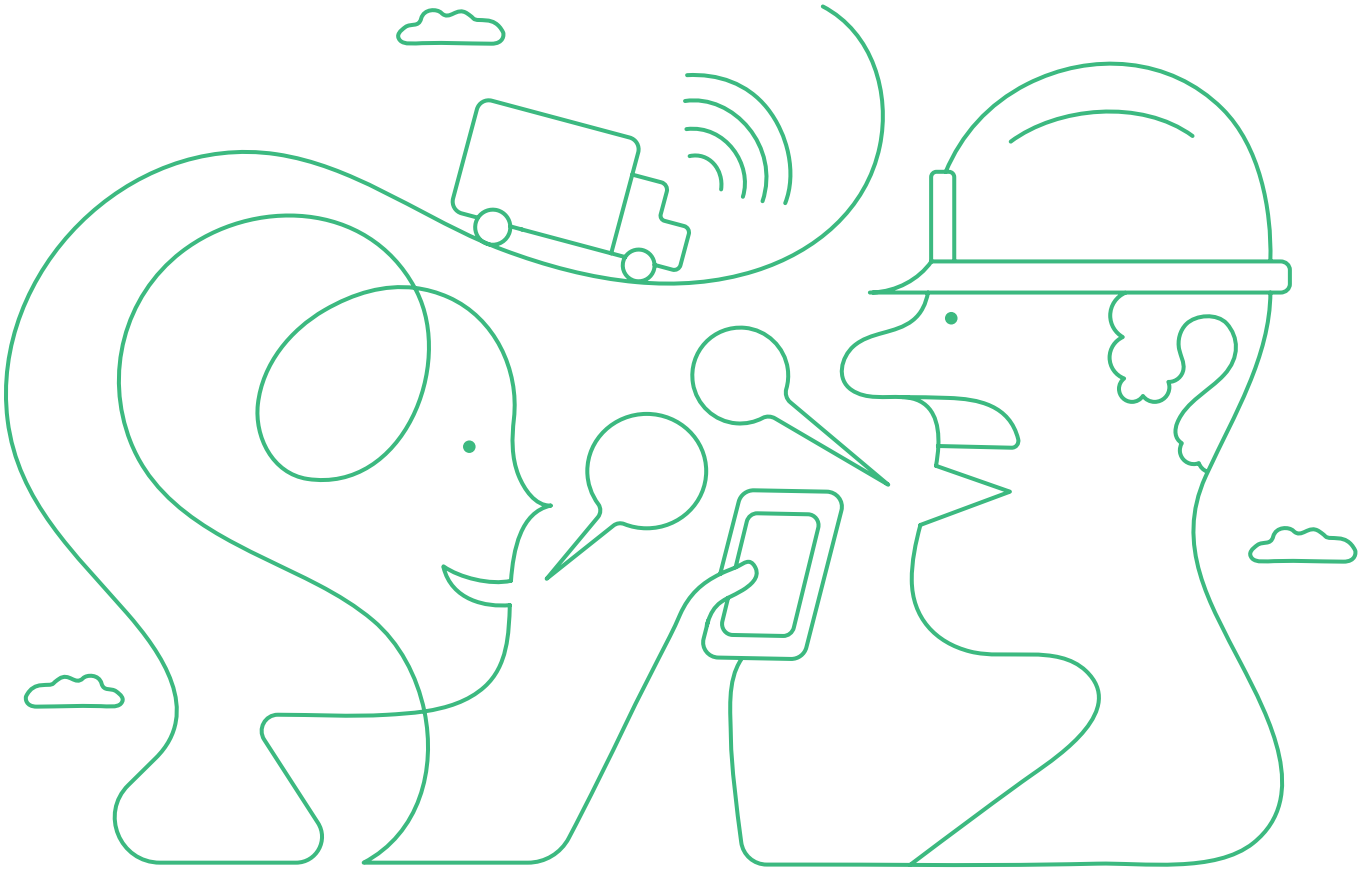

4 Planning and managing deployment

This chapter is written primarily for those involved in the end-to-end process of delivering a project, whether a standalone project or one that is part of a programme and/or portfolio, and regardless of the life cycle approach taken.

Although the professional domain has expanded, as described in many parts of the earlier chapters, the detailed matters associated with defining outputs, integrated planning and controlling deployment remain. However, the context for this work is changing, with pressure to respond to an increasing need for agility and flexibility. As a result, many projects adopt iterative rather than linear approaches for at least some part of the life cycle.

Moving from high-level expressions of stakeholder vision or need through to a detailed statement of work for the chosen solution involves a number of steps of refinement: exploring objectives; detailed requirements; success criteria; measurable benefits; best value options; scope definition and acceptance criteria for each element of that scope. This work builds a firm foundation for detailed planning.

Taking forward the definition of outputs into detailed planning requires a focus on multiple areas, and the integration of those areas into the baseline project management plan. Depending on particular project objectives and the life cycle chosen, different approaches to planning time, resources and cost, in the context of risk can be adopted.

Controlling deployment requires a detailed focus on monitoring and reporting as well as a commitment to manage risk, issues and change/variations in a disciplined way. The imperative to provide audit trails for assurance, and the opportunity for individual team members and the wider organisations involved to reflect, learn and improve, is an organisational reality for all who work in a competitive environment.

The chapter is composed of three parts:

4.1 Defining outputs

4.2 Integrated planning

4.3 Controlling deployment

4.1 Defining outputs

Moving from high-level expressions of stakeholder vision or need through to a detailed statement of work for the chosen solution involves a number of steps of refinement exploring success criteria, measurable benefits, detailed objectives and requirements, best value options, scope definition and acceptance criteria for each element of that scope. This work builds a firm foundation for detailed planning.

The linear progression from high-level expressions of need and benefit in an early business case through to the specification of detailed requirements, scope and acceptance criteria is well understood. For many projects, this remains a value-creating process, especially for large-scale, highly technical projects, where rework is expensive and does not justify an iterative approach.

The emergence and growing popularity of iterative approaches requires us to think about defining outputs in a different, more adaptive way. The danger, however, is to assume that the approaches designed to build in agility and flexibility do not require the discipline to define some things clearly, for example benefits that justify the investment or the acceptance criteria for deliverables. Understanding the different options and maintaining a balance are always important.

This section, written for all people working to plan and deliver either standalone projects or projects within programmes and portfolios, addresses the following topics:

4.1.1 Success and benefits: Understanding what success means for different stakeholders

4.1.2 Objectives and requirements: Comprehensive and measurable requirements are critical to project success

4.1.3 Options and solutions: Exploring multiple options until a preferred solution is identified

4.1.4 Scope definition: The translation of requirements into outputs for the chosen solution

4.1.5 Quality planning: Ensuring outputs are delivered in accordance with requirements

4.1.1 Success and benefits

Understanding what success means for different stakeholders

Project success is the satisfaction of stakeholder needs and is measured by the success criteria agreed at the start of a project. All projects are designed to bring benefits to the investing organisation, but the success criteria for many projects excludes benefit realisation as this is handled by another part of the organisation.

Benefits therefore are different to success criteria. They are the quantifiable and measurable improvements resulting from completion of deliverables that are accepted, utilised and perceived as positive by a stakeholder. Benefits typically have a tangible value, ideally expressed in monetary terms to justify the investment.

History tells us, however, that it is possible to have a project that fails to deliver the intended benefits but is, nevertheless, perceived as successful, or a project that delivers significant benefits but is considered a failure. Further, different stakeholders may have differing views of success. We can conclude, therefore, that success is a relative concept, judged by stakeholders and the role of the project professional is to:

- explore perception of success and benefits
- facilitate an agreed position, as far as possible

Success criteria are agreed with stakeholders as early as possible but can be changed at any time in the project life cycle, subject to approval through change control (see 4.3.6). In an iterative working environment, the team may find it easier to respond to changing success criteria as they deliver and regularly test outputs with end users, allowing for gradual learning and adaptation.

Achievement of project management success criteria is known at project handover (see 2.3.2) and accountability for achieving the project success criteria rests with the project manager. Benefits are often realised some time after transition into use (see 2.3.3), hence accountability for benefits realisation resting with the sponsor.

Benefits management involves identifying and agreeing the benefits and how they will be measured, monitored and managed throughout the project until they are realised. A project that is only responsible for delivering outputs interfaces with the entity responsible for delivering the benefits. This may be a programme, portfolio or business-as-usual organisation. The investment appraisal and business case for the project or programme depends on attribution of benefits at the right level — to avoid things being missed, or 'double-counted'. To facilitate this, stakeholder consultation and benefits mapping can be an iterative process, requiring good business analysis skills and an ability to influence stakeholders (Figure 4.1.1).

A consistent approach to benefits identification and measurement across a programme helps to assess its collective impact on business performance across the organisation. Similarly, the mapping of strategically aligned benefits in a portfolio ensures that investment decisions and the scope of each project and programme, are driven by the contribution of benefits to achieving the operational, organisational or business strategy.

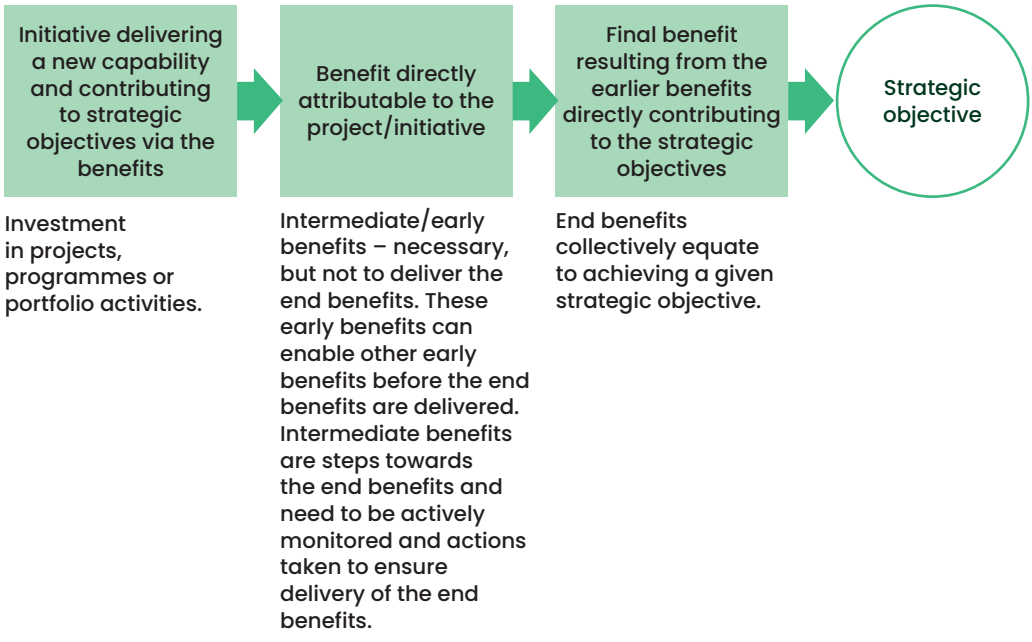

Figure 4.1.1 Benefit mapping process

Source: *Benefits Capability (2019)*

Recommended reading

- *A Guide to Using a Benefits Management Framework* (2019) explains what is involved in introducing benefits management as a discipline into an organisation or a large change portfolio. The guide can also help those who are looking to improve their overall organisational benefits management capability.
- *Sponsoring Change* (2018) guides board members and senior managers to adopt good practices regarding sponsorship of change projects. The guide explains why a sponsor needs to be accountable for project success and how they can reduce risks to the organisation and maximise the benefits realised from projects and programmes.
- *Benefit Realisation Management* (2010) includes a step-by-step benefits realisation process, explaining along the way how to: define your projects and programmes by mapping the benefits; produce a convincing business case; communicate and get stakeholder support; agree the measures to monitor progress; and assess the ultimate success of the project or programme.

4.1.2 Objectives and requirements

Comprehensive and measurable requirements are critical to project success

In many cases, the objectives and needs of a project are derived from the strategic aims of a programme or portfolio. In the case of a standalone project, objectives may relate directly to an organisational strategy or to a subset of a strategy defined by the investing organisation.

In all cases, specific project objectives and requirements are informed by the success criteria and benefits desired by stakeholders (see 4.1.1). Project professionals ensure that:

- there is a clear linkage between benefits, project success criteria, project objectives and project requirements
- requirements are clear, unambiguous and expressed as simply as possible

A good test is to check that requirements are 'SMART', i.e. Specific, Measurable, Achievable, Relevant and Time-based

The sponsor articulates objectives with the assistance and facilitation of project professionals (e.g. business analysts or systems engineers) and technical staff. Detailing requirements (e.g. ship speed), together with measures (e.g. greater than 12 knots), enables acceptance of deliverables during transition to users. Sometimes, more requirements are requested than it is feasible to deliver, so a prioritisation exercise is needed to highlight the most essential requirements. A common prioritisation technique is the MoSCoW approach:

M Must have

S Should have

C Could have

W Won't have

Some requirements are easier to measure than others. The benefits desired by the sponsor may lead to requirements that cannot easily be measured, for example work to be delivered within a specified ethical or values-based framework.

The definition of requirements leads logically to design of test and evaluation criteria to determine acceptability. Often, a depiction of the chosen life cycle as a V, an approach derived from systems engineering, helps this (see Figure 4.1.2).

The relevant staff (ideally, including the project manager) facilitate the process to gather, analyse, justify and baseline requirements. The motivation is to ensure that essential requirements are understood as an input to the work to select the optimal solution and then define the detailed scope of work to be delivered with acceptance criteria. This level of rigour mitigates the risk that in later life cycle there is dispute between the project and the wider programme, portfolio or organisation about completion and transition of the deliverables into use. For projects delivered as part of a commercial contract, this is particularly important to safeguard both the investing and supplier organisation.

In iterative life cycles, requirements can be identified and elaborated through cycles of discovery to reach agreement and refine the understanding of what needs to be done. Some methods express each requirement as a user story, a description of the specific features requested by stakeholders, captured in natural language and containing just enough information to enable a simple estimate of the development effort.

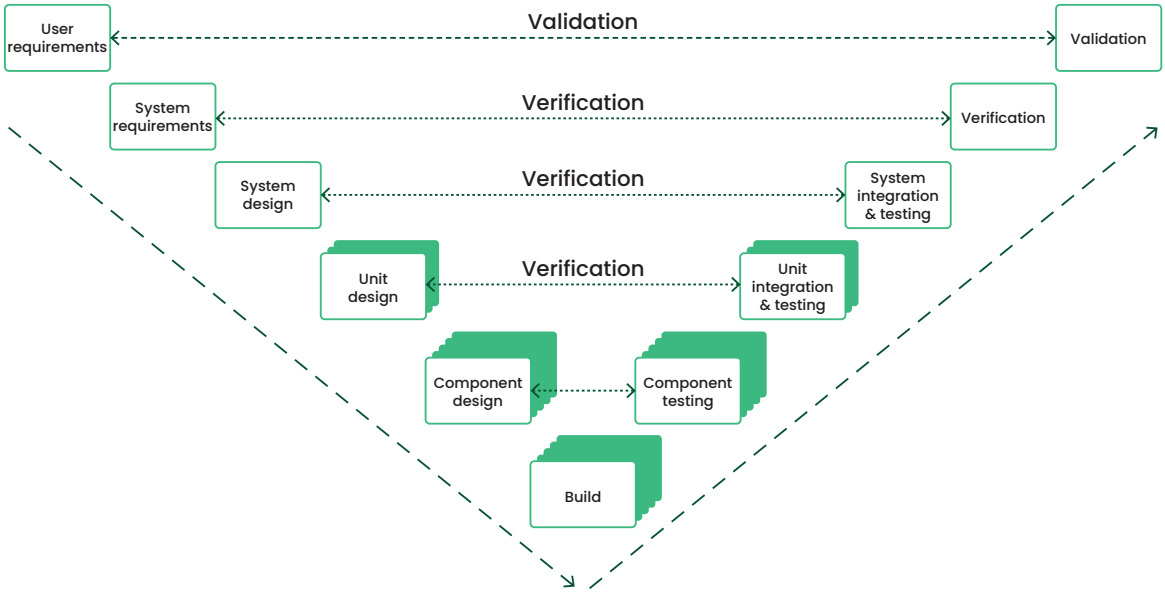

Figure 4.1.2 An example 'V' depiction of a project life cycle

Source: *Planning, Scheduling, Monitoring and Control (2015)*

Recommended reading

- *Business Analysis and Leadership: Influencing Change* (2013) provides practical guidance to people involved in engaging stakeholders to agree objectives and requirements. The book includes case studies, practical advice and contributions from leading practitioners and thinkers.
- *Requirements Engineering* (2017) is a commonly used reference and general text in requirements writing. The book gives useful hints to practitioners on how to write and structure effective requirements and offers a good understanding of the requirements process.
- *Scrum: How to Leverage User Stories for Better Requirements Definition* (2015) has some good hits and tips, together with a selection of samples and examples for applying an iterative life cycle. Scrum is one of the few approaches that make use of the concept of user stories. User stories utilise text narratives to describe how a user interacts with the system and can potentially be applied to other types of projects.

4.1.3 Options and solutions

Exploring multiple options until a preferred solution is identified

A key objective of early life cycle project-work is to identify the optimal solution to satisfy the agreed project requirements. Often, feasibility studies are funded to explore multiple, potential options that could satisfy the sponsor's requirements (Figure 4.1.3).

The business case documents the options considered and it is normal practice to include the 'do-nothing' option as a reference. Through this approach, the business case becomes a record of the recommended option with rationale and evidence to support the decision.

