1 Standards and norms in project management

In this Chapter …

- you will learn about common project management standards and norms and
- you will acquire the skills to evaluate these standards and to identify and apply the standard that is right for you and your project.

Overview

Before we begin to take a closer look at projects, project management and standards, we define important terms in order to develop a common understanding:

> *A **project** is usually a unique endeavor that can be distinguished from other tasks. It has limited time, financial, personnel and material resources. Projects pursue defined goals and have a project-specific organization.*
>
> ***Project management** refers to the entirety of tasks, methods and means from the areas of definition, planning, control, closure and management for the successful completion of projects.*

Anyone managing a small project in the private sector, in a company or other organization probably does not think about whether the underlying procedures and methods used are standardized or not. Small and medium-sized companies are reluctant to use the major project management standards because they fear that the project management process will be too bureaucratic and not tailored to their situation [Turner et al., 2010] or because they are not familiar with the established standards in detail. For projects with a complex project scope or many different stakeholders such as

- project owner or project sponsor
- project team members
- other companies, for example suppliers
- other projects with at least partially shared resources

a lack of common understanding of the procedure makes collaboration more difficult. Typical collaboration interfaces are illustrated in Figure 1.1. If the approach to project definition, planning and management is not clear to the people involved or is communicated in a misleading way, plans, key performance indicators for project control and expectations do not match. This prevents or makes it more difficult to achieve the project's objectives.

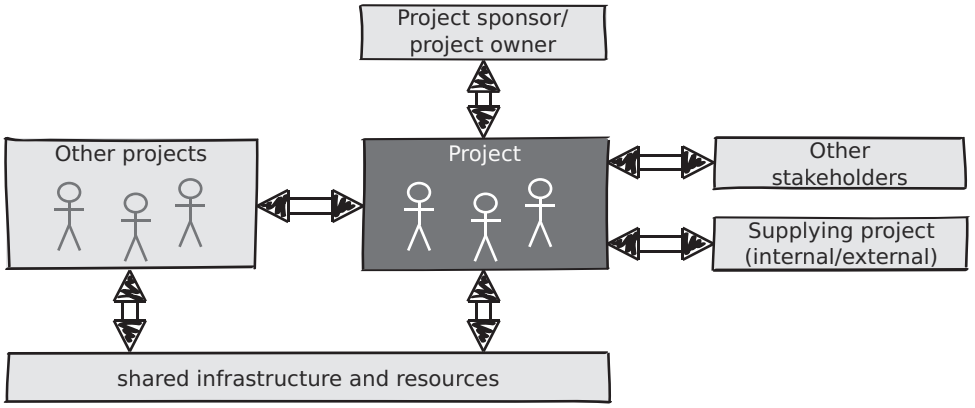

Figure 1.1: A project at the center with interfaces to the project owner or project sponsor, other projects, suppliers, other stakeholders such as a steering committee and infrastructure shared with others, such as software and reporting and shared resources.

Project management helps us on different levels:

- With project management, we can develop the **strategic objectives** of a company, formulate a vision and derive a suitable mission.
- The **measures to achieve** the strategic goals can also be identified, initiated and controlled with project management.
- In general, good project management helps us to implement the strategy **operationally** and to implement many initiatives effectively and efficiently.

In order to develop a common understanding of the aforementioned terms, I propose the following definitions:

> *The **vision** of an organization makes statements about its long-term goal (what are we doing?), motivation (why are we doing this?) and target group (who are we doing this for?)*

> *The **mission** of an organization describes the way to implement the vision. It defines how the vision is to be achieved (daily actions), which offers (products, services, etc.) characterize the organization and which values are important in the process.*

Vision and mission are the basis of the strategy

> *A **strategy** represents a fundamental, long-term behavior of an organizational unit towards its environment to achieve long-term goals.*

The strategy must be scrutinized from time to time and adapted to the environment. New technologies, markets and behavioral habits of the target group can remove the basis (business model) of an organization. Here, too, good project management helps to take appropriate measures at an early stage and when the need for change is identified.

Example

In the 20th century, a number of mail order companies emerged that offered an extremely wide range of goods in thick, printed catalogs. Orders were placed by letter, fax or telephone. Around the turn of the millennium, the internet became increasingly efficient and online providers attracted customers with simple ordering processes, generous return policies and fast deliveries. It turned out that many of the previously successful companies were unable to make the transition from analog mail order to online shops and have effectively ceased to exist today. Others, on the other hand, recognized the signs of the times early on, invested in their own expertise to develop online-based retail and are still successful on the market today.

There is one more term we should look at, as it is often mentioned in the context of strategy and project management: VUCA.

