

Management for Professionals

Jürg Kuster · Christian Bachmann ·
Mike Hubmann · Robert Lippmann ·
Patrick Schneider

Project Management Handbook

Agile – Traditional – Hybrid

Second Edition

 Springer

Management for Professionals

The Springer series *Management for Professionals* comprises high-level business and management books for executives. The authors are experienced business professionals and renowned professors who combine scientific background, best practice, and entrepreneurial vision to provide powerful insights into how to achieve business excellence.

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Preface to the Second Edition

This second, entirely revised edition of the “Project Management Handbook” is based on the fundamentals of the previous standard work and is aligned with the German 5th edition. It now covers a large number of new or updated topics. The handbook contains insights and recommendations from our everyday practice as project managers and project coaches as well as from our teaching activities in project management. We are particularly pleased that this work is not just the sum of contributions penned by different authors, but that we thoroughly exchanged ideas as a team and structured and developed contents together.

We have conducted both public and company-specific training on project management for over 10,000 participants in more than 200 companies and organisations in Switzerland, Germany, and Austria, and carried out development work to promote project management competence in these organisations. It is therefore fair to say that this work reflects both the current and future practice of project management.

One of the major trends in recent years is that not only proven leadership structures with their concepts and processes are in demand, but that also temporary structures are increasingly being used in order to be able to act more quickly and flexibly. Hierarchical leadership relationships are being replaced by holacratic systems with flexible role models and forms of cooperation with a high degree of self-organisation. Project management is strongly affected by this development. We have implemented this new reality with a clearly recognisable reader guidance. This not only distinguishes between agile and traditional project management, but also delves into their combination, namely hybrid project management. We as authors are convinced that the future lies in the golden mean. It is not about a traditional or agile approach, but about a situationally skilful combination of both agile and traditional elements.

Another novelty are real project documents, which we have included in this book as practical examples. For this we would like to thank the transport company BLS, namely Daniel Hofer, Irina Schneider, Daniel Leuenberger, and Marc Zesiger, and Metrohm AG, the Swiss manufacturer of precision instruments for chemical analysis, namely Patrick Hunziker, Christian Feuerlein, and Michael Edelmann.

Our great thanks are due to the authors Eugen Huber, Emil Schneider, and Urs Witschi, who have gone into well-deserved retirement, and to the late Alphons Schmid and Roger Wüst, who over many years have played a notable role in shaping

the contents of this book and also the Beratungs- und Weiterbildungsinstitut BWI AG in the field of project management.

Structure of This Book

Various structural elements simplify the application of this comprehensive work in practice. The **Project Management Compass** serves as a detailed orientation guide for project management and presents two different process models for agile and traditionally managed projects.

The success of complex, interdisciplinary projects requires an increasingly wide range of competences, especially from the project manager. That is why we link the methodological foundations to the people who implement the project with a team. The domains “methodology”, “people”, “leadership,” and “team” interact with each other. That is why the content of this book is divided into the following **chapters**:

1. **Introduction:** Project management at a glance and in a leadership context
2. **Methodology:** Models and working methodology for handling agile, traditional, and hybrid projects
3. **Human:** Essential characteristics of people as designers of projects
4. **Leadership:** Models and methods of leading projects
5. **Teams:** Aspects of successful team development and cooperation

This work has also been updated with a view to **IPMA certification** and offers a comprehensive reference table for all competence elements of the Individual Competence Baseline of IPMA® (ICB4) in Chap. 6.

We wish you many new insights through reading this book and the success you desire for your future projects.

Zürich, Switzerland
Rapperswil-Jona, Switzerland
Liebefeld, Switzerland
Männedorf, Switzerland
Nussbaumen TG, Switzerland
February 2023

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Contents

1	Introduction	1
1.1	Project Management, What for?	1
1.1.1	The Taylor Tub	1
1.1.2	BANI Is the New VUCA	2
1.2	What are Projects?	3
1.2.1	Project Characteristics	5
1.2.2	Project Types	7
1.2.3	Emergence of Projects	7
1.3	What Is Project Management?	8
1.3.1	Hierarchies in Project Management	9
1.3.2	Dimensions in Project Management	10
1.3.3	Principles of Procedure	12
1.4	Process Models in Projects	14
1.4.1	Agile Approach	14
1.4.2	Traditional Approach: Phase Concept	18
1.4.3	Hybrid Project Management	23
1.4.4	Procedure in Change Projects	24
1.4.5	Further Process Models	24
1.4.6	Choice of a Process Model: Traditional, Agile or Hybrid?	27
1.5	Projects are Based on Teamwork	29
1.5.1	Content: Working in the System	29
1.5.2	Organisation and Relationship: Working on the System	30
1.5.3	Interactions	31
1.6	Projects are Social Systems	32
1.6.1	Taylorism in our Heads	32
1.6.2	Mechanistic and Systemic World View	32
1.6.3	People and Teams Are Non-Trivial Systems	34
1.6.4	Systemic Approach to Project Management	35
1.7	Versatility and Creativity	37
1.7.1	Versatility	37
1.7.2	Creativity as a Surplus of Attention	37