An optioneering approach requires creativity and lateral thinking as well as a process that does not become irrationally biased by stakeholder pressure to adopt their preferred (potentially non-optimal) option. To avoid decision bias, it is important to maintain a broad selection of options and to explore the fit of each option with the previously agreed benefits, success criteria, objectives and requirements. Through such a process, recommendations that are evidence-based can be proposed.

Depending on the project, there can be many criteria to consider when defining options, for example:

- **Technical**: Process, material, software, future
- **Social**: People, interactions, needs, relationships
- **Procurement**: Lease, buy, make, service, partnership
- **Management**: Life cycle, governance
- **Transition**: Phased, 'big bang'

Once a comprehensive set of workable options has been identified, they can be prioritised. It is normal to compare options using an investment appraisal that considers the trade-off between whole-life costs, benefits and deployment risks to determine the best value for money option. Other criteria may also be used, for example stakeholder commitment to the solution, or the fit of the option with the strategic analysis of the market for supply of materials or services.

In the case of linear life cycle projects, there is a need for early analysis of options and the selection of a preferred optimum solution with scope. In projects where an iterative life cycle has been chosen, there is the opportunity to maintain the options space for longer. The iterative approach can allow different design options to explored while the needs are being investigated in another cycle. Iterative development can provide a management environment where the solution is released in increments providing the opportunity of progressive user feedback and gradual unfolding of requirements.

The principles and practices of value management are very useful when optioneering, putting a focus on increasing the proportion of satisfied requirements for the resources to be used.

Following the investment decision, the preferred option/solution is confirmed. Any changes thereafter are progressed through formal change control (see 4.2.7).

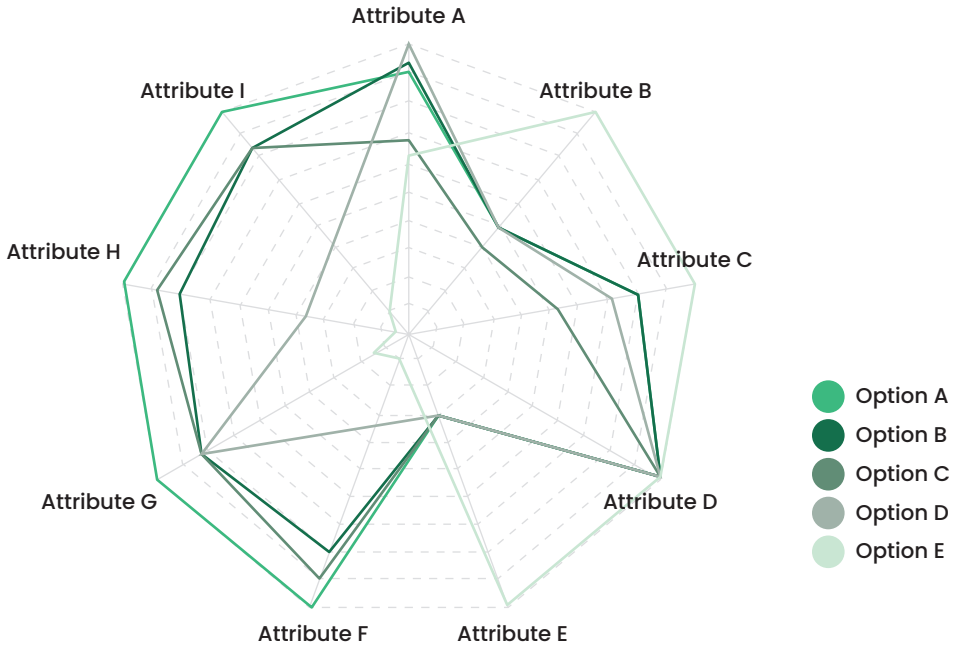

Figure 4.1.3 Comparing multiple options using a spider plot

Recommended reading

- *The Green Book* (2018) includes a reference for the appraisal of options and economic consideration of projects, whether the project is public or private.
- *Directing Agile Change* (2016) provides an explanation of the differences between predictive and adaptive life cycles.
- *Decision Quality: Value Creation from Better Business Decisions* (2016) provides a model for assessing the fit of decisions with requirements, using a mix of quantitative and qualitative criteria.
- *Lateral Thinking: A Textbook of Creativity* (2016) is an updated version of a foundational text addressing techniques for creatively and lateral thinking when optioneering.

4.1.4 Scope definition

The translation of requirements into outputs for the chosen solution

'Scope' is the term used in the management of projects to refer to the totality of the outputs, outcomes and benefits and the work required to produce them. Scope management is the process for identifying, defining and controlling scope.

A high-level scope is typically recorded in the business case (see 1.3.7) in support of the chosen option and its investment appraisal.

In defining scope, it is important to be clear about the boundaries and interfaces with adjacent projects. This is critical to avoid duplication, conflicts or omission of work within a programme or portfolio, or between other standalone projects or business-as-usual work.

The detailed scope of work emerges from the decomposition of chosen option to meet the sponsors requirements. Following the categorisation of the requirements, the project manager is able to direct those categories of requirements to the most suitable technical resource for detailed scope definition.

During the scoping process, assumptions are documented, in particular to clarify work that is not in scope but may have been assumed to be, for example:

- business change activities that will be resourced by business-as-usual not the project
- customisation of the reporting functionality of a software implementation
- provision of under-floor heating in a building refurbishment

Clearly defining what is in and out of scope prevents the risk of misunderstanding at a later point in the project that may lead to emerging issues and change requests. Incomplete scope definition is a common cause of time delays, cost growth and benefit reduction.

In projects with a linear life cycle, the baseline scope of work is defined through a breakdown structure to define the activities which will be scheduled and resourced to meet all the requirements and benefits. Typical breakdown structures used are (Figure 4.1.4):

- Product (or service) breakdown structure – What will be delivered
- Work breakdown structure – Activities to be completed
- Cost (or organisation) breakdown structure – The labour or non-labour resources needed to complete the work

Scope definition in linear life cycle projects is assumed to be fixed. Time, cost and quality to meet the scope is defined in the remainder of the project planning process.

In projects using an iterative life cycle, it is equally important to structure the scope of work and record the assumptions. The difference in this scenario is that the 'must-have' requirements are prioritised in user stories and these are translated into a target scope of work to be achieved within a fixed time window with defined resources. Subsequent iterations may alter the scope based on accumulated experience, acquired insights and emerging priorities.

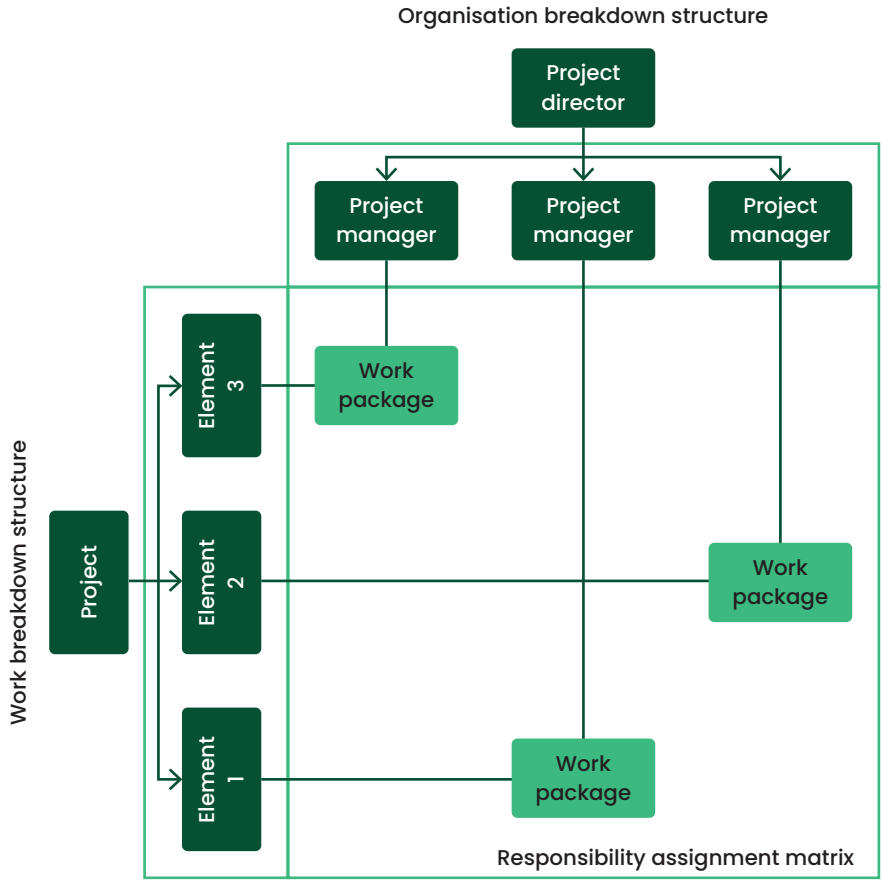

Figure 4.1.4 Relationship between breakdown structures

Source: *Planning, Scheduling, Monitoring and Control (2015)*

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group guide, *Planning, Scheduling, Monitoring and Control* (2015), provides a detailed explanation of scope definition and how various breakdown structures relate to each other. This is important to ensure that the lowest level of scope definition enables effective monitoring of time, cost and quality.
- APM's Earned Value Management Specific Interest Group guide, *Earned Value Management Handbook* (2013), provides additional information regarding the breakdown structures and the establishment of the control accounts if earned value approaches are being used.
- *User Stories Applied: For Agile Software Development* (2004) remains the classic go-to book on using user stories in agile software development. The book explains what user stories are and how they can be used, before providing a detailed blueprint for how to use user stories and how to weave them into the software development life cycle.

4.1.5 Quality planning

Ensuring outputs are delivered in accordance with requirements

'Quality' is defined as the fitness for purpose or the degree of conformance of the outputs of a process, or the process itself to requirements. Quality planning takes the defined scope of the project (or the next phase or time period in an iterative life cycle) and specifies the criteria to be used to validate that the outputs are fit for purpose and acceptable to the sponsor (Figure 4.1.5).

In 1.3.2 (assurance principles) and 2.2.4 (audits and assurance), the approach to assuring the overall governance and management of a project, programme or portfolio was outlined. Quality planning is focused on the specific outputs of a project to enable quality control during deployment (see 4.3.8).

The quality plan sets out the desired attributes of work in scope and how these are to be assessed. To do this, it references applicable regulations, standards, specifications and, in some cases, values of the investing organisation.

Statements in quality plans, often called 'acceptance criteria', provide guidance to the team about the requirements and essential conditions for the deliverable that they are working on. They also guide the planning of quality control and other assurance activities that are performed to check that outputs meet requirements. It is important to do this after scope definition and before any further planning as quality control and assurance activities take time and consume resources that need to be scheduled and costed.

The quality plan documents:

- methods of verifying that the outputs meet requirements
- pass/fail criteria for each method
- frequency of the tests, checks or audits that will be carried out
- requirements for resources required, for example particular test equipment; suitably qualified and experienced staff who may be provided by the delivery organisation or a part of the supply chain; stakeholder approvals

Obtaining stakeholder agreement facilitates the handover of the project's outputs on completion and planning early how this will be done is a key success factor for project management.

When using an iterative life cycle, target acceptance criteria for outputs alongside the 'must-have' requirements for scope are defined and delivered within the defined time period. Although quality control and assurance are built into an iterative development process, the overarching acceptance criteria for the final product still need to be defined and approved by the sponsor, for example that the final product will conform to certain regulatory standards.

The quality plan is agreed with the sponsor and wider governance board as a key part of the integrated project management plan. Where a project is part of a programme, some of the overarching quality requirements may be planned and controlled at programme level, with projects following the standard defined by the programme for its constituent projects.

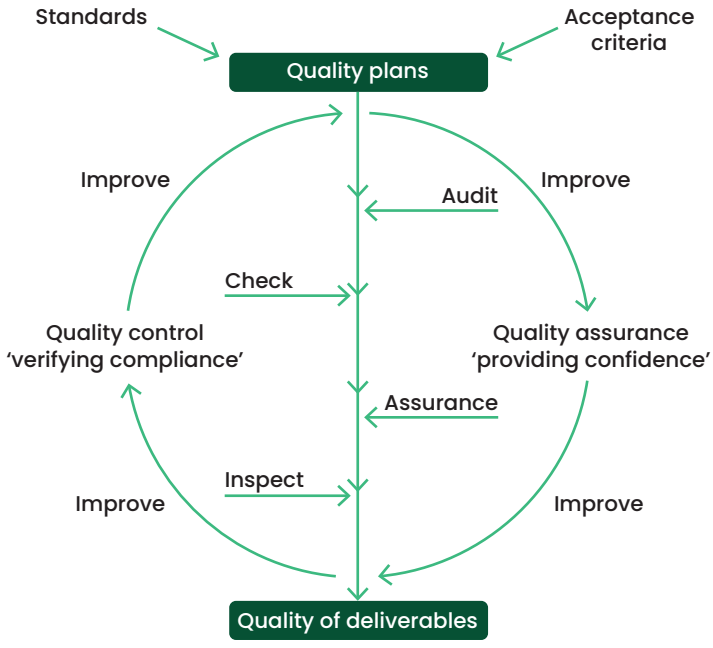

Figure 4.1.5 Quality planning in the context of wider quality management

Recommended reading

- *The Essence of Managing Quality for Projects and Programmes* (2017) addresses quality from a project and programme perspective. This brief and handy resource addresses the quality definition process as the initial task before linking it to quality planning and following the link to execution. It also offers guidance on setting expectations and quality roles.
- *Project Quality Management: Why, What and How* (2014) is a detailed guide, covering most aspects of quality management related to project-work. The section on quality planning addresses prioritisation, requirements and standards and the specific links between quality planning and project planning.
- *Managing Quality in Projects* (2012) offers a broad and balanced introduction to the topic of quality in project practice. The book traces key concepts and applied principles and frameworks. A key emphasis is on examining how quality should be defined and measured and how good practice can be applied to deliver project excellence.

Full references for Section 4.1

4.1.1

APM Benefits Management Specific Interest Group (2019) *A Guide to Using a Benefits Management Framework*. Princes Risborough: Association for Project Management.

APM Governance Specific Interest Group (2018) *Sponsoring Change: A Guide to the Governance Aspects of Project Sponsorship*, 2nd edition. Princes Risborough: Association for Project Management.

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Pullan, P. (2013) *Business Analysis and Leadership: Influencing Change*. London: Kogan Page.

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HM Treasury (2018) *The Green Book: Central Government Guidance on Appraisal and Evaluation*. London: The Stationery Office.

Spetzler, C., Winter, H. and Meyer, J. (2016) *Decision Quality: Value Creation from Better Business Decisions*. New Jersey: J. Wiley & Sons.

Wernham, B., Pyne, A., Garrini, R. and Samphire, M. and APM Governance Specific Interest Group (2016) *Directing Agile Change*. Princes Risborough: Association for Project Management.

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APM Earned Value Management Specific Interest Group (2013) *Earned Value Management Handbook*. Princes Risborough: Association for Project Management.

APM Planning, Monitoring and Control Specific Interest Group (2015) *Planning, Scheduling, Monitoring and Control*. Princes Risborough: Association for Project Management.

Cohn, M. (2004) *User Stories Applied: For Agile Software Development*. Boston, MA: Addison Wesley.

4.1.5

Bartlett, J. (2017) *The Essence of Managing Quality for Projects and Programmes*, 2nd edition. Abingdon: Routledge.

Basu, R. (2012) *Managing Quality in Projects*. Abingdon: Routledge.

Rose, K. (2014) *Project Quality Management: Why, What and How*, 2nd edition. Plantation, FL: J. Ross Publishing.

4.2 Integrated planning

Taking forward the definition of outputs into detailed planning requires a focus on multiple areas, and the integration of those areas into the baseline project management plan. Depending on particular project objectives and the life cycle chosen, different approaches to planning time, resources and cost, in the context of risk can be adopted.

When using a linear life cycle approach, the assumption underpinning integrated planning is that all the work can be defined, estimated, scheduled, risked, resourced and costed — maybe to different levels of granularity in the near term than the long term — nevertheless, that a baseline can be established from which deployment can be managed and controlled. Unexpected issues will inevitably arise during deployment, but this does not negate the need for the best plan possible before work starts. For many projects, this is an appropriate approach to take and the topics in this section cover the different elements that come together to create the deployment baseline.

When using an iterative life cycle approach, a baseline plan is still required, but the assumptions underpinning the plan are different, with flexibility and agility built into the thinking. Guidance on application of the topics in this section to iterative life cycle approaches is provided, although we recognise that there are many different methodologies that exist for iterative or agile development. The language through the section used is intended to be generic and not favour any particular bespoke method.

As previously discussed in 1.2.4 and 2.2.2, many organisations use a hybrid linear/iterative approach to projects and programmes most of the time. The challenge is to plan in the most effective way to give the investing organisation(s) the best possible chance of achieving the objectives and benefits described in the business case.

This section, written for all people working to plan and deliver either standalone projects or projects within programmes and portfolios, addresses the following topics:

4.2.1 **Contract award:** Selecting suppliers and setting up contracts for success

4.2.2 **Risk identification:** Ensuring knowable risks are understood

4.2.3 **Risk analysis:** Ensuring project plans take account of variability and risk events

4.2.4 **Estimation:** Prediction of time and resources required to complete the scope of work

4.2.5 **Scheduling – critical path:** Time-based planning with an emphasis on activities

4.2.6 **Scheduling – critical chain:** Time-based planning with an emphasis on resources

4.2.7 **Resource optimisation:** Managing scope, quality, time and cost in a constrained system

4.2.8 **Cost planning:** Understanding where costs fall over time

4.2.9 **Contingency planning:** Ensuring plans reflect required confidence levels

4.2.10 **Deployment baseline:** Agreeing the integrated plan to enable managed deployment

4.2.1 Contract award

Selecting suppliers and setting up contracts for success

The award of a contract is the culmination of the strategic effort spent on sourcing and procurement (see 1.3.4 and 2.1.4) to match the objectives and requirements of the chosen solution for the project.