> ***VUCA** stands for **V**olatility, **U**ncertainty, **C**omplexity and **A**mbiguity. VUCA describes a constantly changing complex environment (business world).*

Many organizations perceive their current environment as very complex, volatile (in the sense of unstable) and characterized by uncertainty. For a long time, the real and concrete dangers of pandemics, wars and totalitarian countries were ignored. However, the impact on your own organization can be considerable. Added to this are the aforementioned technological changes brought about by digitalization, social change and changing habits and values.
This makes it all the more important for organizations to focus on their project management. This is one of the basic prerequisites for recognizing the need for change at an early stage and implementing the necessary measures quickly. Established standards and norms can provide initial guidance on the right project management approach.
Many companies are starting to assign all employees who

- lead projects
- work on them or
- work in line functions with interfaces to the projects,

according to one of the major project management standards.
The top priority when selecting and adapting a project management standard should be its suitability for the project and the company's working methods. We will discuss criteria and the procedure for selecting and adapting project management standards later on.

Example

If a company does not have a standardized approach to projects, a common set of methods or a standardized use of software, project employees must first be trained in the processes, methods and software to be used for each project. A project handover or the spontaneous involvement of additional or other employees for support is hardly possible. This makes project implementation inefficient and control options in the form of flexible resource deployment more difficult. In addition, a lack of a uniform approach makes project learning more difficult, as there is no common basis for improvements.

However, standardization also entails risks: If a standard is chosen that does not suit the company and its projects, the problems multiply. It is not a single project that is then inefficient or ineffective, but all projects that adhere to this unsuitable standard.
In this chapter, we briefly summarize some common standards. These include

- the Project Management Body of Knowledge (PMBOK) of the Project Management Institute
- the PRINCE2 project management system of the British company Axelos Ltd.
- the Individual Competence Baseline ICB 4.0 of the International Project Management Association,
- the international ISO 21502 series of standards and
- the series of German standards DIN 69901.

There are also standardization efforts in agile project management. I will therefore briefly introduce the requirements of the Scrum Alliance and Scrum.org.
Efforts are also being made in the academic sector to make qualifications in project management comparable. For example, several universities have created a competence framework "Modern Project Management" that introduces students to a modern understanding of project management that takes plan-based, agile and hybrid process models and methods into account.
All of the standards presented here can largely be understood as a framework that needs to be further refined with specific processes, methods and roles. The standards leave more or less room for individual adaptation. Even if most of the standards mentioned are updated from time to time, you will notice that some of the standards date back to a time when agile project management approaches did not yet play a significant role. Current versions now attempt to incorporate agile principles, which is not always successful without contradictions.
The following sections are intended to give you an initial impression of the characteristics of the standards mentioned. This should help you in later decisions for or against the selection and adaptation of a standard.
In the following Chapters 3 and 4, you will learn about plan-based, traditional and agile process models. With this knowledge, we will develop criteria for the selection of one or more suitable process models and their adaptation to company-specific requirements.

PMI Project Management Body of Knowledge

Introduction

The Guide to the Project Management Body of Knowledge, or PMBOK® Guide [PMI, 2021] for short, published by the Project Management Institute (PMI) is also a standard of the American National Standards Institute (ANSI). The current version of the PMBOK® Guide dates from 2021 and has the version number 7.
This latest version brings with it many structural and content changes. Until the previous version 6, the PMBOK® was very process-oriented. Instead of the process orientation, the latest edition now focuses on a value and principle-oriented perspective. However, the PMI

emphasizes that process orientation is still relevant in practice and that there will be many organizations that will continue to follow the predecessor standard.
The PMBOK® is divided into two main parts:

- *Standard for project management*: The standard contains a system of value delivery and 12 principles for project management instead of the process groups initiation, planning, execution, monitoring and control as well as closure.
- *Guide to the Project Management Body of Knowledge*: The previous ten knowledge domains (integration, content and scope, schedule, cost, quality, resources, communication, risk, procurement and stakeholders) have been abandoned. Instead, eight performance domains are now used and the topics of tailoring, models, methods and artifacts are included.

The new structure of the PMBOK® is illustrated in Figure 1.2.

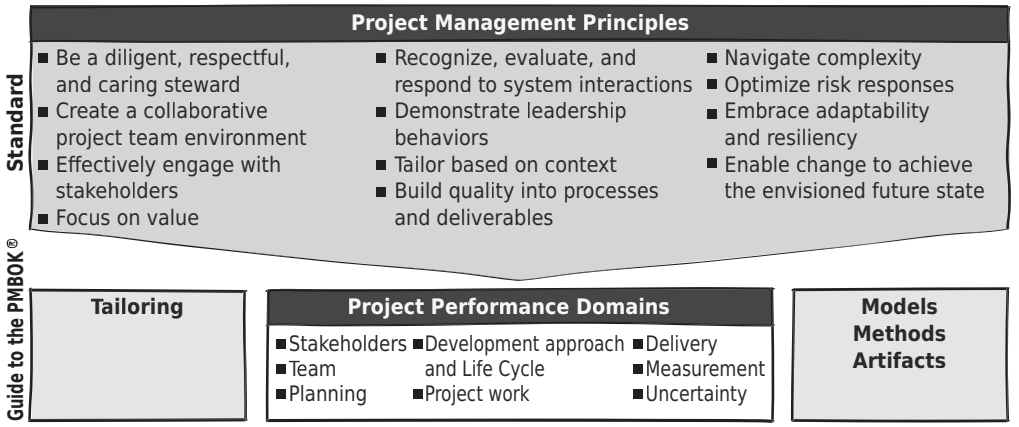

Figure 1.2: Structure of the standard for project management and the performance domains. Own illustration based on [PMI, 2021].