1.7.3	Interplay Between Human, Field and Domain	38
1.7.4	Framework Conditions for Creativity	40
1.8	Standards and Certification Models in Project Management	41
1.8.1	IPMA: International Project Management Association	41
1.8.2	PMI: Project Management Institute	43
1.8.3	PRINCE2	44
1.8.4	Hermes	45
1.8.5	Scrum Alliance	46
1.8.6	DIN 69901 and ISO 21500	46
1.9	Project Portfolio, Multi-Project and Programme Management	47
	References	48
	Further Readings	48
2	Methodology	49
2.1	Introduction	49
2.1.1	Traditional, Agile and Hybrid	49
2.1.2	Accuracy of Estimates	53
2.1.3	Practical Examples	54
2.2	Project Commissioning Phase	56
2.2.1	What Is Important in the Commissioning Phase?	57
2.2.2	Project Factsheet	59
2.2.3	Business Case	60
2.2.4	Project Request	60
2.2.5	Checklist Completion Project Commissioning	61
2.3	Initialisation Phase	61
2.3.1	What is Important in the Initialisation Phase?	62
2.3.2	Setting Objectives	66
2.3.3	Requirements, Requirements Engineering	72
2.3.4	The Magic Triangle	77
2.3.5	Stakeholder Management	79
2.3.6	Project Marketing	83
2.3.7	Risk Management	84
2.3.8	Project Organisation, Roles, Committees	91
2.3.9	Information Gathering and Situation Analysis	111
2.3.10	Project Structuring	118
2.3.11	Project Order	127
2.3.12	Project Manual, Project Management Plan	128
2.3.13	Kick-Off	129
2.3.14	Problem-Solving Process	130
2.3.15	Checklist Completion Initialisation Phase	134
2.4	Concept Phase	135
2.4.1	What Is Important in the Concept Phase?	136
2.4.2	Product Goal (Product Concept)	139
2.4.3	Product Backlog	140

2.4.4	Release Plan	142
2.4.5	Requirements Specification: Solution Concept	143
2.4.6	Effort Estimation	144
2.4.7	Schedule and Timetable	149
2.4.8	Resource Deployment Plan and Resource Coordination	157
2.4.9	Cost Plan	160
2.4.10	Information, Communication, and Documentation	162
2.4.11	Quality Management	164
2.4.12	Checklist Completion Concept Phase	166
2.5	Realisation Phase	167
2.5.1	What Is Important in the Realisation Phase?	167
2.5.2	Sprint Planning, Sprint Backlog	169
2.5.3	Sprint Implementation, Daily Scrum	172
2.5.4	Sprint Review	173
2.5.5	Retrospective	174
2.5.6	Project Controlling	175
2.5.7	Deadline, Cost and Resource Control	184
2.5.8	Project Changes, Change Request Management, Claim Management	188
2.5.9	Checklist Completion Realisation Phase	193
2.6	Introduction Phase	194
2.6.1	What Is Important in the Introduction Phase?	194
2.6.2	Types of Introduction	196
2.6.3	Acceptance and Commissioning	197
2.6.4	User Training and Education	198
2.6.5	Transfer to the Operational Organisation	199
2.6.6	Project Completion	200
2.6.7	Checklist Conclusion Introductory Phase	202
2.7	Project Portfolio and Programme Management	203
2.7.1	Project Portfolio and Multi-project Management	203
2.7.2	Lean Portfolio Management	214
2.7.3	Programme Management	215
2.7.4	Project Management Office: PMO	216
2.7.5	Project Management Handbook	218
2.8	Creativity and Innovation	219
2.8.1	What is the Difference?	219
2.8.2	Finding Creative Solutions	219
2.8.3	Evaluate and Decide on Solution Ideas	228
2.8.4	Innovation Management	232
2.9	Procurement	234
2.9.1	Procurement Procedure in the Agile Approach	234
2.9.2	Procurement Procedure in the Traditional Approach	235
References	240
	Further Readings	240

3	Human	241
3.1	Competence Model	241
3.2	Conditions for Good Performance	242
3.3	Human Phenomenon	244
3.3.1	The Brain Is a Miracle	244
3.3.2	Basic Needs Determine Our Lives	247
3.3.3	Human Perception	250
3.3.4	Awareness and Self-Reflection	252
3.3.5	Trust	253
3.3.6	Humour	254
3.4	Culture and Values	255
3.4.1	What Is Culture?	255
3.4.2	Organisational Culture	255
3.4.3	Project Culture	256
3.4.4	Generations Y, Z, and Alpha in the World of Work	258
3.4.5	Becoming Aware of One's Own Cultural Imprint	259
3.5	Stress and Change	259
3.5.1	Fight or Flight	259
3.5.2	Psychological Stress	260
3.5.3	Stress Traffic Light	261
3.5.4	Stress Competence	262
3.5.5	Life Means Change	263
3.5.6	Personal Coping Strategies and Dilemmas	263
3.5.7	Burnout	264
3.6	Flow	265
3.7	Motivation and Meaning	267
3.7.1	Goal Orientation of the Human Being	267
3.7.2	What Is Motivation?	267
3.7.3	Meaning as an Intrinsic Motivator	269
3.8	Self-Management	271
3.8.1	Human Self-Efficacy	272
3.8.2	Personal Competence Circle: Strengths and Weaknesses	273
3.8.3	Time Management and Work Technique	274
3.8.4	Resilience	276
3.8.5	Dealing with Failure	279
3.9	Personal Communication	281
3.9.1	What Is Communication?	281
3.9.2	Axiom Theory	282
3.9.3	Communication Square	282
3.9.4	Communication Cycle	285
3.9.5	Meta-Communication	286
3.9.6	I and You Message	287
3.9.7	Feedback	288
3.9.8	Questioning Techniques	293