Typically, contracts are awarded through a process of deciding between competing suppliers (Figure 4.2.1). To select the participants in a competitive tender, a prequalification process is usually undertaken, whereby a broad selection of invitees is narrowed down to a shorter list of tenderers through a sifting of capabilities. This process might result in only one qualifying tenderer, or, indeed, the project may have already decided to procure from a single source. In this case, the project can enter into a negotiation process to agree terms.

Where multiple parties have pre-qualified, the next stage is the invitation to tender. Here, shortlisted candidates are requested to submit their best offers against a common statement of deliverables and in accordance with set contract conditions. A tender deadline is set. Good practice dictates that late bids are disqualified. It is good practice for all bids to be opened simultaneously after the deadline even if any were submitted early.

The project professional develops the criteria for judging the tender competition with the sponsor. This may be formally ratified by the governance board. The following considerations apply:

- ***How will relative priorities of time, cost and quality (for the defined scope) be reflected?*** Best value is not always represented by the lower cost. A scoring system is often devised, assigning relative values to the elements of contract scope and it is good practice to communicate this to tenderers when the invitation to tender is issued.
- ***Who will assess tenders?*** It is typical for a tender assessment panel to be appointed, including technical and commercial experts as well as the sponsor and other stakeholders representing the investing organisation.
- ***How will confidentiality be assured?*** To maintain the competitive nature of the process, as well as for ethical reasons, confidentiality between bidders is maintained.
- ***Is there specific legislation governing contract award?*** The project professional needs to be aware of such regulation and ensure compliance. Award irregularity discovered at a later date might negate the terms of the contract or leave the investing organisation open to legal penalties.

Having assessed the tenders, it is usual to select a shortlist of contractors to invite for bid clarification discussions. When a preferred bidder is selected, a further engagement stage might be entered into to finalise the deal. It is good practice for a back-up candidate to be identified to call upon in the event that negotiations or relationships with the preferred bidder break down.

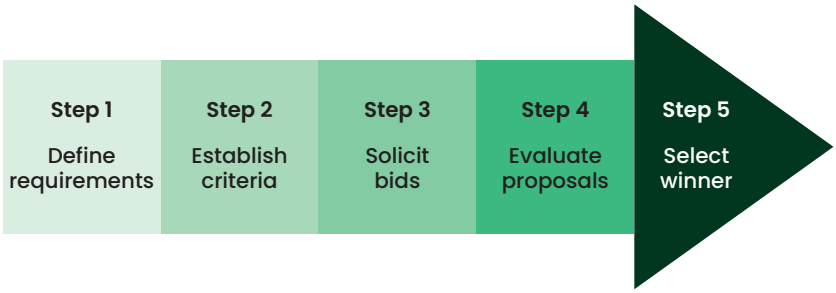

Figure 4.2.1 Essential steps in contract award

Recommended reading

- *The Project Manager's Guide to Purchasing: Contracting for Goods and Services* (2010) is a practical guide to the process of contracting. The book focuses on the steps between selecting a tender to placing a contract. Chapter 8 is dedicated to selecting the tenderers, chapter 9 to the enquiry process and chapter 11 is concerned with evaluating the tenders.
- Section 5 of *Guide to Contracts and Procurement* (2017) looks at preparing the contract terms and requirements, while section 6 is concerned with selecting the provider and awarding the contract. Developed by APM Contracts and Procurement Specific Interest Group, the guide covers each step in detail, utilising an input, activity and output structure.
- *Bids, Tenders and Proposals: Winning Business through Best Practice* (2015) adopts the supplier perspective, offering guidance on structuring bids and tenders. After explaining how to write and structure the documents and the process, chapter 23 explains how clients evaluate tenders.

4.2.2 Risk identification

Ensuring knowable risks are understood

Uncertainty and risk are ever-present features of project-based work. Organisations are better prepared to be successful when the governance board and team understand those uncertainties with the potential to materially impact on the achievement of objectives, either positively (upside opportunities) or negatively (downside threats).

The first essential step in risk identification is to be clear about the objectives that are 'at risk'. The overall appetite for risk of the investing organisation is translated into a set of calibrated impact scales that represent the objectives at risk, and the size of impact that would be tolerable and intolerable. For example, is a high impact on project cost a 5% variance to budget, 10% variance or greater?

Once impact scales have been defined, the project professional can facilitate the process to identify specific risk events.

Different people have different perceptions of what is risky and why. Because risk analysis is fundamentally perception-based, it is important for the project professional to engage stakeholders early to identify risks.

The objective of risk identification is to draw out all knowable risks to project objectives. Risk identification is a creative, divergent process that benefits from the input of a wide range of people using a method that does not restrict or bias their thinking. Working with stakeholders and the team to discuss risk is one area that requires a facilitative approach and a means of providing neutral challenge to address any decision bias (see 3.1.4). Workshops are often used for this purpose, although alternative approaches that enable individuals to contribute without any chance of group bias can be more useful.

To make sense of differing perceptions, it is important to describe risk events clearly, separating causes (facts now or stable planning assumptions), from risk events (situations that may occur), from effects (that have an impact on one or more of the project specific scales already defined). This enables subsequent analysis and management of risks.

It is also vital that the correct risk owner is defined for each risk event at this stage in the risk management process. Risk owners are individuals or groups who are best placed to assess and manage the specific risk. Working with the risk owner, the project professional ensures that risks are clearly described in the risk register before moving on to the risk analysis step of the risk management process.

When working in an iterative life cycle, or an adaptive phase in a hybrid life cycle, risk identification remains relevant but has a different focus. A risk-based approach is important as an embedded mindset. This mindset influences the design of each iteration and ensures a continual focus during deployment on what is risky and why, and what can be done about it.

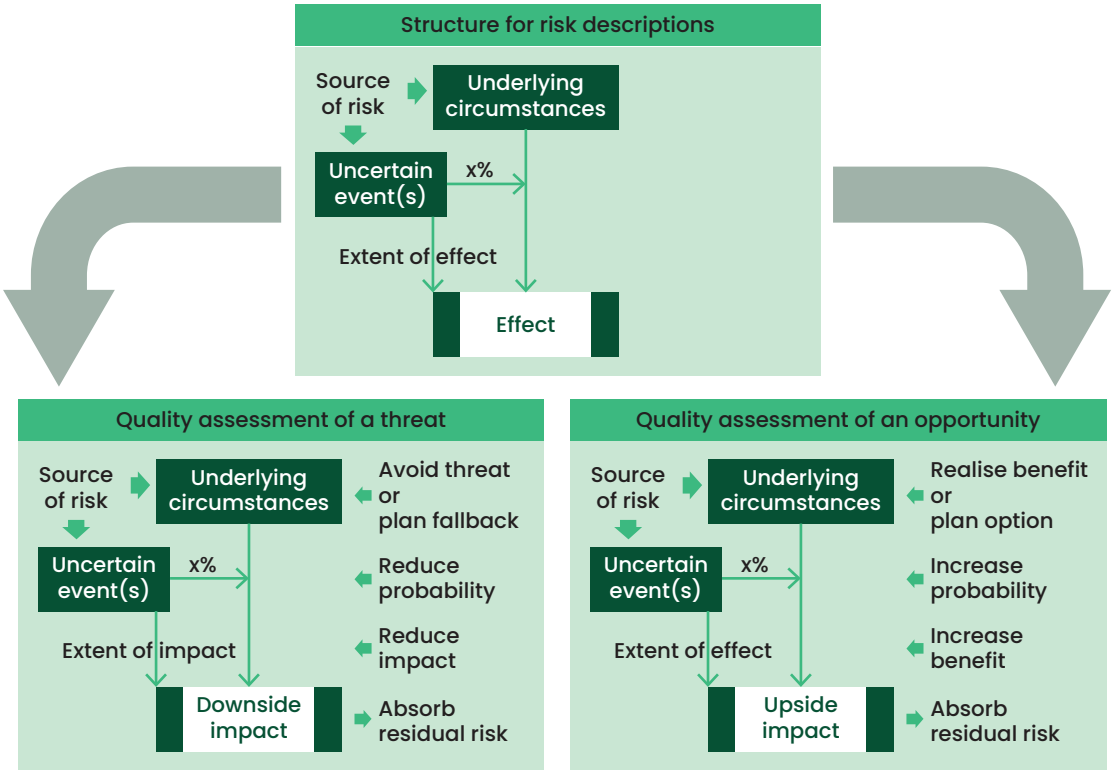

Figure 4.2.2 Describing risks using a defined structure

Source: *PRAM Guide (2010)*

Recommended reading

- APM's Risk Management Specific Interest Group *Project Risk Analysis and Management (PRAM) Guide* (2010) contains a detailed explanation of why it is important to identify risk events and how to do this in a way that is as unbiased as possible.
- *A Short Guide to Facilitating Risk Management: Engaging People to Identify, Own and Manage Risk* (2011) is a practical and easy-to-read book that addresses the many pitfalls associated with making risk management work in practice, including many tips regarding the risk identification step in the overall risk management process.
- *Managing Risk in Projects* (2009) places risk management in its proper context in the world of project management, and emphasises the central concepts that are essential to understand why and how risk management should be implemented. The book compares different standards and perspectives, showing the role and positioning of risk identification.

4.2.3 Risk analysis

Ensuring project plans take account of variability and risk events

Risk analysis is the assessment and synthesis of estimating uncertainty and specific risk events to gain understanding of their individual significance and/or their combined impact on objectives (Figure 4.2.3).

It is normal in projects to refer to qualitative analysis of specific risk events which is a prioritisation process, and to quantitative analysis. Quantitative analysis can be focused on specific risk-based decisions using techniques like decision-trees or sensitivity analysis, or to look at the combined effects of estimating uncertainty and specific risk events on the overall achievement of objectives to determine overall project risk.

The project professional works with risk owners to carry out basic qualitative analysis as a minimum to identify and prioritise risk events based on an assessment of the:

- probability/likelihood of occurrence
- size of impact on schedule, cost, benefits and potentially other objectives

For qualitative risk analysis to be as useful as possible, it is important to focus on the objectives at risk and then calibrate project specific impact scales, as described in 4.2.2. Calibrating project-specific impact scales enables meaningful qualitative risk prioritisation and evaluation of the cost–benefit of risk responses (see 4.3.3).

Many organisations only require a qualitative risk analysis to be conducted. Others require a qualitative risk analysis for all projects and a more sophisticated assessment of overall project risk for larger or more complex projects and in support of the investment decision.

Where an assessment of overall project risk is required, this typically happens using a probabilistic risk analysis approach using Monte Carlo simulation.

Inputs to a probabilistic risk analysis are:

- The baseline schedule and financial model of costs and benefits.
- Assessment of the range of uncertainty in estimates (e.g. productivity may vary by –5% and +15%; see also 4.2.4).
- The impact of each specific risk event expressed as a range, with a most-likely impact where this is relevant (see also 4.2.4).
- Mapping of estimates of uncertainty and risk events to specific parts of the schedule and/or cost/benefit model.
- An understanding of how line items in the schedule and cost/benefit model are correlated (e.g. where a risk event would impact on more that one area to a similar extent).

Outputs from a probabilistic risk analysis help the project professional to:

- Understand the probability of achieving particular out-turn dates, costs or benefits.
- Inform and influence decision-making about the chances of achieving the business case and plan.
- Agree the level of contingency to provide the required level of confidence (see 4.2.9).

All risk analysis relies on a good understanding of stakeholder perception of risks, so competent qualitative analysis is a necessary input to all business cases and plans at project or programme levels, regardless of the life cycle approach chosen.

Probability							
	0.9	**VHI**	0.045	0.09	0.18	**0.36**	**0.72**
	0.7	**HI**	0.035	0.07	0.14	**0.28**	**0.56**
	0.5	**MED**	0.025	0.05	0.10	0.20	**0.40**
	0.3	**LO**	0.015	0.03	0.06	0.12	**0.24**
	0.1	**VLO**	0.005	0.01	0.02	0.04	0.08
			VLO	**LO**	**MED**	**HI**	**VHI**
			0.05	**0.1**	**0.2**	**0.4**	**0.8**
			Impact				

Figure 4.2.3 Example probability/impact grid to qualitatively prioritise risk events

Source: *PRAM Guide (2010)*

Recommended reading

- APM's Risk Management Specific Interest Group has three relevant guides on the analysis of risk: *Project Risk Analysis and Management (PRAM) Guide* (2010), *Project Risk Analysis and Management Mini Guide* (2018) and *Prioritising Project Risks* (2008). These guides summarise current thinking on tools and techniques for qualitative and quantitative risk analysis.
- *Practical Project Risk Management: The ATOM Methodology* (2012) provides a step-by-step guide to how to implement a risk management process for any project. This includes detailed advice on how to make a qualitative risk analysis process as objective as possible as well as practical advice on building risk models for Monte Carlo simulation.

4.2.4 Estimation

Prediction of time and resources required to complete the scope of work

Estimation in a project context is the approximation of time and cost required to complete the scope of work to the defined quality requirements.

Depending on the life cycle adopted, estimates may be to deliver the project to the point of transition into use or may be for the planned working life of the product/service. As time progresses, it is assumed that more is known and therefore estimates become more accurate.

Estimates have multiple purposes:

- to conduct economic analysis for investment appraisals and option selection to support judgements about value for money (see 1.3.6 and 1.3.7)
- as an essential input for creating a resourced schedule (see 4.2.5, 4.2.6 and 4.2.7)
- to enable budget setting and considerations of affordability (see 4.2.8)
- as the starting point for risk analysis and contingency determination (see 4.2.3 and 4.2.9)

Estimates can be made using top-down or bottom-up methods (Figure 4.2.4).

Top-down estimates are useful in early life cycle, when detailed information is not available. Methods include:

- Parametric: Uses a statistical relationship between historic data and other variables to calculate an estimate.
- Analogous: The comparison with similar historical projects to determine the likely out-turn time and cost.

Bottom-up estimates are typically used to validate top-down estimates before a final investment decision. Methods include:

- Analytical: The addition of detailed estimates for labour and non-labour resources to complete the activities in scope.
- Delphi: The generation of a cost through team consensus.

All estimates are predictions of the future and so are fundamentally educated guesses. Project professionals work to make estimates as realistic as possible. External information from suppliers may be used where the supplier is best placed to provide estimates of time and cost. It is also vital to document assumptions underpinning an estimate to ensure the basis of estimates are understood and as a vital input to risk analysis and contingency determination.

Project professionals often use three-point estimates, to communicate the range of potential duration, cost or benefit and to make a judgement about any most-likely point in that range. Three-point estimates are superior to single-point estimates that hide the assumptions underpinning the estimate.

Iterative life cycle estimating requires the same level of data, documentation and rigour as adopted for linear life cycles. An overall estimate of a project or programme with an iterative life cycle will be required for the business case. Estimating within an iteration focuses on aggregating the expected duration of individual tasks or using story points to obtain an indication of overall progression towards a user story.

Estimating is not a one-off activity utilised for the investment appraisal and business case only, but a continuous process used for the adjustment of the integrated project management plan as the project progresses through the life cycle.

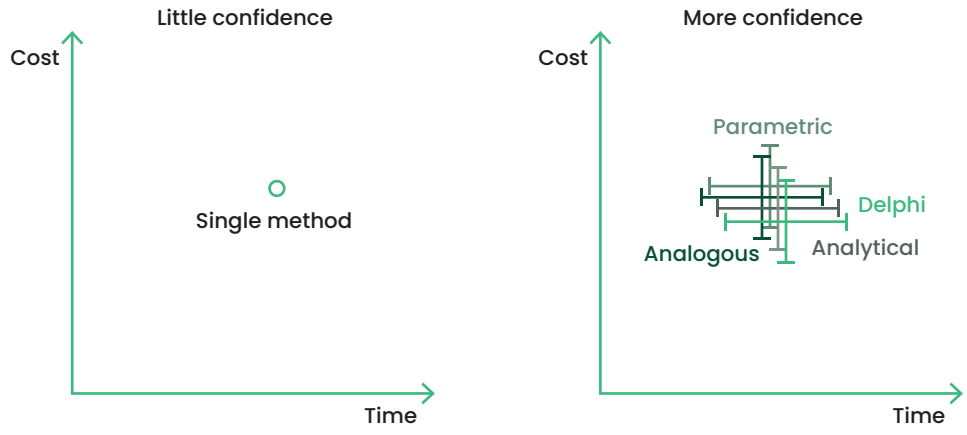

Figure 4.2.4 Multiple estimation as a source for confidence

Recommended reading

- The APM/Association of Cost Engineers (ACostE) *Estimating Guide* (2019) is a practical document for project management on approaching estimating, types of estimates and the process.
- *Working Guides to Estimating and Forecasting*, Vols 1–5 (2018) is a more detailed academic, yet humorous, guide to estimating, with a large body of work dealing with the theories essential to estimating.
- *Systems Cost Engineering* (2009) provides a number of practical applications for the use of parametric cost models within projects, including supplier assessment, technology insertion and software estimating.