With these changes, agile and hybrid project management approaches have also been integrated into the PMBOK®. The PMI offers various certification options for people working in the project business based on the PMBOK® Guide:

- CAPM® – Certified Associate in Project Management: Basic certification for people working on projects
- PMP® – Project Management Professional: Certification for project managers who can demonstrate experience in managing projects
- PgMP® – Program Management Professional: Certification for managers who lead several complex projects and are responsible for their strategic and economic objectives
- PfMP® – Portfolio Management Professional: Certification for managers who manage and are responsible for entire portfolios.

There are other certificates, such as the PMI Agile Certified Practitioner or the PMI Professional in Business Analysis. The aforementioned certifications do not build on each other hierarchically. For example, the PMP® certificate does not require prior CAPM® certification.

For students there is the "PMI Project Management Ready" certificate, which does not require any practical experience.

Standard for project management according to PMBOK®

The standard for project management is based on a code of ethics and professional conduct with four fundamental values and 12 principles based on them. The values and principles form the basis for the people working on the project. The four values are as follows:

- Responsibility
- Respect
- Fairness
- Honesty

According to the PMI, these values form a moral basis on which we should base our actions. Together with people from the field, 12 principles were developed for more concrete implementation, which are now at the heart of the standard together with the orientation towards the value delivery system. These 12 principles are as follows:

- Be a diligent, respectful and caring steward: Project participants should be hardworking, respectful and caring. This includes the responsible use of resources of various kinds.
- Create a collaborative project team environment: Project results are produced by people. A cooperative working culture must therefore be created for the project team and potential external partners. This principle also includes continuous learning and the further development of team skills.
- Effectively engage with stakeholders: In addition to those directly involved in the project, project participants are also responsible for dealing appropriately with other people, so-called stakeholders.
- Focus on value: Value can be created during the project, at the end of the project or after the project has been completed. At the same time, value creation is an important indicator of project success. The evaluation of value creation should therefore be part of regular project management.
- Recognize, evaluate and respond to system interactions: The standard understands projects as a system and requires project participants to think and act in terms of systems. This also includes addressing the dynamics of systems.
- Demonstrate leadership behaviors: Effective leadership requires appropriate leadership behavior that takes into account the values of the standard.
- Tailor based on context: The so-called continuous tailoring (adaptation) of project management to the (possibly changing) environment of the project is an important success factor.
- Build quality into processes and deliverables: Compliance with the agreed acceptance criteria must be ensured. Effective processes must be established for this purpose.
- Navigate complexity: Complexity goes hand in hand with many interfaces and interactions. The degree of complexity can change during the project life cycle. The project participants are aware of this and act accordingly.

- Optimize risk responses: Risks and opportunities are identified and taken into account appropriately. Coping strategies should be planned and implemented appropriately. They are coordinated with relevant stakeholders and are the responsibility of one person.
- Embrace adaptability and resiliency: This principle is about strengthening the ability to adapt to changing conditions or a changing project environment. It also aims to strengthen resilience. This should enable the project team to cope well with setbacks and mistakes.
- Enable change to achieve the envisioned future state: The ability to deal with change and to shape change should be strengthened. Changes may become necessary due to internal and external project influences. A sound stakeholder management and motivational approaches should accompany the change.

Performance domains of a project

The performance domains of a project are not part of the standard, but describe the principles stated in the standard as part of the *Guide to the PMBOK®*. In the current edition, significantly more considerations regarding agile or hybrid project management are now taken into account, so each domain provides suggestions for either more plan-based or agile implementations.
Figure 1.2 summarizes these performance domains in the lower part of the illustration.
Stakeholders represent the first performance domain for which appropriate stakeholder management must be applied. Stakeholder management, in turn, consists of identifying and analyzing stakeholders, prioritizing stakeholders according to their importance, defining measures for stakeholder communication and monitoring stakeholders and measures.
The second performance domain consists of the **team**. Among other things, this involves creating suitable team structures and choosing a suitable management style.
In **planning** domain, all planning measures for addressing the project scope are summarized. In particular, this includes task, schedule, resource and cost-related plans. Emphasis is also placed on questions of estimation accuracy as part of the planning process.
In the domain **development approach and life cycle**, it must be ensured that the appropriate project management is well selected. The selection should take into account the scope of the project and the project environment. Degrees of freedom here are, for example, the choice of predictive (plan-based) or adaptive (iterative) process models and methods.
The **project work** is about creating an effective and efficient working environment for the development of the project object.
The **delivery** of the project object is an important event for evaluating the success of the project. Procedures are used to determine and check the acceptance criteria.
The **measurement** domain contains tasks for recording and analyzing the status of the project.
Dealing with **uncertainty** is characteristic of projects. Uncertainty results from the degree of novelty inherent in projects. Appropriate time or cost-related buffers and risk management, for example, are used to deal with uncertainty.