3.10	Personal Development	296
3.10.1	The Three Living Worlds	297
3.10.2	Self-Knowledge	298
3.10.3	Coaching	304
3.10.4	Intervision	306
3.10.5	Upside or Downside Strategy?	307
	References	307
	Further Readings	308
4	Leadership	309
4.1	Leadership and Cooperation	309
4.2	Leadership: What Is It?	310
4.3	Different Forms of Leadership	312
4.4	Leadership Styles and Models	313
4.4.1	Directive Versus Delegative Leadership Style	315
4.4.2	Situational Leadership Model	315
4.4.3	Leadership Without Authority to Issue Directives	317
4.4.4	Positive Leadership in Projects	319
4.4.5	Tips for Remote Leadership	321
4.5	Self-organisation, Specific Characteristics in the Agile Project	322
4.5.1	Principles and Requirements for Self-organisation	322
4.5.2	What Does Self-organised and Agile Working Mean?	322
4.5.3	How Does Self-direction and Leadership Work in Self-organisation?	323
4.5.4	Decide on Procedures and Solutions in Their Own Competence	324
4.5.5	Important Factors for Self-organisation to Succeed and Be Effective	325
4.6	Leading with Goals	327
4.6.1	Management by Objectives MbO	327
4.6.2	Leading by Objectives and Key Results (Management by OKR)	328
4.7	Delegation	330
4.7.1	Decision-Making Process in the Delegation	330
4.7.2	Delegation as a Recurring Process in Project Management	331
4.8	Task, Competence, Responsibility (TCR)	333
4.9	Power and Authority	334
4.9.1	Empowerment and Seizure: Power Is Based on Relationship	334
4.9.2	Traditional Sources of Power	335
4.9.3	Other Sources of Power in Project Management	336
4.9.4	Projects Always Need Borrowed Power	337

4.9.5	Sources of Power: Between Person and Institution	338
4.9.6	Authority	338
4.10	Negotiation	340
4.10.1	Negotiations in Project Management	340
4.10.2	What is a Negotiation?	340
4.10.3	Negotiation Cycle	341
4.10.4	Conducting a Negotiation According to the Harvard Concept	348
4.11	Moderation	351
4.11.1	Iceberg Model	352
4.11.2	Phases of Moderation	352
4.11.3	Responsibility and Competences of the Moderator	353
4.11.4	Checklist for the Preparation of a Moderated Session	353
4.12	Communicate Effectively with Virtual Teams	355
References		357
Further Readings		357
5	Teams	359
5.1	Aspects of Teams and Groups	359
5.1.1	What Distinguishes Teams from Working Groups?	359
5.1.2	Composition of the Project Team	360
5.2	Dynamics in Teams	362
5.2.1	Forming: Orientation	362
5.2.2	Storming: Discussion	363
5.2.3	Norming: Familiarity	365
5.2.4	Performing: Working in the System	366
5.2.5	Adjourning: Farewell and Separation	367
5.2.6	Dynamics and Interaction	368
5.3	Roles in the Project Organisation	368
5.3.1	“Line-up” in Teams: Position and Role	368
5.3.2	Role Carrier and Role Sender	370
5.3.3	The Role as a Link Between Organisation and Person	371
5.4	Influencing Factors for Successful Cooperation	374
5.4.1	Psychological Safety	374
5.4.2	Positive Psychology and What Distinguishes High Performance Teams from Others	377
5.4.3	Belbin Team Roles	378
5.4.4	Radical Collaboration	381
5.4.5	Multicultural Cooperation	383
5.4.6	Organisational Constellations	388
5.5	Change and Resistance	390
5.5.1	Change and Transformation	391
5.5.2	Mind Change	392

5.5.3	The Human Being and Change	392
5.5.4	“Formula” of Change	394
5.5.5	Readiness for Change in Organisations	395
5.5.6	Psychology and Factual Logic in Projects	395
5.5.7	Willingness to Shape and Cooperate	396
5.5.8	Change Process Model	397
5.5.9	Dealing with Resistance	399
5.5.10	Procedure in Change Projects	405
5.6	Conflict Management and Crises	408
5.6.1	What Is Conflict?	409
5.6.2	Origin and Symptom: The Systemic Phenomenon	410
5.6.3	Conflict Syndrome	413
5.6.4	Conflict Symptoms	414
5.6.5	Potential of Conflicts	415
5.6.6	Types of Conflict in Project Management	415
5.6.7	Conflict Diagnosis	423
5.6.8	Models for Conflict Diagnosis	427
5.6.9	Conflict Resolution	434
5.6.10	Conflict Resolution Depending on the Type of Conflict	443
5.6.11	Conflict Prevention	451
5.6.12	Dealing with Crises	453
5.7	Finally	455
	References	455
	Further Readings	456
6	Reference List for the Individual Competence Baseline (ICB) from IPMA (International Project Management Association)	457
	Index	467

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E. (ed.), *Coaching* (3rd ed. 2013) published by Springer Verlag.

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1.1 Project Management, What for?

The dynamics of change in business and research are high. Innovative organisations have recognised project management as a critical success factor. The products and services of tomorrow emerge from temporary, targeted, and interdisciplinary cooperation. For this, it is necessary to design the optimal working methods and organisational forms according to the situation, so that efficient management and communication channels are possible.