4.2.5 Scheduling – critical path

Time-based planning with an emphasis on activities

Time scheduling is a collection of techniques used to develop and present schedules that show when work within a project is planned to be performed. A project schedule can reside within a programme or portfolio schedule and have dependencies on the completion of other projects.

There are principally two types of scheduling: critical path and critical chain (see 4.2.6). The critical path approach places the emphasis on the activities in a project and understanding the shortest time to complete all activities in a logical order.

To do this, interdependencies (alternatively called precedence relationships) between each activity that forms the scope of work to be completed need to be agreed. Establishing the logic between the activities enables a precedence network to be determined. Then estimates of duration (based on the effort required) can be made. Ideally, three-point estimates of duration are made for each activity, i.e. best and worst cases and the most-likely point in that range.

If the estimated duration is predicted by the project professionals within a team, it is more likely to be accepted, rather than having a schedule imposed by one person or from the programme level.

Critical path analysis is now almost exclusively performed using desktop scheduling software, although it is a key skill for project professionals to understand how this is done so they can verify that the project schedule is built on complete and defensible logic (Figure 4.2.5).

For practical reasons, a rolling wave planning approach to scheduling is useful, with near-term activities considered in detail and later stages of the project considered at a more abstract level. Within a large project, there can be a number of individual schedules to deal with different aspects of the project. The master schedule combines, coordinates and keeps track of all subordinate schedules within the project scope.

When using an iterative life cycle, rather than considering scope and quality as fixed and estimating time (and cost), a timebox approach is used — a fixed period of time with determined resources, during which scope is completed to quality as efficiently as possible. Timeboxes in projects are often sized for a few weeks and some methods refer to these timeboxes as ‘sprints’.

Timeboxes and an iterative life cycle approach are commonly used to manage technologically novel or risky projects. The project is repeatedly tasked with satisfying requirements, iteratively moving the solution towards a satisfactory conclusion in short, set periods of time.

In programmes, defined periods of time that are planned to achieve a step change in capability and benefits realisation are usually referred to as 'tranches'.

The results of all these techniques are usually presented using a visualisation that shows activities as bars on a timeline, known as a Gantt chart.

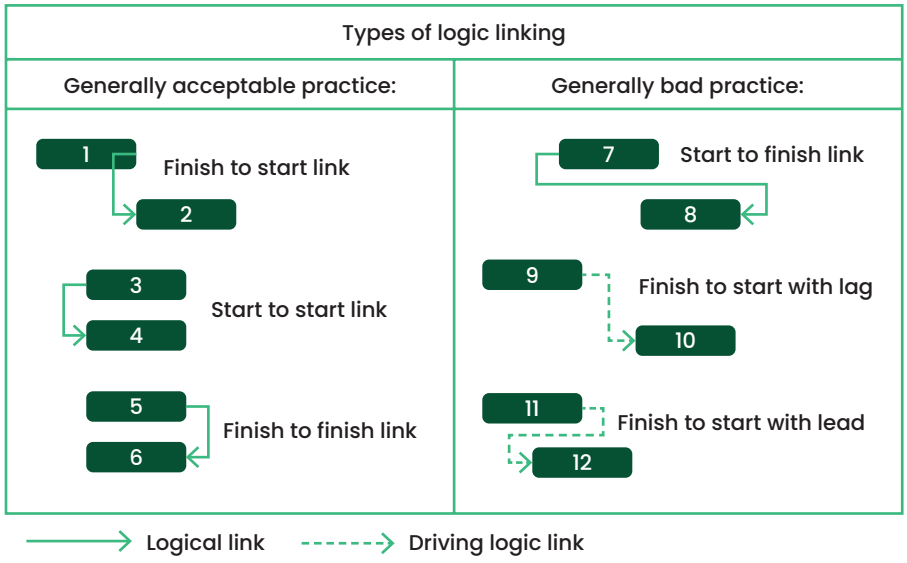

Figure 4.2.5 Precedent relationships in critical path analysis

Source: *Planning, Scheduling, Monitoring and Control (2015)*

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group guide, *Planning, Scheduling, Monitoring and Control* (2015) explains in section 6.1 how to schedule projects in detail, with definitions of key terms related to the critical path method.
- *The Scheduling Maturity Model* (2012) provides insight into the practices needed to build a fit-for-purpose project schedule.
- *APM Introduction to Programme Management* (2016) provides the relationship between the project schedule and the master schedule and programme.

4.2.6 Scheduling – critical chain

Time-based planning with an emphasis on resources

Section 4.2.5 described scheduling using the critical path method. This section focuses on the critical chain method, alternatively called 'resource critical path' because it places the emphasis on the resources (labour and non-labour) in a project, while the critical path emphasises the activities.

The critical chain approach attempts to keep resources at a constant utilisation, avoiding common working practices such as:

- multitasking between activities
- not starting planned work at the earliest start date and committing time until it is finished

Both these practices result in any float (time contingency) in the estimate being lost to the overall project.

Using the critical chain method, estimates are optimistic (the best case in a three-point estimate or a percentage of a single-point estimate) and rather than holding time contingency within the estimate, it is stripped out and included as a buffer for a (critical) chain of activities (Figure 4.2.6).

For this method to work, people and other resources need to be available at the time when an activity can start, and achieving this requires the team and wider stakeholders who may need the same resources for other work to agree on how this will be achieved.

Critical chain depends on a culture being created within the project, where it is accepted that best case estimates will rarely be achieved but on the understanding that all work will be completed as soon as possible and that the buffer for the chain is available to protect the whole. Using this approach, once resources (people or equipment) are allocated, they focus solely on completing the activity to the required quality standard as quickly as possible. The aim is to overcome the temptation to delay activities or to do extra work when there seems to be enough time. Rather than monitoring start and end dates the focus is on encouraging resources to act as quickly as possible, regardless of dates.

The rate of consumption of the buffer is used to control the project schedule and subsequent financial performance (see 4.3.1).

In projects where time is critical, there is empirical evidence that out-of-the-ordinary results can be achieved.

The purpose of critical chain is the same as critical path analysis, i.e. to:

- enable analysis of the work to be conducted
- determine the start and end dates for the work
- use scarce resource efficiently

If resources were unlimited and always available, then the critical path and critical chain method for scheduling would give the same result.

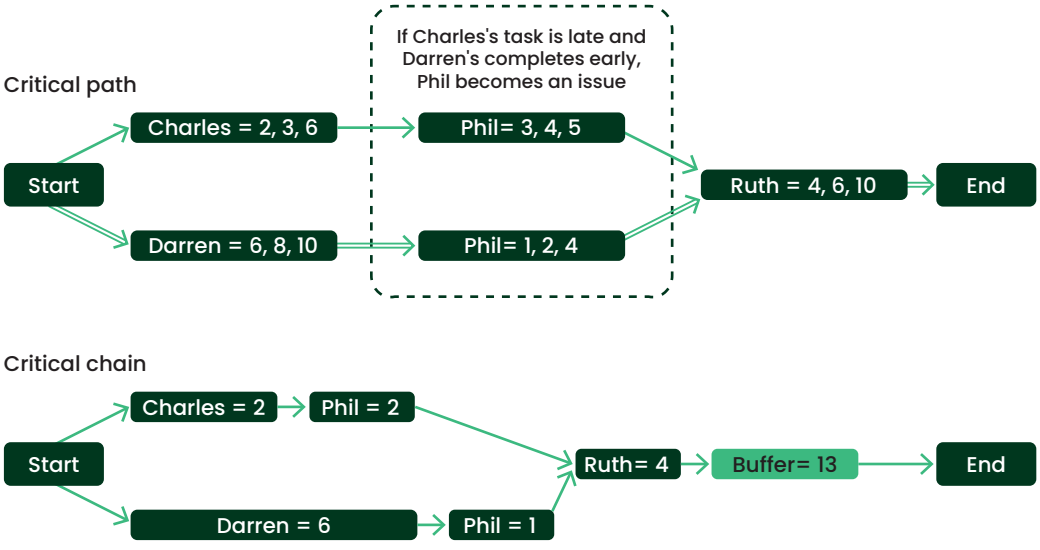

Figure 4.2.6 Comparing scheduling approaches

Recommended reading

- *Critical Chain* (1997) is an accessible business novel and the first publication to introduce critical chain as a way of managing projects, with the main emphasis on the resources required to execute project tasks. The book dismisses the ideas of the engineering estimate and the project milestone and offers new alternative concepts such as project buffers and multitasking to replace them, supported by the theory of constraints.
- *Critical Chain Project Management* (2005) offers detailed coverage of all aspect of the critical chain scheduling approach, including measuring, control, risk management, multiple project selection, critical chain networks and the application of lean and six sigma techniques.
- *The Executive Guide to Breakthrough Project Management: Capital & Construction Projects; On-Time in Less Time; On-Budget at Lower Cost; Without Compromise* (2016) is primarily focused on construction and capex projects but presents critical chain thinking as a way of reducing the risk, cost and duration of projects.

4.2.7 Resource optimisation

Managing scope, quality, time and cost in a constrained system

Project professionals appreciate that projects reside within larger organisational structures. In a standalone project, the sponsor defines the relative priorities of scope, quality, time, cost and benefits realisation. Where projects are within programmes and/or portfolios, further constraints are imposed.

As a result, project professionals are not able to make decisions alone that would result in:

- changes to scope
- different acceptance criteria (quality) of outputs
- delivering outputs, outcomes and benefits later than promised

Instead, this requires them to use scarce resources optimally. Beyond the critical chain approach (see 4.2.6), there are two basic options available to the project professional: resource levelling and resource smoothing.

Resource levelling answers the question: 'With the resources available, when will the work be finished?' Project professionals use levelling when projects are dependent upon limited resources, for example test pilots or specialist testing equipment.

Using a linear life cycle, fitting the scope of work into any resource cap and holding the quality results in delay to planned completion dates of activities and an overall increased duration. Projects using an iterative life cycle ensure requirements are prioritised and implemented within the pre-allocated resources, varying the scope and quality achieved within the timebox, if needed. However, if all the scope is needed to the specified quality, additional time is inevitably needed, so specific features may be scheduled for a subsequent iteration.

Resource smoothing is used when scope and quality are not negotiable, and time is relatively more important than cost. This involves adding resources, for example more people, the same number of people working longer hours, or additional equipment and then trying to get a 'smooth' usage of resources, avoiding peaks and troughs of resource demand. To achieve a smoothed resource profile may require some redefinition of the order of some of the work, where the logic used originally was discretionary not mandatory, for example where work could be done in parallel rather than in sequence. Achieving the optimally resourced schedule can be a creative process requiring multiple iterations to get the best result possible.

There is, of course, a finite limit to the resource that can be put into some tasks due to constraints on physical space, organisation or the time taken for a process to complete. If resource really is finite, there are no more hours available from skilled people or no more equipment available, then there is no option but to extend durations and the overall project time to accommodate this (Figure 4.2.7).

The result of resource optimising, whether involving the critical chain approach or resource levelling or smoothing of a critical path-based schedule, is a curve that shows the planned deployment of resource (and therefore cost) to complete the scope and quality over time. This idea is expanded further in 4.2.8.

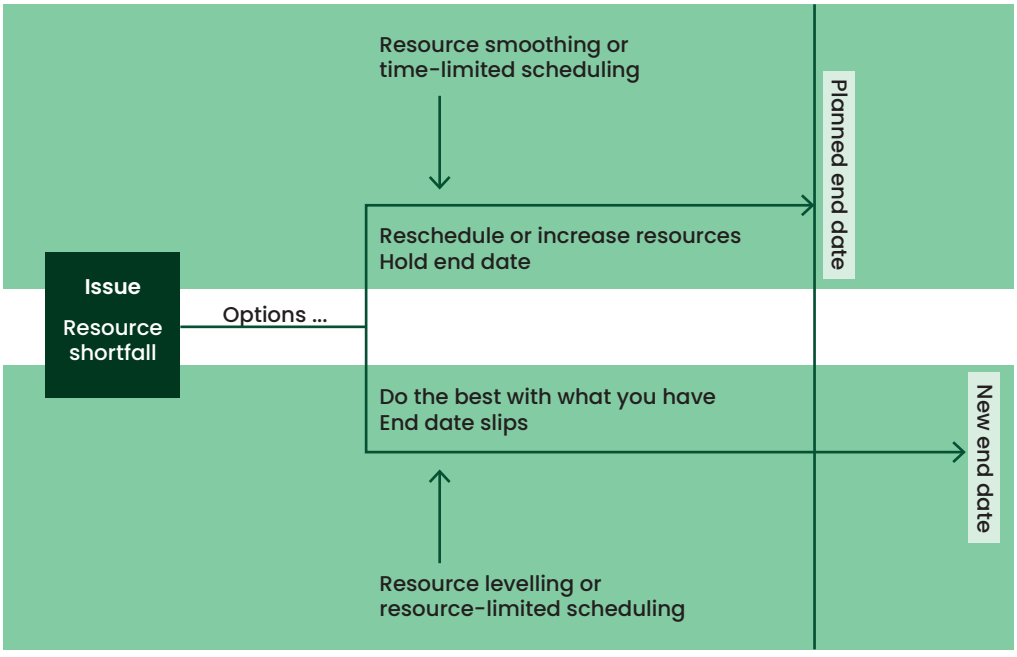

Figure 4.2.7 Resource levelling and smoothing options

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group guide *Planning, Scheduling, Monitoring and Control* (2015) explains in detail in section 16.3 how to perform resource levelling and resource smoothing.
- *Project Management* (2013) covers most aspects of project management, with two chapters dedicated to scheduling resources. Chapter 15 covers the basic principles, explaining resource-limited and time-limited scheduling, whilst chapter 16 offers practical advice on which resources to optimise.
- *The Handbook of Project-Based Management: Leading Strategic Change in Organizations* (2014) looks at delivering beneficial projects. The chapter on performance also looks at resources, offering alternative views of resource smoothing for a project scheduled by early start and late start, and for smoothing focused on prioritising different types of resources.
- *The Resource Management and Capacity Planning Handbook* (2014) is a dedicated guide for practitioners. The book begins by exploring the current state of affairs in resource planning, while chapter 3 addresses things that cause havoc with resource efficiency and suggests approaches for dealing with the issues.

4.2.8 Cost planning

Understanding where costs fall over time

Cost planning is an essential part of the project management process, the creation of a justified and credible cost for a project is a good start; however, the forecasted cost alone is not enough to enable project control. In addition, project managers need to understand where costs fall in their schedule to manage resource demand, supplier's payments and funding requests.

The resource optimised schedule (see 4.2.6 and 4.2.7) is the essential input to cost planning — to build up a picture of the cost of the planned resources over time.

In some organisations, all resources that will consume costs will be included in the schedule, e.g. volume of materials to be used, or phasing of purchasing of new hardware to support software development. Other organisations only schedule labour and enter non-labour costs directly into the cost model.

Where subcontracted resources are provided and committed contractually to provide as much labour or other resource as needed to meet the agreed timescales, the budgeted amount is the fixed price of the contract and remains at this level irrespective of actual resource used by the supplier.

Bringing labour and non-labour costs together, the cost profile for the resource optimised schedule is known as the planned value or budgeted cost of work scheduled (BCWS). The BCWS is the cost profile against which the project is judged in terms of progress (see 4.3.1).

There are additional cost planning aspects that the project professional takes into account during integrated planning including (Figure 4.2.8):

- **The relationship between fixed and variable costs**: Fixed or non-recurring costs happen once in a project life and contribute a single cost, for example machine setup, site activation, research and development, etc.; while variable or recurring costs occur periodically as an event in a project and contribute multiple costs with a cumulative effect, for example component machining, maintenance at failure events, production line tasks, etc.
- **Likely periodicity of funding release by the sponsor and governance board**: In an iterative project life cycle, the release of funds may be more frequent due to the close interaction with the sponsor as work is completed in short intervals; whereas in a linear life cycle, funds may only be released at decision gates, when the costs spent to date are understood and costs forecasted for the future are approved through the updated business case.

The level of detail required is dictated by the project phase, more detail is typically necessary in the near term, while later phases of work can be maintained at a higher level of granularity.