PRINCE2®

Introduction

PRINCE2® stands for Projects In Controlled Environments and is a project management system consisting of principles, roles and practices. PRINCE originated in the UK, where it became the government standard for IT projects in 1989. In 1996, it was further developed into PRINCE2® and presented as a comprehensive, cross-industry project management system. PRINCE2® is now published and distributed by the British company Axelos Ltd.
The last major revisions were made in 2009, 2017 and 2023. However, to make it clear that PRINCE2® has remained true to its principles, the number 2 has not been changed. Changes from the 6th to the current 7th edition include a stronger focus on people and sustainability context. In addition, the previous themes have been renamed to practices.
For PRINCE2® there is a staged certification system [Axelos, 2022]:

- PRINCE2®-Foundation: basic certification
- PRINCE2®-Practitioner: certification that builds on the foundation level and includes the processing of practical case studies.

As with the PMI, there are also other certificates, such as the PRINCE2-Agile® certificate, which accentuates agile skills.
PRINCE2® is a flexible, customizable project management system. It is able to integrate agile working methods and process models and there are numerous practical examples of this.
Figure 1.3 shows an overview of PRINCE2®.

The seven principles of PRINCE2®

The following principles represent the core values of a PRINCE2® project:

- **Ensure continued business justification**
  A PRINCE2® project needs a justified reason to be carried out. This reason can be, for example, a specific strategic contribution or can be proven by a profitability analysis. Projects that lose this justification in the course of the project must be terminated.
- **Learn from experience**
  In order to ensure the transfer of knowledge despite a time-limited project duration and corresponding time-limited project organization PRINCE2® puts great emphasis on knowledge management. Knowledge must be safeguarded and transferred to new projects.
- **Define roles, responsibilities and relationships**
  Roles and responsibilities must be defined, structured and communicated to all relevant stakeholders.
- **Manage by stages**
  PRINCE2® PRINCE2 requires further management phases in addition to the initiation phase. Phase transitions are approved by a project board (steering committee). The standard emphasizes that this principle can also be applied to agile projects.

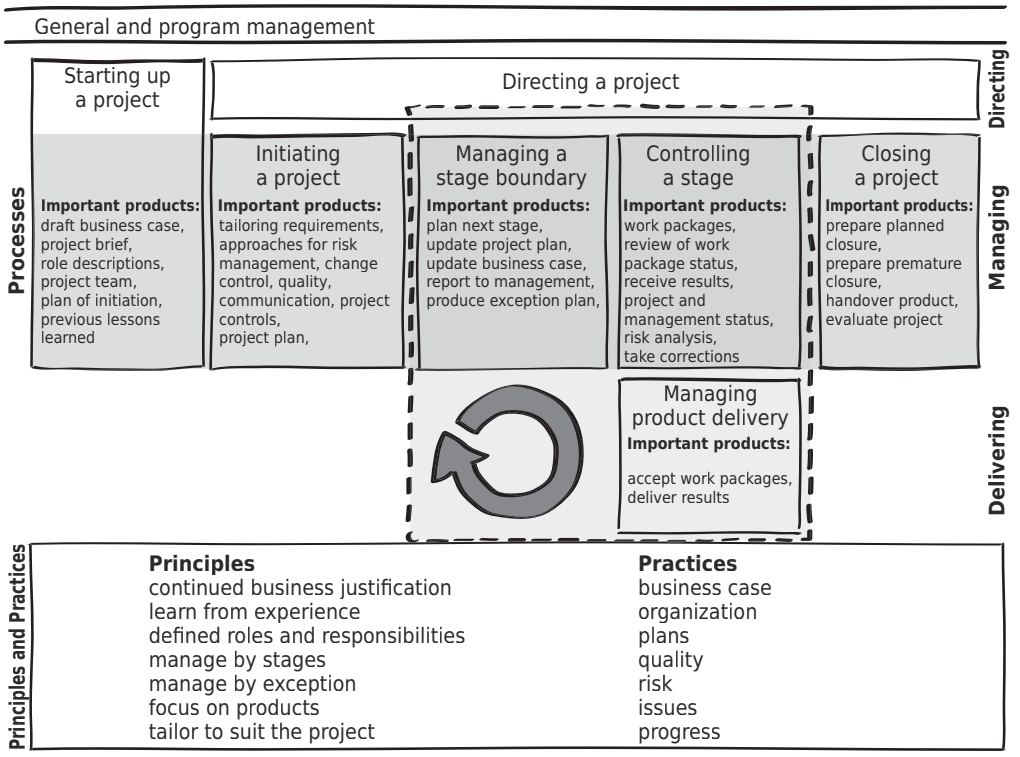

Figure 1.3: Overview of PRINCE2® based on [Murray et al., 2023].

- **Manage by exception**
  Tolerances are defined for important project objectives. These define the scope of action for those responsible. If the tolerances are exceeded, escalation is required.
- **Focus on products**
  The project scope is understood as a product or result. The project must be directed towards this and optimized.
- **Tailor to suit the project**
  PRINCE2® includes a collection of best practices that need to be tailored, i.e. adapted, to the project context (e.g. environment, size, complexity, team).