Project management was developed in the 1950s in the aerospace and plant construction industries. Special planning methods such as the network planning method (Critical Path Method) or PERT (Programme Evaluation and Review Technique) were developed for these projects. They were used to solve complex tasks not only for technical undertakings, but also for problem and crisis situations in all management functions: for example, for marketing, and in human resources, finance and organisation in private-sector companies and public administrations. The traditional approaches are still valid today and are widely applied. However, in various areas such as product or software development, they have reached their limits. Agile methods such as scrum help and increasingly rely on the principle of self-organisation of teams. They are deliberately lean and focused on fast, iterative delivery of results and prototypes. Mixed forms have developed from the traditional and agile approaches, which are referred to as hybrid project management. If projects include operational, structural, organisational, or personnel aspects, project management is often also called change management.

1.1.1 The Taylor Tub

In the industrial age of Taylorism, traditional project management helped to create efficient procedures. Today, in the knowledge age of the network economy, complexity and dynamics determine the everyday life of companies. Bernd Oestereich

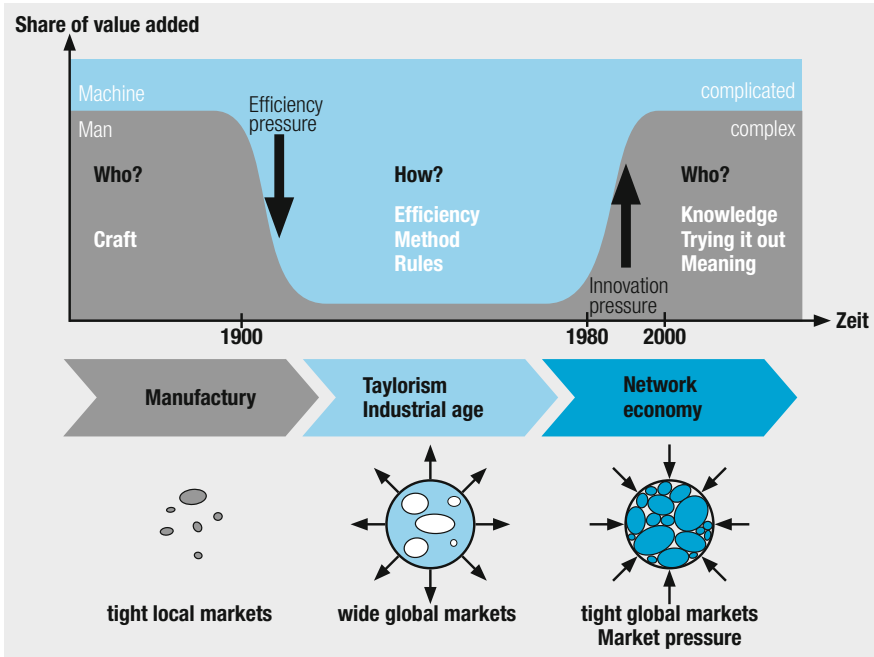


Fig. 1.1 Taylor tub

and Claudia Schröder illustrate this using the model of the Taylor tub by Wohland et al. (2004) and Pflaeging and Hermann (2015) in Fig. 1.1.

Companies have to adapt to the intense competition and the increased demand for personalised offers. In order to master the high dynamics and complexity of everyday life, they tend to use agile approaches in project management. Depending on the situation in which an organisation finds itself, it then chooses the appropriate approach accordingly.

1.1.2 BANI Is the New VUCA

Science is constantly developing new explanatory models for changes seen in the world; e.g. the sensemaking model BANI by Jamais Cascio (Facing the Age of Chaos, April 2020). It describes four trends that are increasingly observed in today's world:

- *Brittle*: many systems have become unstable and can collapse at any time
- *Anxious*: a diffuse basic fear has taken hold of the world
- *Non-linear*: linear logic has long since reached its limits
- *Incomprehensible*: previous explanatory models are increasingly losing their value

The VUCA model (W. Bennis, B. Nanus, 1987) was developed after the end of the cold war and consists of the following four elements:

- Volatility: Fluctuations and rapidity in the digitalised world
- Uncertainty: Difficulty in predicting events and trends
- Complexity: Many influencing factors are interdependent
- Ambiguity: Clear and unambiguous decisions are rarely possible any more

This great speed of change also repeatedly leads to adjustments in the understanding of project management. In summary, the following features characterise this domain:

- A flexible and quickly reactive temporary organisation ensures the optimal handling of the respective project.
- Project management facilitates and promotes direct, interdisciplinary cooperation.
- The competences of leadership are clarified in the project organisation.
- Direct communication channels within and outside the project are easily accessible.
- The existing performance potential is activated through teamwork and a stimulating atmosphere.
- Clear affiliation to the project team makes it easier to identify and deal with conflicts of loyalty.
- Involving the people concerned makes it possible to form a learning organisation.

1.2 What are Projects?

A generally valid definition of the term project has not been agreed upon yet. Organisations define projects differently according to their needs. The following common characteristics can be singled out:

- Projects are goal-oriented. They bring about changes that can result in very different reactions: from euphoria to resistance, from scepticism and fear to joy and motivation. They require great organisational-psychological demands to manage.
- Projects are innovations. Either they push the limits of what has been technically or organisationally feasible so far (e.g. new information and communication technologies), or they are something completely new for the organisation, for which knowledge has to be acquired at first (e.g. by means of self-organisation).
- Projects are undertakings having clear boundaries: They are one-off, limited in time and under deadline pressure.
- Projects are interdisciplinary: they go beyond the usual organisational structure and touch on different disciplines and areas of responsibility.
- Projects are of high content and social complexity.