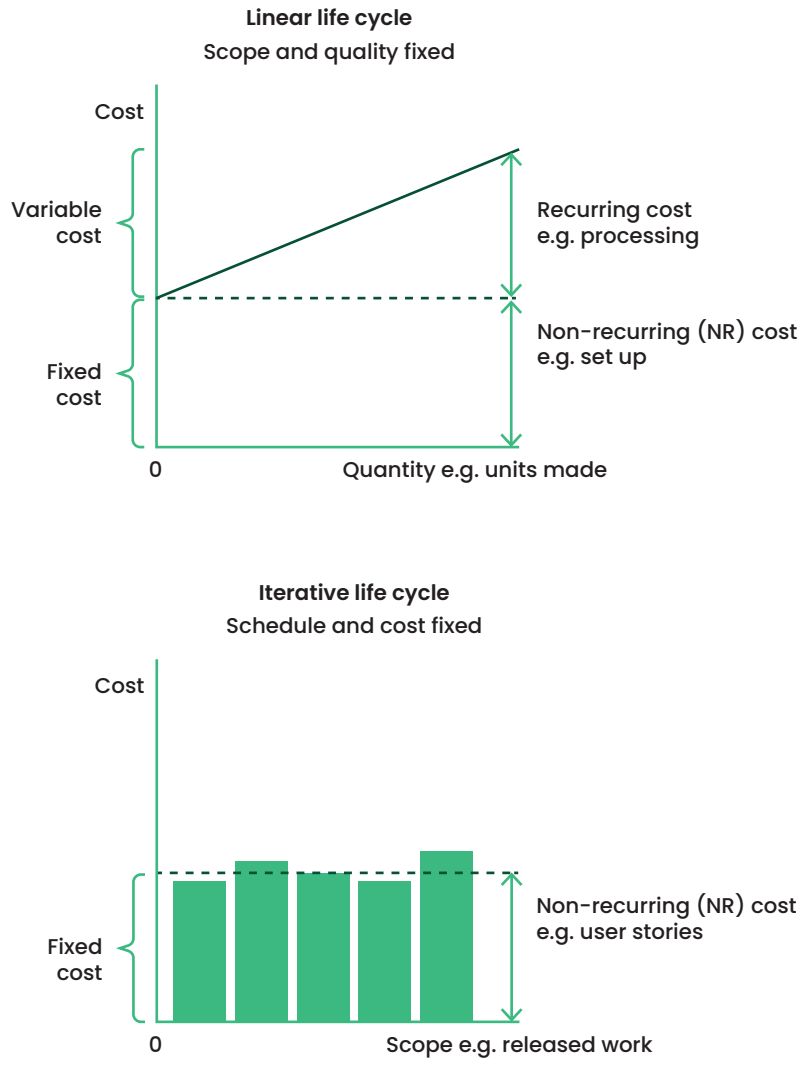

Figure 4.2.8 Fixed and variable cost for linear and iterative life cycle approaches

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group guide, *Planning, Scheduling, Monitoring and Control* (2015), explains in section 12 how to construct the planned value (budgeted cost of work scheduled) forecast.
- NASA, *Integrated Baseline Review (IBR) Handbook* (2016), is a practical guide to conducting an IBR, including preparation, conduct of the IBR and closeout in the review.
- APM's Earned Value Management Specific Interest Group guide, *Earned Value Management Guidelines* (2008), has an explanation of cost planning and setting the planned value (budgeted cost of work scheduled) forecast.

4.2.9 Contingency planning

Ensuring plans reflect required confidence levels

It is important for the project professional, via the sponsor and governance board, to agree the desired confidence levels in estimates and plans. It is fine to have an optimistic plan — this can be motivating for the team and can drive good results — but it is wrong to have a plan that is optimistic but that some stakeholders believe is easily achievable.

Contingency is resource set aside for responding to identified risks. Contingency is needed to match the gap between the 'un-risked' (deterministic) plan and the desired level of confidence. In addition to contingency for known risks (sometimes referred to as the risk budget), some organisations also hold a management reserve to make provision for unidentified risks (sometimes referred to as 'unknown unknowns') or for those identified risks that have very low likelihood of occurrence but would have a very high impact if they did occur (Figure 4.2.9).

Contingency is most typically expressed as:

- **Monetary value**: An allowance for dealing with impacts on cost or financial benefit.
- **Time**: An allowance for dealing with impacts on schedule.

When using an iterative life cycle and timeboxes, it may be relevant to think of contingency in terms of scope/quality, i.e. resource set aside to complete outputs to the desired specification. Timeboxes may also incorporate lower priority items that can be sacrificed to secure emerging priorities.

If it is normal in an organisation to perform probabilistic risk analysis using Monte Carlo simulation, then confidence levels in plans will typically be expressed in terms of probabilities. For example, the P90 cost (the out-turn cost of the project with a 90% confidence level based on the uncertainty and risk considered), or the P50 schedule (the end-date that the analysis predicts there is a 50/50 chance of achieving).

In other organisations, the qualitative risk analysis can be used to predict confidence levels with lower precision, for example by looking at the expected value of the risks in the risk register or making an experience-based judgement.

In all cases, contingency is clearly identified, for example as an identified line item in a budget, an additional timeboxed iteration in a schedule or as a buffer to protect a critical chain of activity. Contingency is not 'hidden' extra time or money to deliver planned scope.

It is normal for contingency to be held at different levels to deal with different sorts of risk and to support management of the contingent funds/time. Most organisations will proportion the contingency between the project manager, project sponsor or programme manager and the governance board. Allocation of contingency reflects the level of control desired.

The management of contingency and its links to risk management, issue management and change control is covered in 4.3.4.

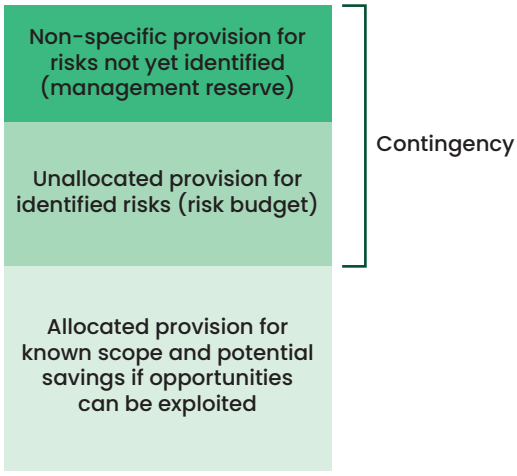

Figure 4.2.9 Provision for known and unknown risk

Source: *Adapted from Interfacing Risk and Earned Value Management (2008)*

Recommended reading

- APM's Risk Management Specific Interest Group *Prioritising Project Risks* (2008) covers a wide range of techniques for analysing overall project risk as an input to contingency determination. It also references other specific texts.
- *Practical Schedule Risk Analysis* (2009) provides detailed guidance on how to build a competent risk model and perform a project schedule risk analysis using Monte Carlo simulation so that schedule contingency can be determined.
- *Why Can't You Just Give Me the Number? An Executive's Guide to Using Probabilistic Thinking to Manage Risk and to Make Better Decisions* (2014) covers the science behind quantitative risk analysis in an accessible way, addressing the challenges of decision bias and communicating outputs to stakeholders in ways that they can be understood to make contingency plans.

4.2.10 Deployment baseline

Agreeing the integrated plan to enable managed deployment

The culmination of all the work described in the 13 topics in 4.1.1 to 4.2.9 is the deployment baseline, documented in the integrated project management plan (PMP) (Figure 4.2.10).

The deployment baseline and PMP are approved at the decision gate associated with the approval of significant costs on the project. Some projects may have an integrated baseline review to provide assurance prior to approval.

The deployment baseline is the starting point for progress monitoring (see 4.3.1) and implementation of change control (see 4.3.6).

When using a linear project life cycle, the baseline (scope, quality, resourced schedule and associated cost) is set for the whole project and the planned value curve is understood for the whole project. In an iterative project life cycle, the baseline resources and schedule are determined, but the achievement of scope and quality may vary from the plan as teams may have autonomy to re-prioritise and act on new knowledge. Any work not achieved in the timebox is returned to the backlog.

Linear life cycles treat scope and quality as the driver and calculate the consequential consumed time and cost. Iterative projects commit to set resources over limited periods to deliver products that are developed over successive cycles.

The approval of the deployment baseline is a good time to reconfirm the boundaries of the project — both what is in and out of scope, and how the project interfaces with other projects or business-as-usual activities in a programme or strategic portfolio. Any lack of 'fit' would require rework of the integrated plan prior to approval — either to adjust scope or to make provision for a different amount of cost contingency to take account of exposure to risks, and to fund risk responses that are not built into core scope.

If the project is using the critical chain approach to scheduling, then the buffer sizes are approved and frozen in the deployment baseline to enable the monitoring of performance.

It is likely that the version of the business case approved at the previous decision gate contained many assumptions. At the point of agreeing the deployment baseline, these assumptions need to be clarified or replaced with definite plans.

It is good practice for an integrated baseline review to be conducted by an independent reviewer. An integrated baseline review is a risk-based review conducted by project professionals to gain a mutual understanding between all parties on the risk inherent in the baseline costing and to ensure it is realistic for accomplishment of the baseline scope of work within the schedule and budget.

Once created, understood by the governance board and project team, and approved, the deployment baseline and PMP provide the starting point for successful deployment.

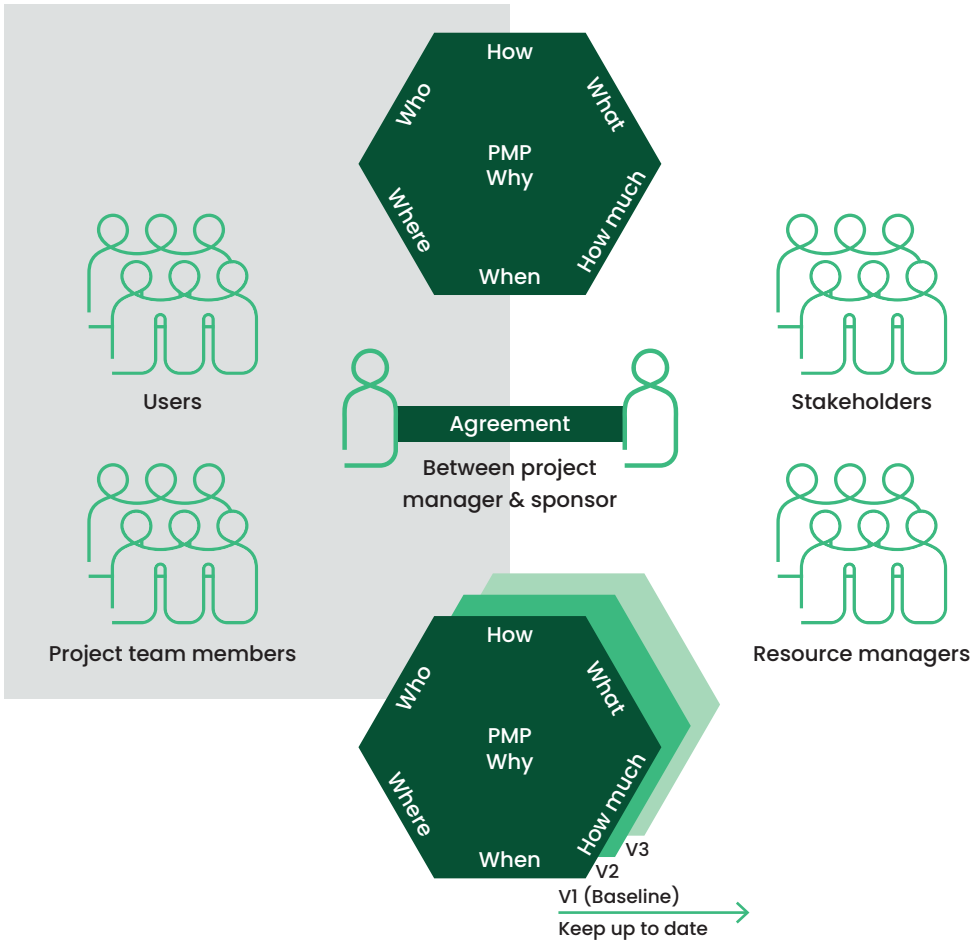

Figure 4.2.10 The project management plan as the baseline for managed deployment

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group guide, *Introduction to Project Control* (2010), provides the what, why, when, who and how of project controls covering scope, quality, time, resource and cost planning and the creation of the project baseline.
- APM's Planning, Monitoring and Control Specific Interest Group guide, *A Guide to Conducting Integrated Baseline Reviews* (2016), has a detailed step-by-step approach to integrated baseline reviews and provides insight into the timing, roles and responsibilities.
- APM's Earned Value Management Specific Interest Group guide, *Earned Value Management Handbook* (2013), explains the relevance of the deployment baseline to earned value management.
- APM's Planning, Monitoring and Control Specific Interest Group White Paper on *Agile and Earned Value* (2013) provides an explanation of the application of earned value when adopting an iterative life cycle.

Full references for Section 4.2

4.2.1

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4.3
Controlling deployment

It may seem strange that the work that takes up the majority of time in any project, programme or portfolio endeavour is contained in one section at the end of the *APM Body of Knowledge* but readers will recognise that controlling deployment is dependent on a huge amount of up-front work, as described in the previous 72 topics.

Controlling deployment, in part, is about ensuring there is good information about progress and performance. This informs correction action and decision-making to ensure that the business case is delivered as well as possible.

It is also about rigour in the areas of issue management, change control, configuration management and quality control — to ensure that good work put into early life cycle planning is not squandered by a lack of attention to detail in implementation.

Controlling deployment is also very much about people and relationships: in the supply chain, to ensure that contract management is effective, and in the wider team and stakeholder context, to ensure that conversations about risk and reward are alive and adding value.

In the final analysis, people deliver projects and strong relationships with people underpin the administrative and bureaucratic disciplines required during deployment.

This section, written for all people working to plan and deliver either standalone projects or projects within programmes and portfolios, addresses the following topics:

4.3.1 Progress monitoring and reporting: Tracking performance against the deployment baseline

4.3.2 Contract management: Monitoring and managing supplier performance

4.3.3 Risk management: Being ready to respond to minimise threats and maximise opportunities

4.3.4 Contingency management: Controlled release of management reserves

4.3.5 Issue management: Adapting the plan to resolve issues

4.3.6 Change control: Managing variations and change requests in a controlled way

4.3.7 Configuration management: Ensuring the continual fit of configuration items

4.3.8 Quality control: Safeguarding the conformance of outputs and outcomes to requirements

4.3.1 Progress monitoring and reporting

Tracking performance against the deployment baseline

There are three elements required for any performance measurement: a baseline to measure against (see 4.2.10); data on actual performance; and an assessment of the implications of the performance to date. Progress monitoring enables meaningful reports to be presented to the sponsor and governance board to enable appropriate decisions to be made to improve performance.

Effective progress monitoring encompasses many different approaches. The project professional and sponsor agree and establish methods appropriate to the work to monitor all aspects of the project, including:

- achievement of planned scope to the required quality
- motivation and satisfaction of team members
- performance of contractors and the health of the relationships in the supply chain
- committed costs and cash-flow
- changes to the risk profile and impact on time buffers or cost contingency
- effectiveness of communication with stakeholders

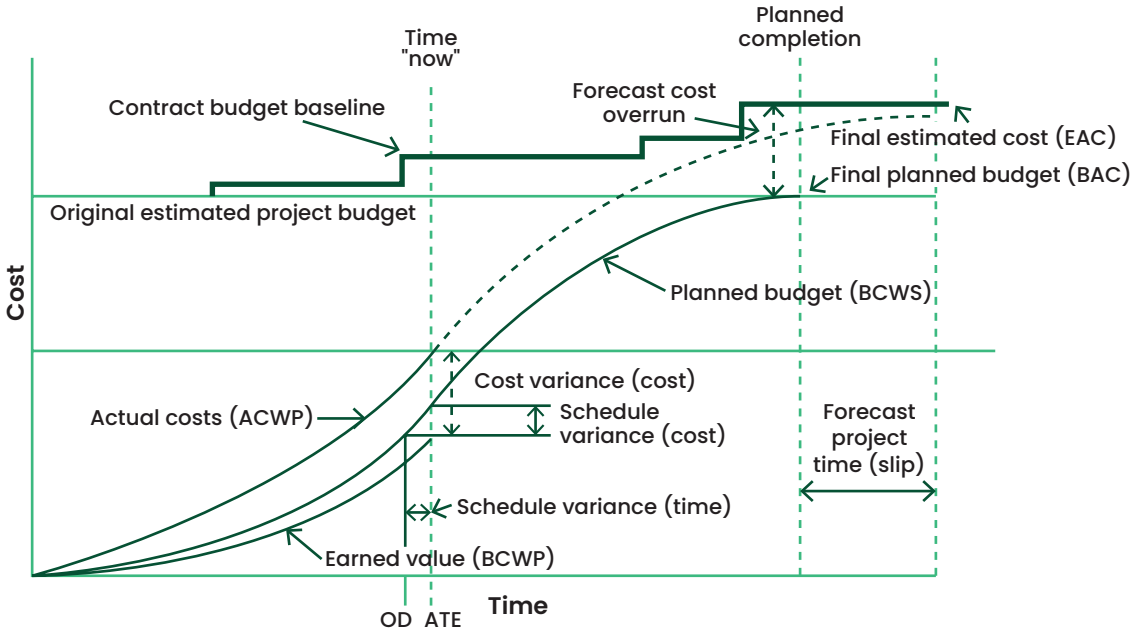
Methods used are often determined at programme, portfolio or organisational level. Earned value analysis is the optimal way of tracking actual spend and actual work achieved using the same units (Figure 4.3.1). Earned value analysis is superior to separate tracking of spend or work achieved as it provides opportunities to look at efficiency of spend through the cost performance index (CPI) and productivity through the schedule performance index (SPI).

Primary progress and performance tracking is best done by those responsible for the work although in many organisations with established project controls, monitoring of progress in terms of time, cost and risk is performed in a project management office (PMO). This does not absolve the project manager and team from monitoring progress in other, non-quantifiable, areas of the project, for example stakeholder and team mood and satisfaction. Frequency of monitoring and any subsequent reporting depends on the circumstances and is agreed with the sponsor. Monthly monitoring and reporting of time, cost, risk and earned value is appropriate for many projects, but some, for example turnaround maintenance on a critical asset may warrant weekly, or daily tracking.

The outputs of progress monitoring are typically presented quantitively and use 'traffic-light' approaches to flag areas that are in control or out of control to varying degrees. Individual elements of the plan may be reported individually or in a dashboard format covering multiple areas of performance. The important thing is that the progress is clearly identified and in enough granularity to pinpoint any issues and address them.

Iterative and timeboxing approaches utilise burndown charts to track completion and measure progress against their forecasts. These used to calculate the velocity of the team in order to improve future estimates.

Where progress monitoring and reporting highlights issues that cannot be recovered, replanning is required to establish an amended baseline. Formal governance of this process is established, with close links to all remaining topics in this section.