The seven practices of PRINCE2®

The seven practices of PRINCE2® can be understood as knowledge areas and represent typical project management disciplines. They are intended to answer the questions on project justification, content, structure and status.
The practices and associated questions are listed below:

- business case (Why?)
- organization (Who?)

- plans (How? How much? When?)
- quality (What?)
- risks (What if?)
- issues (What now?)
- progress (Where are we now, where are we going? Should we continue?)

The seven processes of PRINCE2®

PRINCE2® takes a process-based approach. The seven processes can be assigned to the 3 management – levels directing, managing and delivering.
The following two processes belong to the management level **directing**:

- **Starting up a project**
  Examination of the justification of a project by the project board
- **Directing a project**
  Activities of the project board to manage the project

The management level **managing** includes the following five processes:

- **Starting up a project**
  Elaboration of the business case and preparation of the project start by the project manager
- **Starting up a project**
  Definition and planning of the project by the project manager
- **Managing a stage boundary**
  Preparing the next phase, updating the business case, preparing the phase report, obtaining approval for the phase; if there are several phases, this process is run through several times accordingly
- **Controlling a stage**
  Release of new work packages, status review, risk management, initiation and monitoring of control measures; if there are several phases, this process is run through several times accordingly
- **Closing a project**
  Prepare project completion, handover products, evaluate project and recommend completion

The following process belongs to the management level **delivering**:

- **Managing product delivery**
  The team ensures the delivery of deliverables to the project manager. Partial deliveries are also possible with iterative or incremental working methods.

ISO 21502

The ISO 21502 is a rather comprehensive standard, which was released in 2020. It takes account of the project environment and activities before and after conducting the project.

It also contains role descriptions and a lot of definitions, which can help to gain a common understanding.
The central part is about integrated project management practices, which are outlined in Figure 1.4. The sponsoring organization evaluates whether it is worth starting a project as part of the pre-project activities. The organization oversees the project during project execution. One of the tasks in the post-project activities is to ensure that the project results are sustainable for the organization.

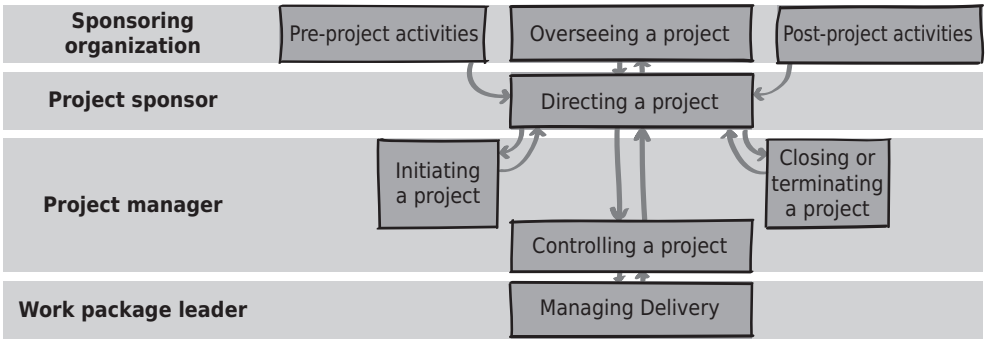

Figure 1.4: Integrated project management practices and associated roles according to ISO 21502 [ISO21502, 2020].

The project sponsor serves as an interface to the project manager, who initiates, manages and ultimately completes the project. Each work package leader ensures the contribution of work package deliverables to the overall project scope.
While the *integrated* project management practices serve as a framework for the overall project management organization, *individual* practices facilitate project execution at the project level. These individual practices are planning, benefits management, scope, resources, schedule, cost, risk, issues, change control, quality, stakeholders, communication, change, reporting, information, procurement and lessons learned. Each of these practices is briefly described in the standard.
Overall, ISO 21502 is a standard that relies heavily on plan-based project management with traditional hierarchies. As such, it does not really do justice to a modern understanding of project management. However, the defined terminology within the standard can help to promote a common global understanding.

DIN 69901

The predecessor of the aforementioned ISO 21502:2020 was ISO 21500:2012, which in turn was heavily influenced by the German standard DIN 69900 and the DIN 69901 series. These are structured as follows:

- DIN 69900: Network technology, description and terms
- DIN 69901-1: Project management systems – Fundamentals
- DIN 69901-2: Project management systems – Processes and process model
- DIN 69901-3: Project management systems – Methods

- DIN 69901-4: Project management systems – Data and data model
- DIN 69901-5: Project management systems – Terms and definitions

There are additional DIN standards related to project management, such as the DIN 69909 series on multi-project management or DIN ISO 10007 on configuration management.
The DIN series was published in 2009 and does not include the term "agile project management" or specific process models such as the waterfall or V-model. The DIN series rather represents the plan-based, traditional view of project management with sequential phases, a predictability of the future course of the project that can be achieved through good plans.