- Their character changes from a phase to the next (vision, concept, execution), and they require different management skills at every step.
- Projects are difficult to plan and control, they require special organisational measures as well as clear and unambiguous decisions.
- Projects need extraordinary resources in terms of leadership, knowledge, personnel, and finances.
- Depending on their size and complexity, projects also carry various risks, namely risks of a financial, personnel, technical, and scheduling nature.
- Projects are social systems: they need their own project organisation for their execution.

The team of authors defines a “project” as follows:

Definition

A project is a unique, cross-departmental, time-limited, goal-oriented, and interdisciplinary undertaking that is so important, critical, and urgent that it cannot be handled within the existing line organisation, but requires special organisational framework conditions.

Projects which are not really projects, but in which individual elements of project management are applied, include:

- one-off special assignments that can essentially be fulfilled by one person, i.e. without a separate project organisation.
- continuous processes such as learning, production, development, or change processes without a defined end. They are more like a stream. However, projects can be embedded in them. For example, the conception and introduction of a quality management system is usually handled as a project in order to install on-going feedback and learning processes.

The principles and methods of project management can on the whole be adopted for such projects, too.

Each organisation can and should set criteria based on its level of project management maturity as to the scope and complexity of a project. It is often a good idea to classify projects. A higher number of governance documents and processes are prescribed for projects with a higher classification. Table 1.1 shows an example of project classification.

Other criteria used in practice for classification can be:

- Personnel expenses internal/external
- Content/social complexity (Sect. 1.2.1)
- Internal vs. customer projects
- Project duration
- In addition to the project-specific classification, projects can also be grouped together in programmes according to their interdependence, see Sect. 2.7.3.

Table 1.1 Example of a project classification

Criterion	A Projects	B Projects	C Projects	D Activities
Project costs	> € 1 m	> 250 k€	> 100 k€	≤ 100 k€
Complexity	Group-wide	Business unit	Maximum 3 departments	Maximum 2 departments
Strategic importance	High	Medium	Low	Low
Risk	Very high	High	Medium	Low
Default documents according to matrix list	All mandatory	Many mandatory, some optional	Some mandatory, many optional	No specifications
Governance structure	Monthly steering committee (group)	Regular steering committee (business unit)	Ad hoc steering committee at the request of the PL	Optional

Classification (A, B, C, D) is based on the highest criterion

Table 1.2 Project characteristics

Task	Closed	Known, clear task with limited solution options, e.g. structural extension for certain uses
	Open	Many possibilities regarding content and approach without solution ideas, e.g. improving the flexibility and reaction speed of an organisation
Social complexity	Deep	Unproblematic cooperation, e.g. few stakeholders, little differences in interests, cooperation mainly in one field of expertise
	High	Interdisciplinary, politically explosive, different user interests, great potential for conflict

1.2.1 Project Characteristics

The character of a project gives the project manager important information on how to structure the project, define the project organisation, and see what resources are needed. There are different ways of characterising projects.

A distinction is made between projects according to the nature of their task: closed or open, and according to their social complexity.: low or high (Table 1.2).

Four project characteristics can be derived from this (Fig. 1.2):

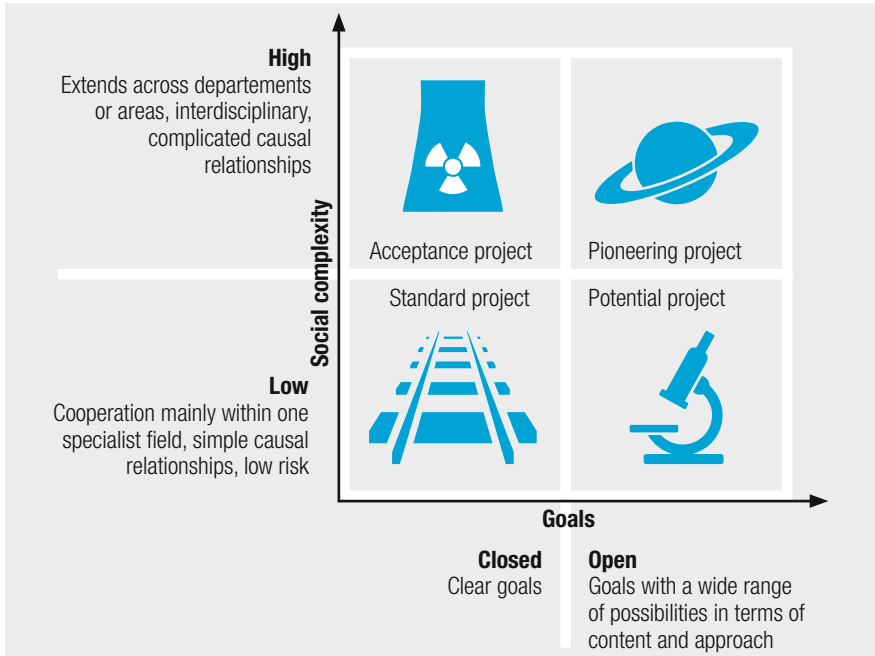


Fig. 1.2 Project characteristics

- *Standard projects* can draw on a wealth of experience and can therefore be handled in a standardised and simple manner. Examples: technical customer project, replacement investment.
- *Acceptance projects* are projects with clearly defined tasks. Based on experience, methods and tools can be formalised and standardised to a certain extent. As they are often associated with acceptance problems, communication with stakeholders plays a crucial role. Examples: a road construction project, or a complex software project.
- *Potential projects* are tasks with open questions, but which are not (yet) closely linked to the project environment and are not too risky in this respect. The project organisation here is usually simple and small. This category includes studies, potential clarifications, feasibility studies, often also research projects. Examples would be: product innovations, and the development of new business models.
- *Pioneering projects* are interventions having far-reaching consequences in the organisation; they span several areas, have a high novelty content, and are threatening and risky for many of those affected. The scope of the task is difficult to estimate. Examples might be, for instance, the merger of two companies, or the development of self-driving vehicles.