KEY

EAC	Estimate at completion
BAC	Budget at completion
BCWS	Budgeted cost of work scheduled
BCWP	Budgeted cost for work performed (earned value)
ACWP	Actual cost of work performed
OD	Original duration planned for the work to date
ATE	Actual time expended for the work to date

Figure 4.3.1 Insights available through earned value analysis

Source: *Earned Value Management: APM Guidelines (2008)*

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group, *Guide to Planning, Scheduling, Monitoring and Control* (2015), includes in section 22 a comprehensive guide to the use of multiple performance measuring methods and how to report using them.
- APM's Earned Value Management Specific Interest Group, *Earned Value Management Handbook* (2013), provides a detail account of how to establish a commitment to use of earned value management and how to establish monitoring and reporting of the data.
- While chapter 25 of *Project Management* (2013) is dedicated to earned value analysis and cost reporting, including the prediction of final project costs, chapter 22 is concerned with managing progress. Coverage includes collecting progress information, managing subcontractors, corrective measures, immediate action orders, progress meetings, as well as internal progress reports for management and external progress reports for clients.

4.3.2 Contract management

Monitoring and managing supplier performance

Following contract award, project professionals set up arrangements to monitor and manage supplier performance in line with the contract (Figure 4.3.2).

The extent of this activity is tailored to the size of the contract and its significance in enabling success of the overall project or wider programme or portfolio. However, there are some important controls relevant to all contracts that project professionals put in place:

- **Understanding of the contract obligations**: Regardless of who was involved in contract award, post-award it is useful to hold an early meeting to make sure that the people involved in delivering the contract from the supplier and the people involved in managing the contract from the client share an understanding of their respective obligations and expectations. Differences can be resolved early and amicably.
- **Planned meetings to review progress**: Technical and commercial matters are likely to be discussed throughout the contract and different people may be involved in different discussions. Regular reviews between relevant parties support transparency and the early identification of any issues.
- **Formalised reporting, communication and escalation routes**: Standard reporting tools, conventions and techniques ensure there is clarity of understanding between both parties. Where monitoring of the work gives early warning of issues with the contract (from either the supplier or client side), an escalation route that has been agreed in advance saves time and prevents conflict (see also 4.3.4 and 4.3.5). The monitoring approach is designed to ensure visibility of risks or issues, with a direct impact on contractual clauses such as milestone payments or any bonus or penalty provisions. The contract may also contain provisions that bind the client to responding to contractor notices within set timescales so it is important that there is an understanding of who reviews and evaluates contractor claims, and how and when responses and any payments are made.
- **A route to sharing perceptions of risk with the work**: The degree to which risks are shared may be impacted by the method of remuneration in the contract, for example which party is carrying cost risk, but it is highly desirable that the people involved in the work are open in sharing risks and to putting in place effective responses (see 4.3.3).

In addition, it is highly beneficial for all parties to agree a behavioural charter covering client and supplier staff involved in the project. This is a useful way of building a coherent project culture and for supporting the development of a high-performing team (see 3.2.3).

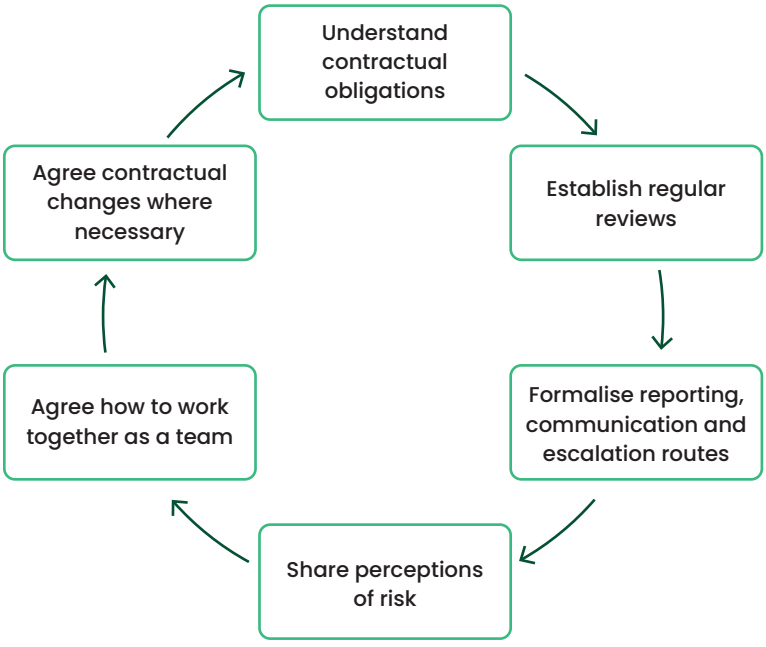


Figure 4.3.2 Controls that support contract management

Recommended reading

- APM's Contract and Procurement Specific Interest Group, *Guide to Contracts and Procurement* (2017), details the steps and considerations to be made when managing a previously agreed contract in chapter 7.
- *Contract and Commercial Management: The Operational Guide* (2011) addresses most aspects of managing contracts from a practical perspective. This useful resource is written specifically for non-contracting professionals and includes case studies and check lists. Chapter 16–18 address the management aspects of contracts including transition to a new contract, managing performance and managing changes and disputes.
- *Contract Management: Core Business Competence* (2017) is a credible and authoritative resource which adopts an industrial-commercial perspective. Specific chapters address mobilisation and getting started, deciding what to do when things go wrong and managing for success, which encompasses a discussion of the traits of a good contract manager, staying on top of detail and planning for exit.

4.3.3 Risk management

Being ready to respond to minimise threats and maximise opportunities

The risk owner uses information collected during risk identification (see 4.2.2) and risk analysis (see 4.2.3) to determine whether it makes sense to proactively invest previously unplanned time and money to bring the exposure to risk within tolerable levels. Deciding when to take the risk or invest in increasing certainty is influenced by the appetite for risk of the investors.

If there is a justification for investing time and money proactively to increase certainty, the risk owner makes provision to implement the planned responses (time, resource, cost) and updates the integrated project plan (deployment baseline) accordingly.

There are two main types of response to threats and opportunities — a proactive response and a reactive response (Figure 4.3.3):

- **Proactive response**: A planned and implemented response undertaken to address the likelihood of the risk occurring or the size of the impact if it did occur. Responses include avoiding or reducing a threat, or exploiting or enhancing an opportunity. Responses ideally focus on the cause of the risk. Sharing risk in the supply chain is also a type of proactive response. Cost risk may be transferred to another party, for example an insurer, but risks to schedule cannot be transferred.
- **Reactive response**: A provision for a course of action that will only be implemented if the risk materialises. Such responses accept the risk but with a contingent response ready to go. Some reactive responses may require funding to be built into the integrated plan because they are designed to monitor the risk and detect changes early.

Risk is a future construct and different people perceive risk in different ways. The conscious or subconscious choices that individuals or groups make on how to respond to a risky situation is based on their perception and risk attitude. There are many conscious, subconscious or affective factors that influence perception of risk and risk attitude and the project professional works with the team and wider stakeholders to understand these as far as possible and to challenge in order to address any systemic bias.

Keeping the risk conversation alive is crucial to the ongoing delivery of any project. The risk management process is iterative to reflect the dynamic nature of project-work, capturing and managing emerging risks and reflecting new knowledge in existing risk analyses and estimates of contingency required. A risk register is used to document risks, analysis and responses, and to assign clear ownership of actions.

Information on priority risks is escalated to governance boards to manage stakeholder expectations, enable quality conversations and evidence-based decisions.

The final part of the management process is to ensure that all risks are closed when they have occurred, or that there is no possibility of them occurring.

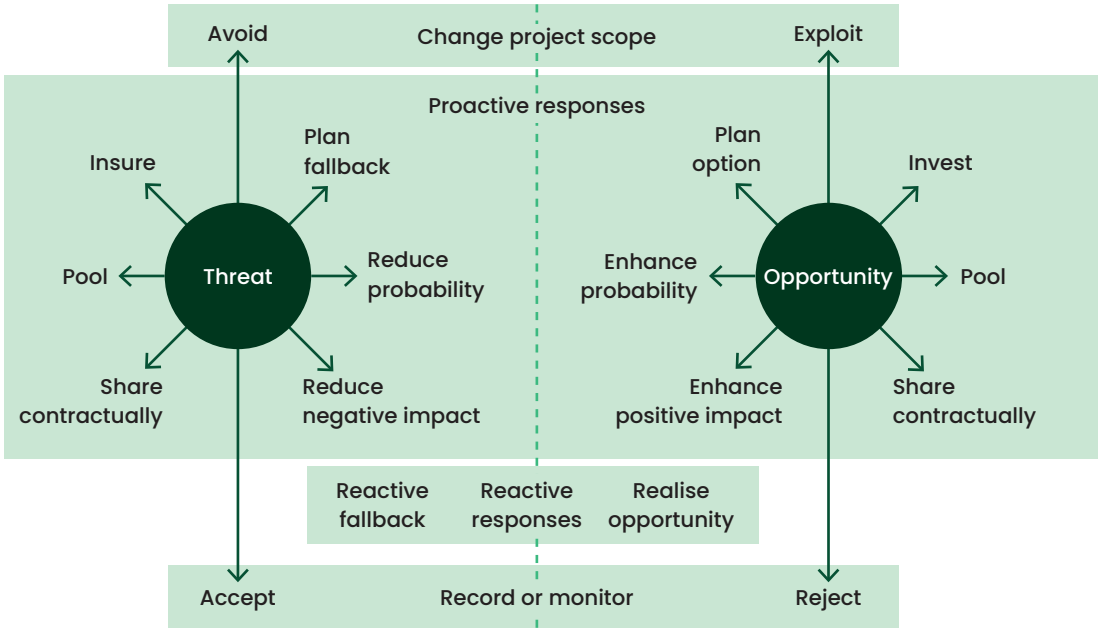


Figure 4.3.3 Generic response strategies for threats and opportunities

Source: *PRAM Guide (2010)*

Recommended reading

- APM's Risk Management Specific Interest Group, *Project Risk Analysis and Management (PRAM) Guide* (2010), contains a detailed explanation of how to respond to risks efficiently and effectively, and the importance of establishing a culture, whereby the risk conversation is kept alive through the life of the project or programme.
- *Practical Project Risk Management: The ATOM Methodology* (2012) provides a detailed guide to the application of a risk management process to a project.
- *Understanding and Managing Risk Attitude* (2007) brings together leading-edge thinking on risk attitude and emotional literacy to guide those wishing to move from a process-only conception of risk management to one that addresses the influences of people in the process.

4.3.4 Contingency management

Controlled release of management reserves

Section 4.2.9 covered the planning of contingency as part of overall integrated planning to establish the deployment baseline for the work. Contingency is clearly identified in integrated plans, for example as an identified line item in a budget, an additional sprint/timeboxed iteration in a schedule or as a buffer to protect a critical chain of activity. Contingency is not 'hidden' extra time or money to deliver planned scope.

Contingency is also typically held at different levels to deal with different sorts of risk. Allocating all the contingency to the project manager requires high levels of trust and confidence from the sponsor and governance board that the additional resource is not used unless absolutely necessary. Also, some risks are not best managed at project level, e.g. currency risk, and so arrangements to deal with this are managed elsewhere in the investing organisation.

During deployment, the project consumes resources over time, incurring costs. Monitoring activities highlight when the project is about to, or actually is deviating from plan because:

- an identified risk has occurred
- an unidentified risk has occurred

Where risk was identified and analysed effectively, the planned contingency (funds or schedule float/buffer) has provision to deal with the deviation. The project manager requests authority to use the contingency — often known as 'contingency drawdown' (Figure 4.3.4).

Where previously unidentified and analysed risks occur, contingent time will not be available. Some management reserve may have been put aside for unidentified risk but this may be insufficient. The project manager raises a change request (see 4.3.6) to seek approval of a milestone slippage and/or additional funds to manage the situation. Where the project is part of a programme, contingency may be held at this level and is requested via a change request.

If risk analysis and contingency planning is effective, the planned time and/or contingency would be expected to be used. Unused contingency is most likely caused by overestimation, luck or the efficient management of risk. Insufficient contingency is most likely caused by optimistic estimation, bad luck or inefficient management of risk.

Where the project is using an iterative life cycle approach, with fixed time, resources and cost, contingency relates to scope and quality. During their work, the team proceeds through a series of timeboxes, autonomously amending the content of a forthcoming timebox. However, there may come a point where the agreed number of iterations have been used and the solution is developed to a minimum viable level, but without addressing some of the 'should-have' requirements. Here, the team may raise a change request to vary the scope and quality from the plan. In such a situation, the sponsor and governance board may authorise the use of further time and resource to implement more functionality through further increments.

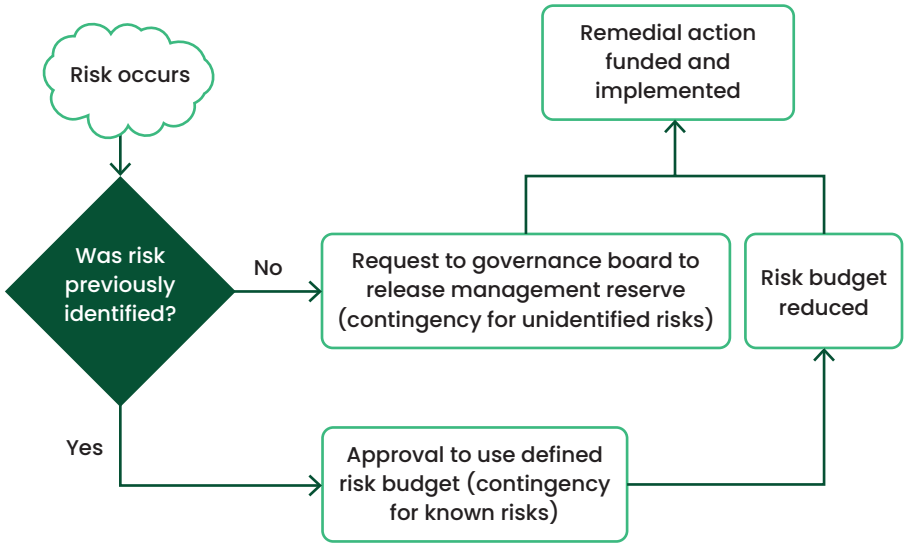


Figure 4.3.4 Process flow for contingency drawdown

Recommended reading

- APM's Risk Specific Interest Group, *Project Risk Analysis and Management (PRAM) Guide* (2004), explains how governance can monitor and control the use of contingency.
- APM's Programme Management Specific Interest Group guide, *Introduction to Programme Management* (2016), has a good description of the programme level risk management reserves approach and its relationship to project reserves.
- *Practical Cost Control Handbook for Project Managers: A Practical Guide to Enable Consistent and Predictable Forecasting for Large, Complex Projects* (2014) is a practical handbook for managing large, complex projects. It addresses the traps of cost control and forecasting to support decision-making. Addresses contingency through the lens of forecasting.

4.3.5 Issue management

Adapting the plan to resolve issues

In project management, an issue occurs when the tolerances of delegated work have been, or will definitely be exceeded. Issues are differentiated from problems that are dealt with on a day-to-day basis by the project manager and team. Issues require support from the sponsor to agree a resolution (Figure 4.3.5).

There is often a tendency to mix up the identification, analysis and management of risks with issues. They are related but are not the same thing. Issues may develop when particular risks or groups of risks actually occur. Issues happening now may also be causes of new risks, or result in assessment of risk likelihood and/or size of impact to change. It is understandable that project professionals prioritise the management of issues (problems now) over the management of risks (potential problems or opportunities), but a project where this is continually the case would suggest an underlying concern with project plans and controls.

Irrespective of the source of an issue, the process used to manage the issue is the same. The project professional ensures that:

- When an issue is detected, it is logged in an issue register and analysis is performed quickly to understand the nature of the issue, its causes and impacts if it is not resolved. The prioritisation of issues is based on the success criteria and benefits for the work taking into account the relative priorities of scope, quality, time, cost and benefits in the business case.
- Issues are escalated to the sponsor, who may, in turn, escalate them to the governance board for resolution.
- Actions are assigned to the person or group who is best placed to address the issue and identify and implement a resolution in a timely manner.
- Issues that result in changes to scope or any other part of the baseline plan are progressed through change control. As part of integrated planning, the limits of delegated authority are established and formal change control is required when these tolerances are breached (see 4.3.6).
- The management of issues is tracked from identification through to resolution, including any change control and replanning the deployment baseline and project management plan.

The issue management process is a simple concept. However, there are barriers to effective adoption that range from a lack of time or reluctance from project professionals to identify and escalate issues early, to an inability of the governance board to make an informed decision that addresses the root cause of the issue rather than treating the symptoms. Issue management is an important project control and effective implementation can be enhanced by engaging members of a project management office (PMO) to help facilitate the necessary resolution.