IPMA Individual Competence Baseline

Introduction

Version 4.0 of the Individual Competence Baseline (ICB) [IPMA, 2017] of the International Project Management Association (IPMA) has been available since fall 2015. The ICB is widely used internationally with a certain focus on Europe. The ICB does not propose project management processes or methods, but rather defines competencies that are important for successful project management.
In earlier versions, the abbreviation ICB stood for IPMA Competence Baseline. To emphasize more strongly that the standard focuses on individuals working in project management, the new term "Individual Competence Baseline" was chosen. This also makes it easier to classify the standard within other IPMA standards, namely the Organizational Competence Baseline (OCB) and the Project Excellence Baseline (PEB):

- The **OCB** explains how project-oriented organizations function and how their project management can be improved.
- The **PEB** shows how outstanding project and program management skills can be achieved. It helps organizations assess their own capabilities and develop improvements.

In the following explanations, we will limit ourselves to the ICB, i.e. the Individual Competence Baseline [IPMA, 2017]. ICB 4.0 focuses on people and their competencies for processing projects, programs and portfolios. It is internationally harmonized and has been translated into various languages.
The IPMA offers a four-stage certification system via its respective national representatives:

- IPMA® Level D – Certified Project Management Associate: Basic certification for people working on projects
- IPMA® Level C – Certified Project Manager: Certification for project managers with significant professional experience
- IPMA® Level B – Certified Senior Project Manager: Certification for project managers of complex projects and programs
- IPMA® Level A – Certified Project Director: Certification for managers of project-oriented organizations

The individual levels build on each other. However, combination courses are offered so that higher levels can be certified at the same time with the appropriate qualification. The certification usually consists of several examinations (oral and written) as well as proof of experience in the form of written transfer reports or project experience reports. For levels C, B and A, certain practical experience in project management must be demonstrated.
The IPMA/GPM certifications focus on plan-based, traditional project management. Agile or hybrid skills are only examined in peripheral fields. In order to be able to offer something in this area too, some local country representations of IPMA has created the hybrid+ certificate, which focuses on agile and hybrid project management.

Individual competencies

The project management standard Individual Competence Baseline 4.0 (ICB) from the International Project Management Association (IPMA) differs significantly from other standards in terms of its structure. The ICB does not define processes or organizational structures, but focuses on the individual competencies of people involved in the project business.
The ICB defines individual competence as a person's ability to apply knowledge, skills and abilities in such a way that a desired result is achieved. Knowledge, skills and abilities are defined in hierarchical order:

- **knowledge** means knowing something, for example being able to read and understand a certain plan
- **skills** allows us to use the knowledge, for example to create our own plans
- **abilities** build on knowledge and skills and enable their application in a specific context, for example interpreting a plan and deriving control measures in the event of deviations from the plan.

The ICB 4.0 describes a total of 29 different competencies, which are assigned to the following three competence areas:

- **People competencies** must be demonstrated by people in order to successfully participate in or shape projects, programs or portfolios. Examples include self-reflection, communication, project team leadership, teamwork and negotiation skills.
- **Practice competencies** include methods, tools and techniques that are used to successfully implement projects, programs and portfolios, such as competencies for formulating and analyzing goals and requirements, planning, controlling and designing changes.
- **Perspective competencies** help with interaction with the environment. Examples include strategic, structural and procedural thinking as well as dealing with power in the context of working with internal and external stakeholders of a project, program or portfolio.

The three areas of competence are also referred to as the Eye of Competence. The use of the 29 competencies is explained for projects, programs and portfolios.

Green Project Management P5

Introduction

The Green Project Management (GPM) organization was founded in the USA in 2009. It considers itself a global leader in the practice of sustainable project management.
GPM offers training courses on sustainable project management in accordance with its own P5 standard, either online or with accredited training partners. In addition, a certification system is available that offers three levels, some of which build on each other:

- **GPM-b** uses a multiple-choice exam to demonstrate basic knowledge of sustainable project management. The knowledge can be acquired either through GPM training courses or through self-study.
- **GPM-s** focuses on in-depth skills and abilities. Candidates must submit a documented case study. Possession of the GPM-b certificate is not required.
- **GPM-m** is the master level of the certificate system. Candidates must already hold a GPM-s certificate and demonstrate their competencies through a documented case study and by providing references.

The GPM P5 standard

The GPM standard for sustainable project management is called P5 [GPM, 2023]. In 2023, it was published in its 3rd edition and licensed under a creative commons license. P5 stands for the five dimensions:

- products
- process
- people
- planet
- prosperity.

The GPM considers these dimensions to be a logical extension of the iron triangle, which consists of the dimensions scope, time and cost. The P5 encompasses the iron triangle and puts it into a broader context, see Figure 1.5.
The standard contains a so-called ontology, which can be regarded as a structure of 49 elements, i.e. topics relating to sustainability in project management. An excerpt of these elements is shown in Figure 1.5. The P5 standard lists all elements, briefly explains them and relates them to the 17 Sustainable Development Goals (SDGs) of the United Nations [UN, 2015].
The GPM P5 standard is strongly aligned to sustainability. Although other standards such as PRINCE2® have started to integrate sustainability topics as well, the P5 standard goes far beyond that. Anyone interested in creating a project management framework with a strong focus on sustainability will find a lot of relevant and helpful information. In contrast, the standard does not provide enough information on general project management to derive a general project management framework.