Many projects alter their project character during their development from the initialisation phase to the introduction. They often change from a potential project to a pioneer project and then turn into an acceptance or even a standard project.

This typology can not only provide information about the basic project management approach, the choice of the project organisation, the characteristics of the communication, or the methodological focus, but also about the necessary strengths and qualifications of the project manager. For example, a construction project requires different qualifications than a change project, a development project, or an order processing project.

The traditional approach is well suited for the handling of standard projects. On the other hand, agile approaches are better suited for the handling of pioneer projects, potential ones, and even acceptance projects. Estimating dates and costs is easier in standard and acceptance projects. Dates and costs can be planned with a low tolerance. In contrast, the estimation of the effort needed and the derivation of a possible schedule in potential and pioneer projects is much more demanding and tends to be associated with a higher degree of uncertainty and fuzziness.

1.2.2 Project Types

Another way of classifying projects is to arrange them according to their purpose. For some purposes, separate project procedures have been developed and standardised by appropriate bodies. Typical project types are:

- Investment projects
- Product development projects
- Organisational development projects
- Change projects
- Information and communication technology projects (ICT projects)
- Software development projects
- Order processing projects, customer projects
- Process optimisation projects, efficiency improvement projects
- Infrastructure projects
- Building projects
- Research and development projects

1.2.3 Emergence of Projects

Projects can arise in different ways as shown in Fig. 1.3.

Depending on how the project originated (as an internal project or customer project), depending also on what its history is, what type of project it is, or what project characteristics it has, the project manager has to adapt his approach accordingly. These points have a direct influence on the selection of processes and tools, as shown in Table 1.3.

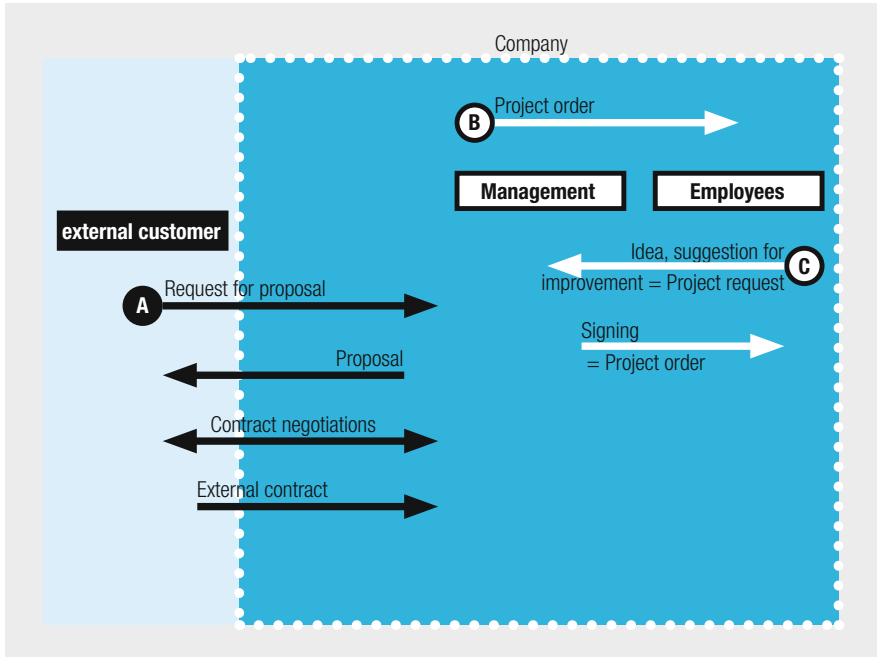


Fig. 1.3 Emergence of projects

1.3 What Is Project Management?

Every company wants to achieve strategic and operational objectives. The objectives set cannot always be achieved through the line organisation. Depending on the situation, it makes sense to approach and implement plans and measures as a project. This makes it possible to bundle and focus forces. With regard to the management of projects, the traditional and agile approaches pursue different approaches.

In the traditional approach, the following steps have proven to be very successful:

- Subdividing the procedure as a whole into phases and work packages
- Defining decision-making, leadership, and technical competence per phase

In the agile approach, the focus of the elements is slightly different:

- Empowered, self-organised teams are to continuously review and adapt
- Timebox procedures with early and frequent deliveries

► Project management is understood as a generic term for all planning, monitoring, coordinating, and controlling measures that are necessary for the redesign or reorganisation of systems, processes, or problem solutions.