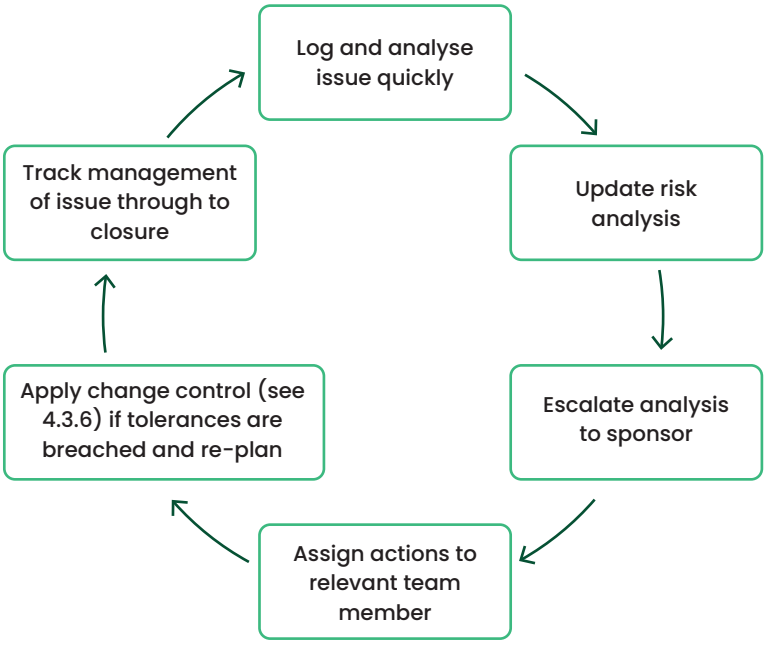


Figure 4.3.5 Key aspects of issue resolution

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group, *Introduction to Project Controls Guide* (2015), demonstrates how issue management fits into the wider suite of project controls.
- *The Project Workout: The Ultimate Guide to Directing and Managing Business-Led Projects* (2019) dedicates a chapter to the discussion of what went wrong, including procedures for dealing with issues and advice for managing the issue log (register).
- *Decision Making & Problem Solving: Break through Barriers and Banish Uncertainty at Work* (2019) offers a set of techniques and insights for resolving problems in the work place. The book includes practical exercises, templates and advice on how to generate ideas, solve problems and inspire confidence within a team.

4.3.6 Change control

Managing variations and change requests in a controlled way

Change control is the process through which all requests to change the baseline of a project, programme or portfolio are identified, evaluated and approved, rejected or deferred (Figure 4.3.6). Change requests may arise as a result of issues that arise in the management of the work, or from external sources such as new stakeholder requirements, new regulations or changes in the context that result in the original plans being no longer viable.

Managing requests for change effectively is a proven success factor in project management, the alternative being a potential escalation of problems as changes are adopted without analysis of their impact on other parts of the solution or deliverables. It is of particular importance when the project is part of a larger programme or portfolio because the consequential effects of unmanaged change may be far-reaching within the planned change environment and to business-as-usual activities.

Managing change requests in a controlled way enables the sponsor and other stakeholders to:

- understand the implications of variations on the forecasted outcomes of the work
- influence the decision of how to respond in the context of their objectives and appetite for risk

The project professional implements the following steps to control change:

- *Log change request*: A change register (or log) records all changes identified or requested from whatever source and whatever their status.
- *Initial evaluation*: The change is reviewed to consider if it is worthwhile evaluating in detail or should be rejected.
- *Detailed evaluation*: Considering the impact on baseline success criteria, benefits, scope, quality, time, resources, costs, risks, stakeholder engagement or any other criteria important to achieving the business case.
- *Recommendation*: Is made to the sponsor and/or wider governance board to approve, reject or defer the change. The sponsor is accountable for ensuring a decision is made and communicated.
- *Update plans*: If a change is approved, plans are updated to reflect the change.
- *Implement*: The necessary actions and monitor through to completion.

In scenarios where change is implemented without formal authorisation, the project professional adopts a retrospective process. Rather than being seen as unnecessary bureaucracy, this is needed to enable realistic forecasts.

In certain circumstances, it is appropriate to implement a change freeze on a project where no further changes are considered, as to do so would jeopardise the achievement of the project objectives.

It is important to differentiate change control from the wider discipline of change management. Change management is a structured approach to move an organisation from a current state to a future desired state. Project-based working is used to achieve this.

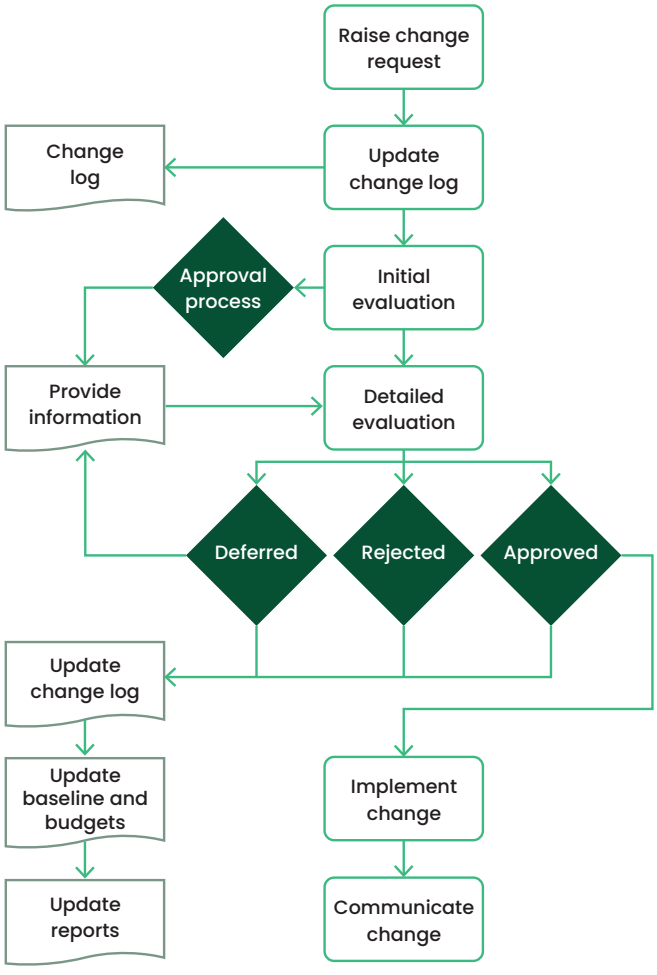


Figure 4.3.6 A change control process

Source: *Planning, Scheduling, Monitoring and Control (2015)*

Change control is a subset of overall change management and it is useful to not mix up the language.

Recommended reading

- APM's Planning, Monitoring and Control Specific Interest Group, *Introduction to Project Controls Guide* (2015), demonstrates how change control fits into the wider suite of project controls.
- APM's Planning, Monitoring and Control Specific Interest Group guide, *Planning, Scheduling, Monitoring and Control* (2015) includes in section 25 a comprehensive guide to a change control process.
- *The Project Workout: The Ultimate Guide to Directing and Managing Business-Led Projects* (2019) dedicates a chapter to the consideration of change control, with a particular emphasis on controlling change, accountabilities for change decisions, change control process and advice regarding the change request form.

4.3.7 Configuration management

Ensuring continual fit of configuration items

Configuration management encompasses the technical and administrative activities concerned with the creation, maintenance, controlled change and quality control of the scope of work. A configuration is the functional and physical characteristics of the final deliverable as defined in technical documents and achieved in the execution of project management plans (Figure 4.3.7).

At its simplest, configuration management involves version control of documents and information (see also 2.2.3), but the discipline of configuration management is a more complex endeavour in projects where the design of the solution is multifaceted, combining multiple technical disciplines and a wide range of asset types. As a result, in some environments, configuration management can be regarded as an asset control and it is essential whether one or more versions of a deliverable is created. It links to and is informed by wider asset management strategies. In these situations, the configuration also captures any organisational or regulatory standards to be met.

The discipline known as business information modelling (BIM) is related to this topic. BIM involves the generation and management of digital representations of physical and functional characteristics of buildings and places. Building information models are digital files (often, but not always in proprietary formats and containing proprietary data) which can be extracted, exchanged or networked to support decision-making regarding a building or other built asset. Current BIM software is used to plan, design, construct, operate and maintain diverse physical infrastructures. It used to provide a digital record of specification and configurations of items and assets.

To implement configuration management, the project professional resources the following five activities:

- **Configuration management planning**: A configuration management plan describes any project specific procedures and the extent of their application. The plan also identifies roles and responsibilities for carrying out configuration management.
- **Configuration identification**: Involves breaking down the project into configuration items, and creating a unique numbering or referencing system for each item.
- **Configuration control**: Ensures that all changes to configuration items are controlled. It is important to identify the interrelationships between configuration items to enable this.
- **Configuration status accounting**: Provides records and reports that relate to a deliverable and its configuration information. It enables traceability of configuration items throughout their development.
- **Configuration verification audit**: Is used to determine whether a deliverable conforms to its requirements and configuration information. Typically, a verification audit is undertaken at the end of a life cycle phase, when a deliverable is finished or at the point of transitioning the output into use.

The key output of a well-controlled configuration management process is:

- confidence that the current version of any configuration item is known, be that a document, drawing, software or any other asset
- documented traceability between versions of each configuration item

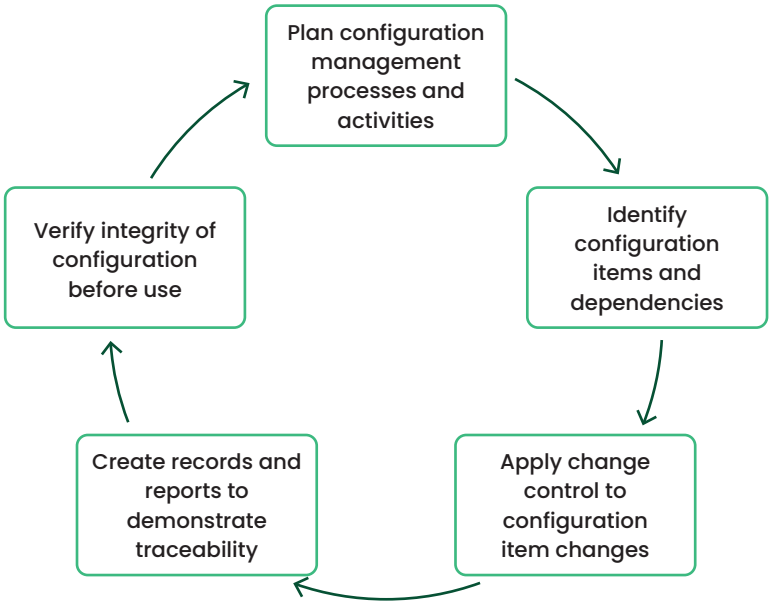


Figure 4.3.7 Essential activities to verify the configuration of an output

Recommended reading

- *Project Management* (2010) describes how configuration management is an essential project management tool to ensure that only the current specifications and designs are being used throughout the project and how it links to change control and quality management.
- APM's Planning, Monitoring and Control Specific Interest Group, *Introduction to Project Controls Guide* (2015), demonstrates how configuration control fits into the wider suite of project controls.
- *BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors* (2018) is an established resource which aims to provide an in-depth understanding of BIM technologies, as well as the business and organisational issues associated with its implementation. The new edition incorporates coverage of BIM standards and a number of useful case studies.

4.3.8 Quality control

Safeguarding the conformance of outputs and outcomes to requirements

Quality control consists of inspection, measurement and testing to verify that the project outputs meet the acceptance criteria defined during quality planning (see 4.1.5). While quality assurance attempts to build in quality through the use of consistent use of standard processes and procedures, supported by training and feedback, quality control is focused on preventing problems being passed on to the internal or external customer.

For quality control to be effective, configuration control (see 4.3.7) of specifications and test plans is vital so that any modifications are formally authorised, coordinated and communicated.

As part of quality planning test plans will have been agreed. These include aspects such as:

- Sample size of tests, for example the whole item or a percentage chosen at random.
- Test protocols, including resources required – people, equipment – third-party expertise or facilities.
- Independent performance or witnessing of tests, by a regulator or process owner from business-as-usual.

There are many project scenarios where the project outputs are highly complex and technical and where the work to verify conformance of outputs to specifications is extensive. Testing is well established and understood in these scenarios. It is easy to overlook that all projects need to deliver outputs and outcomes that are fit for purpose and quality control applies equally to interim or final outputs such as reports, communication materials or financial models.

In all quality control activities, decisions need to be made about the degree of conformance of the output (or sample of outputs) tested to the specification and acceptance criteria, and what action to take in the event of non-conformance.

There will be some projects, for example where safety critical products are being built where continuing to use a non-compliant item is unacceptable and rework will be necessary, triggering a change to the plan. In other scenarios, for example in user acceptance testing of a system, some deviations from requirements may be tolerable in initial use and the decision may be to press ahead to 'go-live' with known issues, picking up remedial work at a later point, and driven by the permanent organisation.

Projects deliver a huge variety of outputs and are consequently subject to many forms of quality control depending on the technical nature of the work and the particular requirements of individual industries. The project professional agrees the quality control regime for the project drawing on input from relevant technical experts rather than by reference to generic processes.

Safeguarding the conformance of outputs and outcomes to requirements in the pursuit of beneficial change cannot rely on quality control — it is the final appraisal. Investments in stakeholder relationships, planning and control as described in this *APM Body of Knowledge* deliver quality and value (Figure 4.3.8).

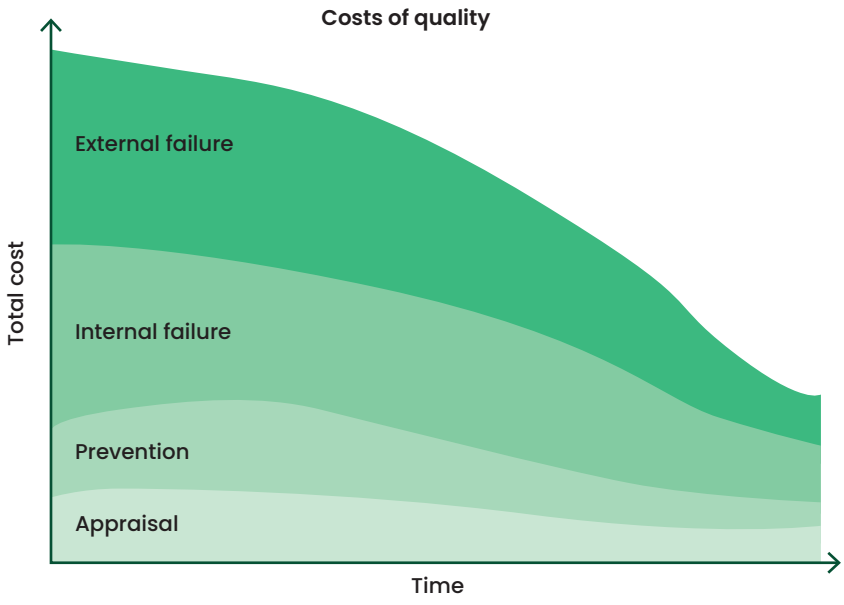


Figure 4.3.8 Proactive management of projects delivers quality and value

Recommended reading

- *The Essentials of Managing Quality for Projects and Programmes* (2017) dedicates chapter 6 to the topic of controlling quality. It offers advice on using the quality plan to maintain control, measuring project quality and issues of governance.
- *Project Quality Management: Why, What and How* (2014) includes a significant discussion of project quality control and continuous improvement issues in chapter 6. The discussion includes a detailed case with lessons learned.
- *Agile Testing: A Practical Guide for Testers and Agile Teams* (2008) is an important essential source which attempts to reposition the role of testing in the context of agile projects. The book defines agile testing and illustrates the tester's role, using practical examples, showing how to complete testing activities within short iterations and how to use tests to guide development.

Full references for Section 4.3

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Glossary

This glossary is made up of terms used in the seventh edition of the *APM Body of Knowledge* only. Definitions are provided where terms used are unique to the profession, or have a unique meaning in the profession.

Acceptance criteria The requirements and essential conditions that have to be achieved before a deliverable is accepted.

Activity (1). A task, job, operation or process consuming time and possibly other resources. (2). The smallest self-contained unit of work in a project.

Adoption The optional additional phase in a linear life cycle that facilitates the use of project outputs to enable the acceptance and use of benefits.

Agile A family of development methodologies where requirements and solutions are developed iteratively and incrementally throughout the life cycle.

Analogous estimating An estimating technique based on the comparison with, and factoring from, the cost of similar, previous work. Also known as comparative estimating.

Analytical estimating An estimating technique that uses detailed specifications to estimate time and cost for each product or activity. Also known as bottom-up estimating.

Assurance The process of providing confidence to stakeholders that projects, programmes and portfolios will achieve their objectives for beneficial change.

Baseline The reference levels against which a project, programme or portfolio is monitored and controlled.

Benefit A positive and measurable impact of change.

Benefits management The identification, definition, planning, tracking and realisation of benefits.

Benefits realisation The practice of ensuring that benefits are derived from outputs and outcomes.

Bottom-up estimating An estimating technique that uses detailed specifications to estimate time and cost for each product or activity. Also known as analytical estimating.

Breakdown structure A hierarchical structure by which project elements are decomposed. Examples include: cost breakdown structure (CBS), organisational breakdown structure (OBS), product breakdown structure (PBS) and work breakdown structure (WBS).

Buffer A term used in critical chain for the centralised management of schedule contingencies.

Business-as-usual An organisation's normal day-to-day operations. Also referred to as steady-state.

Business case Provides justification for undertaking a project, programme or portfolio. It evaluates the benefit, cost and risk of alternative options and provides a rationale for the preferred solution.

Business information modelling (BIM) involves the generation and management of digital representations of physical and functional characteristics of buildings and places. Building information models are digital files (often but not always in proprietary formats and containing proprietary data) which can be extracted, exchanged or networked to support decision-making regarding a building or other built asset. Related to configuration management.

Business readiness A continuous concern and activity through the life of a project or programme that seeks to understand attitudes to change and any barriers so that people are ready to accept outputs and adopt new ways of working to realise benefit.

Change control The process through which all requests to change the approved baseline of a project, programme or portfolio are captured, evaluated and then approved, rejected or deferred.