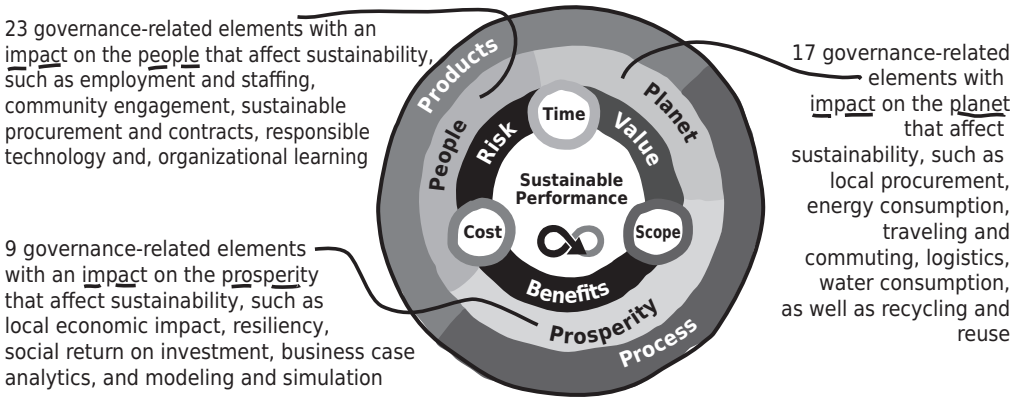

Figure 1.5: Project management dimensions as defined in the GPM P5 standard in accordance with [GPM, 2023].

Agile standards

Introduction

You may now be wondering whether agility and standardization are not mutually exclusive. If we look at the Agile Manifesto [Beck et al., 2001], which you will learn more about in Chapter 4, there are two central values, among others:

- **Individuals and interactions** are valued more than processes and tools.
- **Responding to change** is valued more than following a plan.

Today, there are several standards and certification options for agile process models that consider the values of the agile manifesto. This offers both opportunities and risks: standardization and certification promote visibility and increase the number of people who adopt and disseminate the ideas. It also facilitates collaboration between teams that follow the same standard. Certified experts will write their certification on business cards, publish it on social media and make others curious. They know the underlying considerations that led to agile management and can apply and further develop them. In addition, a common standard can be a good basis for identifying and implementing improvements.
Caution is advised with regard to the ideals of the Agile Manifesto if standardization leads to

- building new hierarchies,
- proceeding like a recipe instead of really reacting to changes, or to
- valuing processes and tools more than individuals and interaction.

Scrum is a widely used process model for agile project management. Scrum is characterized by close, recurring involvement of the customer and an iterative approach. An important document that can be described as the Scrum standard is the Scrum Guide by Ken Schwaber and Jeff Sutherland, which can be obtained free of charge in many languages from www.scrumguides.org.

Important organizations around agile project management

Scrum.org

Scrum.org was founded in 2009 by Ken Schwaber, one of the authors of the Agile Manifesto, to provide an organizational platform for the further development of Scrum.
Scrum.org offers several certifications, including:

- Professional Scrum Master™
- Professional Scrum Product Owner™
- Professional Scrum Developer™

The examinations on which the certificates are based can be taken online. Scrum.org provides extensive literature and videos as well as practice questions for preparation.

Scrum Alliance®

The Scrum Alliance® is an organization with over 400,000 members currently. Its aim is to further establish Scrum. The Scrum Alliance® offers some of the best-known certifications for Scrum. These are structured hierarchically. Depending on the area of application, certification starts with one of the following three:

- Certified Scrum Master®
- Certified Scrum Product Owner®
- Certified Scrum Developer®

Building on this, the Certified Scrum Professional certification can be acquired. The acquisition of the certificates is usually linked to participation in a seminar with an authorized provider.

Other organizations

Today, all major project management organizations, such as the Project Management Institute, the International Project Management Association and Axelos, have also integrated agile working methods and process models into their standards. However, the scope varies and agile concepts sometimes seem like foreign objects in otherwise plan-based project management.
The shift towards an increasing scope of agile content in the project management standards is also reflected in the certifications. For example, agile topics are being added to existing certificates and additional certificates with an agile focus are being offered.

Modern project management

Introduction

Nowadays, project participants are expected to choose the project management method that best suits the respective project task and project environment. Depending on the constellation, this can be plan-based or agile working methods and process models.

Hybrid combinations are also conceivable and are often a very good solution. Hybrid project management refers to the combination of different process models or methods, for example the integration of the agile Scrum process model into a plan-based, phase-oriented project process.
Comprehensive project management skills are required in order to select the right process models for the situation and tailor them accordingly. An initiative has therefore been formed in the academic sector to promote such skills for modern project management. This initiative has developed a system of certificates consisting of three levels: Foundation, Professional and Excellence, see Figure 1.6.