Table 1.3 Different project types and characteristics require different approaches

Order processing project	An external customer has a problem. The company has made a binding offer to the customer. Deadline and costs are fixed and legally binding, perhaps a contractual penalty has been agreed upon. The project manager focuses on proven standardised processes, low-risk and on-time execution, and effective cost control
Internal development project at own risk	Management has initiated a strategic project to realign the company. Objectives and deadlines are not set in stone. In case of new findings, targets, deadlines, or costs can be discussed and adjusted
Suggestion for improvement, idea from own employees	Motivation and knowledge are given. The supervisor must have the employees' backs in that they have sufficient resources to be able to work on the project efficiently in addition to all routine tasks
Small project	Individual phases or activities can be passed over. The project manager works according to the standard process, decides at the start of the project to skip individual steps and reviews. He records this in the project documentation
Acceptance project	If major resistance is to be expected in a project, the project manager will involve all relevant stakeholders at an early stage and draw up a carefully coordinated information and communication concept
Innovation project, pioneering project	The company has reached its limits with its product line and needs to rely on a completely new technology in manufacturing. The project manager will use a balanced mix of people with a wide range of abilities and experienced specialists and have both types of work in self-organised teams

The procedure for achieving the solution, the resources required for this, their use and coordination are more important than the solution itself. In contrast to project management, line management is more concerned with day-to-day business and its management of the organisations involved.

1.3.1 Hierarchies in Project Management

The “project management” method permeates the entire organisation. Different tasks are carried out by different hierarchical levels in the company.

Programme management is about coordinating different interdependent projects, aligning priorities and allocating all resources, such as labour and finances, accordingly. Examples: Research programme, development programme, etc.

A *project portfolio* consists of the projects and/or programmes of a company or a division. They do not necessarily have to be related to each other, but they have access to the same pool of resources, i.e. mostly to people and finances. It is about making the best use of the organisation's resources and achieving the organisation's strategic objectives while minimising risks.

Product management encompasses all strategic and operational activities of a position or person responsible for a product or service in all areas of the company. Whoever is responsible for product management is usually also the contact person for customers. Developments, introductions, or problem solving in connection with a product may very well be regarded and handled as projects.

1.3.2 Dimensions in Project Management

The dimensions in project management can be illustrated well using the IPMA “Eye of Competence” (see Fig. 1.4).

1.3.2.1 Competence Area Perspective

This competence area deals with the context of a project. It contains the following topics:

- Strategy
- Governance, structures, and processes
- Compliance, standards, and regulations
- Power and interests
- Culture and values

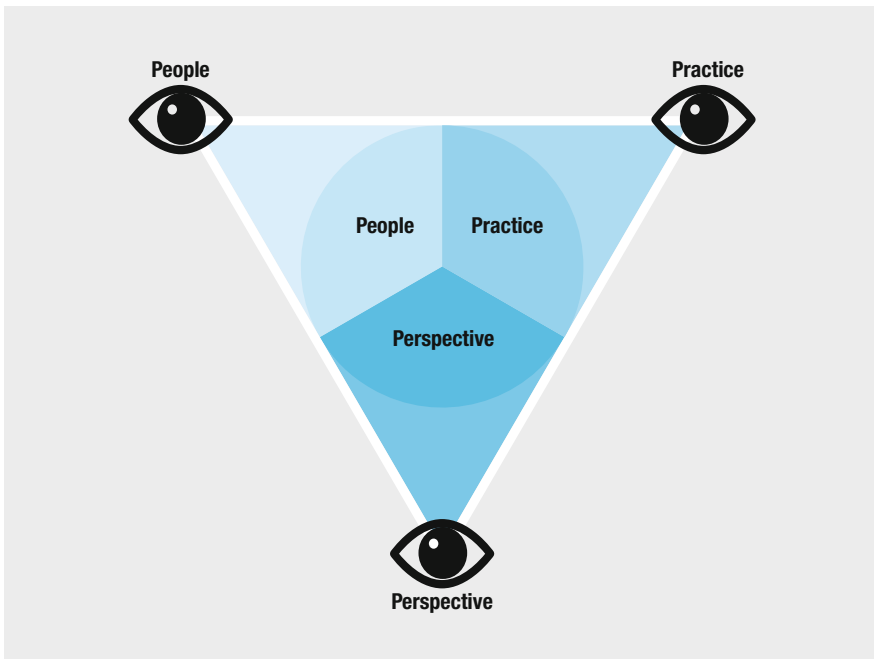


Fig. 1.4 Eye of Competence from IPMA (International Project Management Association)

These topics set the framework and define the environment in which the project is carried out. In this handbook on project management, these topics are addressed in various places of this reference work and explored in greater depth.

1.3.2.2 Competence Area People

This competence area deals with personal and social competences. It contains the following topics:

- Self-reflection and self-management
- Integrity and reliability
- Personal communication
- Relationships and engagement
- Leadership
- Teamwork
- Conflicts and crises
- Ingenuity
- Negotiations
- Results orientation

This area of competence is key to the success of a project. A project is successful if it succeeds in shaping the relationships between people and teams in a constructive and positive way. In this handbook on project management, these topics are dealt with in Chaps. 3 “People” and 5 “Teams”.

1.3.2.3 Competence Area Practices

This area of competence deals with methods employed in project management. It contains the following topics:

- Project design
- Requirements and objectives
- Scope of services and deliverables
- Procedure and dates
- Organisation, information, and documentation
- Quality
- Costs and funding
- Resources
- Procurement
- Planning and control
- Opportunities and risks
- Stakeholders
- Change and transformation

To master a project successfully, mastering the craft is an indispensable prerequisite. However, the decisive factor for project success often lies in the question of how to manage the relationships between people and teams. In this handbook on project management, these topics are mainly dealt with in Chap. 2 on “Methodology”.

1.3.3 Principles of Procedure

The following principles and attitudes have proven effective in practice:

- From the general sketch to more detail
- Investigate alternatives; variant formation
- Arrangement of phases
- Problem-solving methodology

The principles “from the rough and general to greater detail” and “investigating alternatives” are explained below. The two other principles (phase structuring Sect. 1.4.2 and problem solving Sect. 2.3.14) are so crucial to project management that they are dealt with separately.