Change freeze A point after which no further changes to scope will be considered.

Change management The overarching approach taken in an organisation to move from the current to a future desirable state using a coordinated and structured approach in collaboration with stakeholders.

Change register (or log) A record of all proposed changes to scope.

Change request A request to obtain formal approval for changes to the approved baseline.

Closure The formal end point of a project, programme or portfolio; either because planned work has been completed or because it has been terminated early.

Communication The process of exchanging information and confirming there is shared understanding.

Communities of practice A type of learning network used within and between organisations to maintain, develop and share knowledge.

Comparative estimating An estimating technique based on the comparison with, and factoring from, the cost of similar, previous work. Also known as analogous estimating.

Complexity Relates to the degree of interaction of all the elements that make up a project, programme or portfolio and is dependent on such factors as the level of uncertainty, interaction between stakeholders and degree of innovation.

Concept The first phase in a linear life cycle that develops an initial idea through initial studies and high-level requirements management and assessment of viability including an outline business case.

Configuration The functional and physical characteristics of a product as defined in its specification and achieved through the deployment of project management plans.

Configuration management Configuration management encompasses the technical and administrative activities concerned with the creation, maintenance, controlled change and quality control of the scope of work.

Conflict resolution The process of identifying and addressing differences that if left unmanaged would affect successful completion of objectives.

Context A collective term for the societal and/or organisational setting of a project, programme or portfolio. Also known as environment.

Contingency Provision of additional time or money to deal with the occurrence of risks should they occur. See also risk budget and management reserve.

Continuing professional development (CPD) The term used to describe the requirement for any professional to continually develop their competence.

Contract An agreement made between two or more parties that creates legally binding obligations between them. The contract sets out those obligations and the actions that can be taken if they are not met.

Control Tracking performance against agreed plans and taking the corrective action required to meet defined objectives.

Cost of capital A term used in investment appraisal to reflect the percentage return an investment must deliver to satisfy lenders. Value is only created when the return is greater than the cost of capital. See also weighted average cost of capital (WACC).

Cost planning and control The estimation of costs, the setting of an agreed budget, and management of actual and forecast costs against that budget.

Critical chain A resource-based approach to scheduling, useful when time is critical and derived from the critical path, that protects critical chains of activities with buffers.

Critical path A sequence of activities through a precedence network from start to finish, the sum of whose durations determines the overall duration.

Critical path analysis An activity-based scheduling technique that determines the overall duration of the identified work based on estimates and logical dependencies. The method of determining the critical path.

Decision bias Psychological biases affecting individuals and groups when making risk-based decisions.

Decision gate A point in the life cycle between phases that is used to review and confirm viability of the work in line with the business case. Alternatively called stage gates or gates.

Delphi technique The generation of an estimate through individual expert judgement followed by facilitated team consensus.

Earned value A measure of progress that expresses costs committed and work achieved in the same units.

Earned value management A project control process based on a structured approach to planning, cost collection and performance measurement. It facilitates the integration of project scope, time and cost objectives and the establishment of a baseline plan of performance measurement.

Emergent change Unplanned change that is managed by an organisation through incremental, iterative or evolutionary approaches.

Environment A collective term for the societal and/or organisational setting of a project, programme or portfolio. Also known as context.

Escalation The process by which issues are drawn to the attention of a higher level of management.

Estimate A forecast of the probable time or cost of completing work.

Estimating The use of a range of tools and techniques to produce forecasts of the probable time or cost of completing work.

Event-driven Control actions or reports that are triggered by a specific event.

Extended life cycle A life cycle approach that adds an adoption phase to a linear or iterative life cycle with the purpose of ensuring the accountability and governance of the investment stays with the change teams until change is fully embedded. It provides the missing connection to benefit realisation in a linear life cycle and facilitates cooperation and knowledge sharing between change and business-as-usual teams.

Facilitation An approach to working with groups in a collaborative way to create energy and make it easy for the group to solve problems.

Fixed or non-recurring cost A resource and associated cost that is not influenced by volume of business or quantity, for example a one-off capital cost.

Float A term used to describe the flexibility with which an activity may be rescheduled. There are various types of float, such as total float and free float.

Forecast A prediction of a defined future state, typically related to the duration and out-turn cost of a project or programme.

Funding The means by which the money required to undertake a project, programme or portfolio is secured and then made available as required.

Gantt chart A graphical representation of activity against time.

Governance The framework of authority and accountability that defines and controls the outputs, outcomes and benefits from projects, programmes and portfolios. The mechanism whereby the investing organisation exerts financial and technical control over the deployment of the work and the realisation of value.

Governance board A body that provides sponsorship to a project, programme or portfolio. The board will represent financial, provider and user interests. Members of a governance board oversee deployment and make decisions through the chosen life cycle. Alternatively called steering committee, steering group, project board, programme board, etc.

Handover The point as part of the transition phase of a linear life cycle, where deliverables are commissioned and handed over to the permanent organisation to adopt.

Host organisation The organisation that provides the strategic direction of the project, programme or portfolio and is the primary investor and recipient of benefits. Used interchangeably with investing organisation and client organisation.

Hybrid life cycle A pragmatic approach to achieving beneficial change that combines a linear life cycle for some phases or activities with an iterative life cycle for others.

Influencing The act of affecting the behaviours and actions of others.

Information management The collection, storage, curation, dissemination, archiving and destruction of documents, images, drawings and others sources of information.

Integrated assurance The coordination of assurance activities where there are a number of assurance providers. It can follow a Three lines of defence model from corporate governance.

Integrated planning The application of management processes that bring together the planning of benefits, success criteria, scope, quality, time, resources, cost, risk, communications, etc. to create the project management plan.

Internal rate of return (IRR) Used to determine the profitability of a potential investment. It is the discount rate that makes the net present value zero.

Investment appraisal The analysis done to consider the profitability of an investment over the life of an asset alongside considerations of affordability and strategic fit. An input to the investment decision.

Investment decision The decision made by the sponsor and governance board that justifies the investment in a project, programme or portfolio. Investment decisions rely on robust investment appraisal.

Issue A problem that is now breaching, or is about to breach, delegated tolerances for work on a project or programme. Issues require support from the sponsor to agree a resolution.

Iterative life cycle A life cycle that repeats one or more of the phases of a project or programme before proceeding to the next one with the objective of managing uncertainty of scope by allowing objectives to evolve as learning and discovery takes place.

Knowledge management The holistic, cross-functional discipline and set of practices concerned with the way organisations create and use knowledge to improve outcomes.

Leadership The ability to establish vision and direction, to influence and align others towards a common purpose, and to empower and inspire people to achieve success.

Life cycle A framework comprising a set of distinct high-level stages required to transform an idea of concept into reality in an orderly and efficient manner. Life cycles offer a systematic and organised way to undertake project-based work and can be viewed as the structure underpinning deployment.

Linear life cycle A life cycle that aims to complete a project within a single pass through a set of distinct phases that are completed serially and span from the development of the initial concept to the deployment of an ultimate output, outcome or benefits.

Management plan A plan that sets out how an aspect of a project, programme or portfolio will be delivered, for example, a configuration management plan. Individual management plans are component parts of the overall project management plan (PMP) that is the output of integrated planning.

Management reserve A sum of money that is part of overall cost contingency to cover the cost impact of unidentified risks, and potentially some already identified very low-probability, very high-impact risks. See also risk budget and contingency.

Maturity model An approach to understand the current capabilities, processes and behaviours deployed in the management of projects and to identify a structured path to increase the predictability of success.

Milestone A key event selected for its importance in the schedule commonly associated with tangible acceptance of deliverables.

Minimum viable product A product with just enough features to satisfy early users and to provide feedback for future product development.

Monte Carlo simulation A technique often used in the estimation of overall risk for a project, programme or portfolio that enables the combined effect of estimating uncertainty and specific risk events to be predicted.

Net present value (NPV) The difference between the present value of cash inflow and the present value of cash outflow over a period of time. It is the monetary value used to judge the value of an investment at a particular discount rate.

Network diagram A model of activities and their dependencies used in scheduling. Also known as a Precedence network.

Objectives A generic term for predetermined results towards which effort is directed. Objectives may be defined in terms of outputs, outcomes and/or benefits.

Opportunity A positive risk event that, if it occurs, will have an upside/ beneficial effect on the achievement of one or more objectives.

Optioneering An approach to exploring multiple options to optimally satisfy stakeholders' needs, requiring creativity and lateral thinking.

Organisational culture The unwritten rules that influence individual and group behaviour and attitudes. Applicable at multiple levels of organisation, including national culture or project culture.

Outcome The changed circumstances or behaviour that results from the use of an output and leads to realisation of benefits.

Output The tangible or intangible product typically delivered by a project. Used interchangeably with deliverable and product.

Parametric estimating An estimating technique that uses a statistical relationship between historic data and other variables to calculate an estimate.

Phase The major subdivision of a life cycle.

Planned value The cost profile of a resource-optimised schedule used as the baseline to monitor actual spend and earned value. Alternatively called the Budgeted Cost of Work Scheduled (BCWS).

Portfolio A collection of projects and/ or programmes used to structure and manage investments at an organisational or functional level to optimise strategic benefits or operational efficiency.

Portfolio management The selection, prioritisation and control of an organisation's projects and programmes in line with its strategic objectives and capacity to deliver.

Precedence network A model of activities and their dependencies used in scheduling. Also known as a Network diagram.

Procurement strategy The high-level approach for securing the goods and services required from external suppliers to satisfy project, programme and portfolio needs. See also strategic sourcing.

Product A tangible or intangible component of a project's output. Used interchangeably with deliverable and output.

Product life cycle A life cycle approach that adds operation and termination phases to a linear life cycle to reflect the whole life of an asset. Enabling a full asset life cycle perspective encourages engagement with long-term future implications of project-related actions.

Professionalism The application of expert and specialised knowledge within a specific field and the acceptance of standards relating to that profession.

Programme A unique, transient strategic endeavour undertaken to achieve beneficial change and incorporating a group of related projects and business-as-usual (steady-state) activities.

Programme management The coordinated management of projects and business-as-usual (steady-state) activities to achieve beneficial change.

Project A unique, transient endeavour undertaken to bring about change and to achieve planned objectives.

Project-based working A collective term for project, programme and portfolio management. Used interchangeably with management of projects.

Project management The application of processes, methods, knowledge, skills and experience to achieve specific objectives for change.

Project (programme or portfolio) management office (PMO) An organisational structure that provides support for projects, programmes and/or portfolios.

Project management plan (PMP) The output of process of integrated planning for a project or programme.

Project professional The term used to describe those people in roles associated with the management of projects, programmes or portfolios.

Quality The fitness for purpose or the degree of conformance of the outputs of a process or the process itself to requirements.

Quality control consists of inspection, measurement and testing to verify that the project outputs meet acceptance criteria defined during quality planning.

Quality planning takes the defined scope and specifies the acceptance criteria used to validate that the outputs are fit for purpose to the sponsor.

Reports (1). The presentation of information in an appropriate format (e.g. management report). (2). A written record or summary, a detailed account or statement, or a verbal account. (3). A term used to refer to a role that is subordinate to another role in an organisation structure.

Requirements The stakeholders' wants and needs clearly defined with acceptance criteria.

Requirements management The process of capturing, assessing and justifying stakeholders' wants and needs.

Resource allocation The process by which labour and non-labour resources are attributed to activities.

Resource levelling An approach used during resource optimisation that delays activities such that resource usage is kept below specified limits. Also known as resource limited scheduling.

Resource management The acquisition and deployment of the internal and external resources required to deliver the project, programme or portfolio.

Resource optimisation A collective term used to describe the methods for ensuring that labour and non-labour resources are matched to the schedule. See also resource levelling and resource smoothing.

Resource smoothing An approach used as part of resource optimisation that involves utilising float, or increasing or decreasing the resources required for specific activities, such that any peaks and troughs of resource usage are smoothed out avoiding extension of the duration where possible. Also known as time limited resource scheduling.

Resources All the labour and non-labour items required to undertake the scope of work to the required quality.

Responsibility assignment matrix A diagram or chart showing assigned responsibilities for elements of work. It is created by combining the work breakdown structure with the organisational breakdown structure.

Return on investment (ROI) An expression of the value of an investment in change based on the gain in benefit relative to the cost.

Risk The potential of a situation or event to impact on the achievement of specific objectives.

Risk analysis An assessment and synthesis of estimating uncertainty and/or specific risk events to gain an understanding of their individual significance and/or their combined impact on objectives.

Risk analysis and management A process that allows individual risk events and overall risk to be understood and managed proactively, optimising success by minimising threats and maximising opportunities.

Risk appetite How much risk investors are willing to tolerate in achieving their objectives. Expressed as risk thresholds or tolerances.

Risk attitude The perception driven choice of a person or group about an individual risk, or overall riskiness of a project, programme or portfolio.

Risk budget A sum of money that is part of overall cost contingency to cover the cost impact of identified risks. See also management reserve and contingency.

Risk event An uncertain event or set of circumstances that would, if it occurred, have an effect on the achievement of one or more objectives.

Risk owner the individual or group best placed to assess and manage a risk.

Risk register A document listing identified risk events and their corresponding planned responses. Used interchangeably with risk log or risk repository.

Risk response An action or set of actions to reduce the probability or impact of a threat, or to increase the probability or impact of an opportunity.

Rolling wave planning The process whereby short-term work is planned in detail and longer-term work is planned in outline only.

Scenario planning A method used to anticipate potential future scenarios that is useful in preparing to deal with emergent change.

Schedule A timetable showing the forecast start and finish dates for activities or events within a project, programme or portfolio.

Scope The totality of the outputs, outcomes and benefits and the work required to produce them.

Scope management The process whereby outputs, outcomes and benefits are identified, defined and controlled.

Share A risk management response to an opportunity that increases its probability, impact or both by sharing the risk with a third party.

Social system The network of relationships between people (actors) involved in the project, programme or portfolio and how the influences between actors work as a whole.

Sponsor A critical role as part of the governance board of any project, programme or portfolio. The sponsor is accountable for ensuring that the work is governed effectively and delivers the objectives that meet identified needs.

Stakeholder Individuals or groups who have an interest or role in the project, programme or portfolio, or are impacted by it.

Stakeholder engagement The systematic identification, analysis, planning and implementation of actions designed to influence stakeholders.

Statement of work An annex to the main body of a contract that defines the detail of deliverables, timescales and management procedures relevant to the contract.

Story point A method of estimating the completion/forecasting work yet to complete on a user story when using an iterative life cycle.

Strategic intent The term used to describe the aspirational plans, overarching purpose or intended direction of travel needed to reach an organisational vision.

Strategic sourcing An analysis of the buying strengths and weaknesses of an organisation that enables procurement strategies to maximise buying advantages and respond to risks of supply disruption.

Success criteria The satisfaction of stakeholder needs for the deployment of a project. Note this is a different performance measure to benefits, which are focused on the strategic intent and delivering beneficial change.

Sustainability An approach to business that balances the environmental, social, economic and administrative aspects of project-based working to meet the current needs of stakeholders without compromising or overburdening future generations.

Talent management The ability to attract, motivate and retain high quality people to deliver the strategic goals and objectives of the organisation.

Team A group of people working in collaboration or by cooperation towards a common goal.

Temporary organisation (team) A generic term used to describe a specific project, programme or portfolio team brought together specifically to implement project-based work. Used to contrast the organisational structure for project-based work from the permanent organisation.

Threat A negative risk event; a risk event that if it occurs will have a downside/detrimental effect on one or more objectives.

Three-point estimate An estimate in which optimistic best case, pessimistic worst case and most likely values are given.

Time scheduling A collection of techniques used to develop and present schedules that show when work will be performed.

Timebox A generic term used in iterative life cycle approaches to refer to an iteration with a fixed end date that is not allowed to change, thereby adjusting the scope and quality to deliver on time and to cost.

Tolerance A level of delegated permission to vary performance from specified parameters.

Tranche A sub-division of the deployment phase of a programme designed to enable an incremental approach to development of outputs, outcomes and benefits.

Transition The fourth phase in a linear cycle where results are handed over, commissioned and accepted by the sponsor, culminating in formal closure.

Triple constraint A way of describing the fundamental trade-off between time, cost and quality in delivering the scope of a project. Often also called the iron triangle.

User story An informal, simple language description of one or more features of a system or tool. User stories are often written from the perspective of an end user or user of a system.

Users The group of people who are intended to work with deliverables to enable beneficial change to be realised.

V life cycle A graphical representation of a life cycle where horizontal lines connect related front and back-end phases, useful specifically in verifying how requirements will be checked during deployment.

Value A standard, principle or quality considered worthwhile or desirable. In value management terms, value is defined as the ratio of 'satisfaction of requirements' over 'use of resources'.

Value management A structured approach to defining what value means to the organisation. It is a framework that allows needs, problems or opportunities to be defined and then enables review of whether these can be improved to determine the optimal approach and solution.

Variable or recurring cost A resource and associated cost that is influenced by volume of business or quantity, for example a recurring operational cost.

Virtual team A team where the people are separated by geography and potentially time zone.

VUCA conditions (volatility, uncertainty, complexity and ambiguity) A phrase used to describe an organisational context where there is inherent uncertainty that makes it difficult to predict and plan with great accuracy.

Weighted average cost of capital (WACC) The minimum average return that an organisation must earn on an existing asset base to satisfy its capital providers (creditors, owners, etc.). See also cost of capital.

Whole-life costs The fixed and variable capital and operational costs required to develop, use and terminate a product or asset.

Workplace stress The adverse reaction that people have to excessive pressure or other types of demand placed upon them.

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