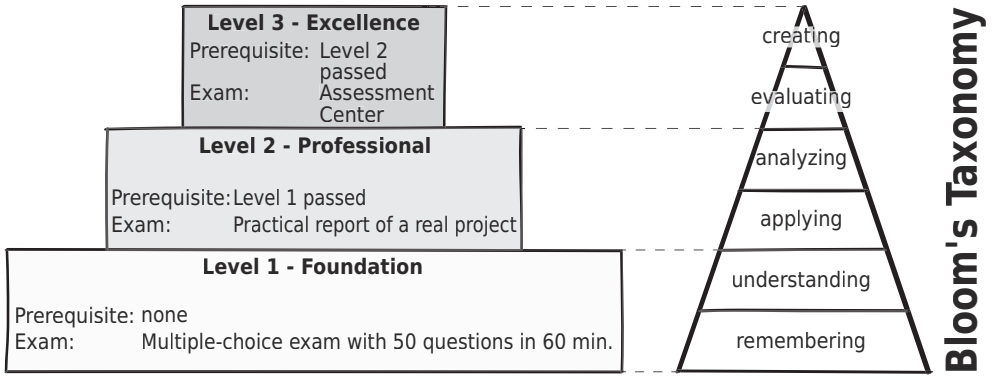

Figure 1.6: Competence levels of the Modern Project Management certificate and mapping to the Bloom taxonomy [Bloom et al., 1956].

The competence levels are based on the Bloom Taxonomy [Bloom et al., 1956], from which the examination formats can also be derived:

- **Level 1 – Foundation:** This level assesses comprehensive knowledge and understanding as well as simple use cases of plan-based, agile and hybrid project management. The exam takes place online as a multiple-choice exam.
- **Level 2 – Professional:** This stage tests practical application and reflection skills. This involves documenting and critically reflecting on the project management of a real (student) project.
- **Level 3 – Excellence:** This level tests the highest competence levels by requiring participants to work on and solve a complex case study as part of an assessment center.

This book covers the essential topics of this certificate, which are summarized in Figure 1.7. There is also a sample exam for Level 1 – Foundation in Chapter 10.

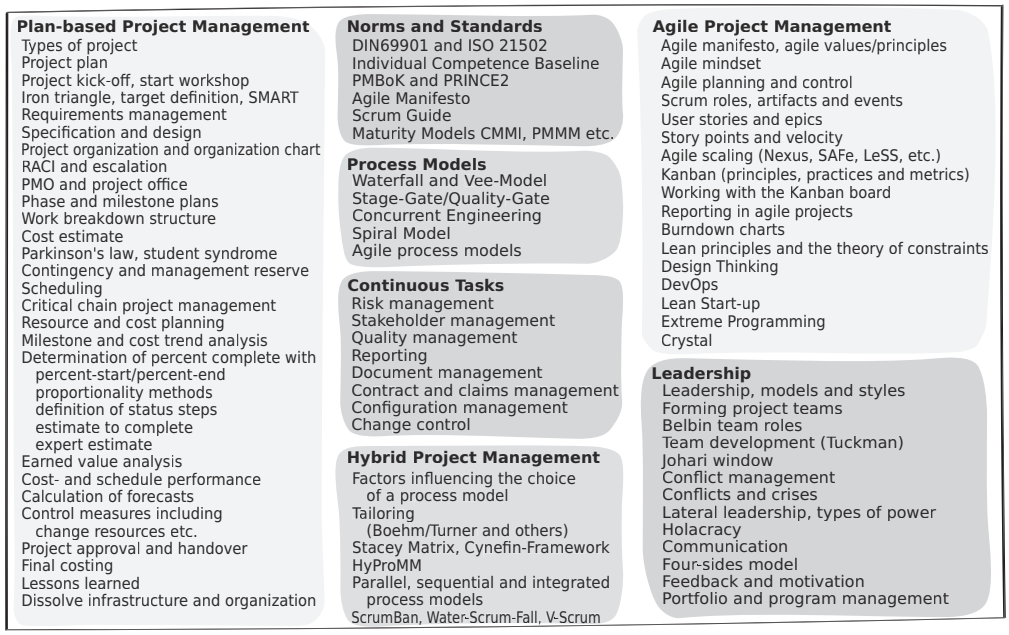

Figure 1.7: Topics of the Modern Project Management certificate, which must be demonstrated in varying degrees of detail depending on the competence level.

At a glance

- Known project management standards are the
  - PMBOK® of the Project Management Institutes (PMI)
  - PRINCE2® from Axelos
  - ISO 21502
  - ICB 4.0 of the International Project Management Association (IPMA)
  - Scrum from Scrum.org or the Scrum Alliance®
- Project managers and employees can be certified in accordance with most standards and thus document their relevant skills.
- Most standards and certificates relate to plan-based project management, which has been known for decades. So far, many standards have only partly included any agile or hybrid approaches.
- There are now increasing efforts to develop a holistic understanding of project management that allows project participants to select and tailor the most suitable process models depending on the situation.