1.3.3.1 From a Rough Sketch to a More Detailed Depiction

The principle shown in Fig. 1.5 is an important basic attitude in the handling of a project. It is described as follows: At the beginning of the project, the field of observation should be broadly defined and then gradually narrowed and focussed. This applies to both the investigation of the problem area and the design of solutions.

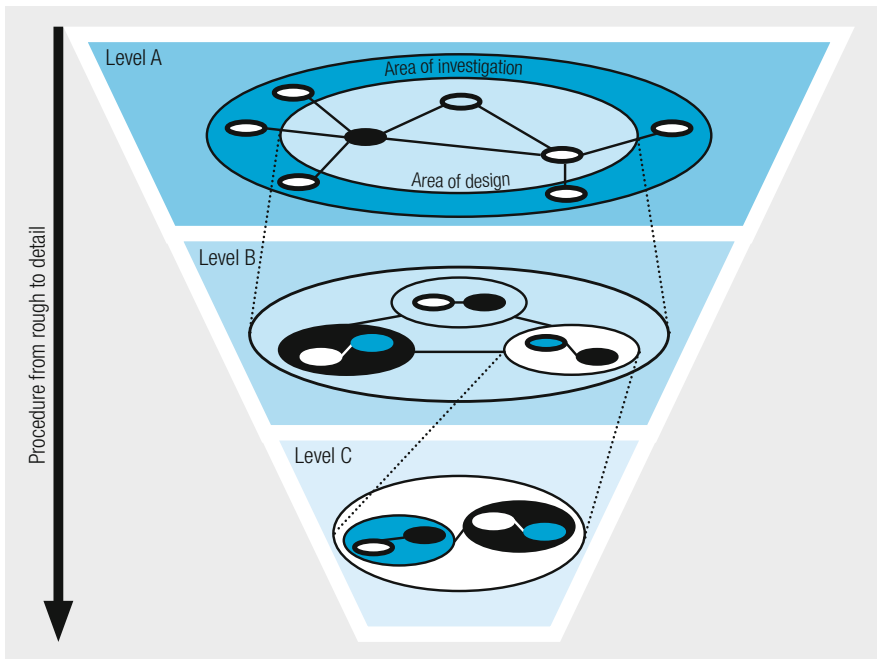


Fig. 1.5 Procedure from the rough to the detailed

Only when the problem area has been first structured in a more general way, embedded in its environment and delimited, or when interfaces to the environment have been defined, can detailed surveys begin.

When designing the solution, general objectives and a general solution framework must first be defined. Their level of detail and concretisation is to be elaborated step by step in the course of the project.

The principle of “*top-down*” can be reversed to “*bottom-up*”. The bottom-up approach can make sense under special conditions, e.g. for improvements in existing, functioning solutions, in the so-called empirical procedures. In the case of a conceptual approach, i.e. in new approaches or large-scale redesigns, it is usually more effective to develop an overall concept from the outset, so that an orientation framework is created for the sub-steps to be carried out.

During implementation, it becomes apparent that a circular approach of “*top-down*” and “*bottom-up*” leads to the necessary common view. This coordination also significantly increases the commitment of each individual involved to take responsibility for a structure or plan created in this way.

1.3.3.2 Variant Formation

Figure 1.6 shows an indispensable part of good planning. It is a basic methodological approach and, if the principle of “from the rough to the detailed” is observed, works without any significant additional planning effort. If this principle is not observed,

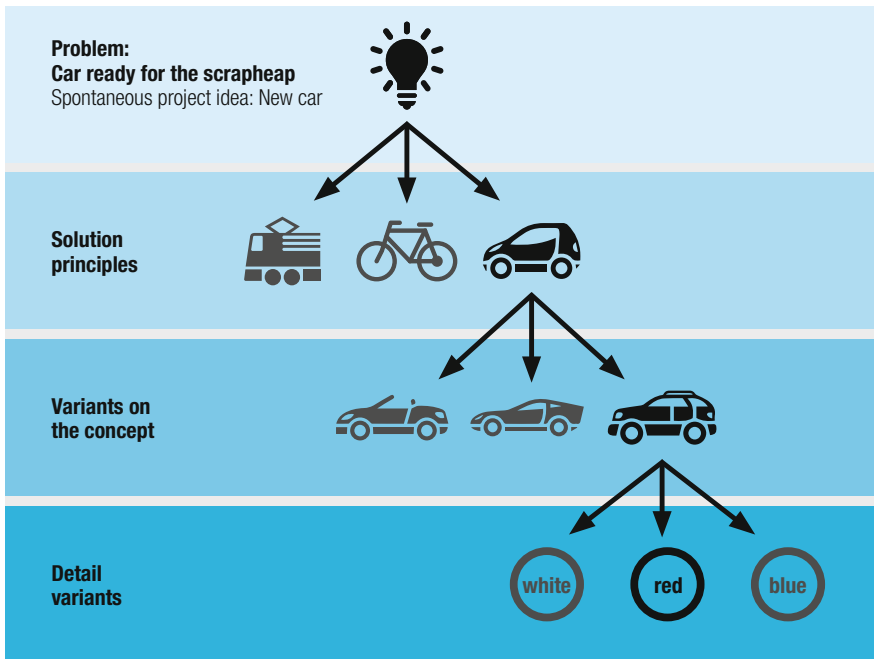


Fig. 1.6 Example of a step-by-step variant formation