Project Management

A Practical Approach

Roel Grit

Third edition

Noordhoff Uitgevers

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Noordhoff Uitgevers Groningen|Houten

Cover design: Studio Frank & Lisa, Groningen
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0 1 2 3 4 5 / 15 14 13 12 11

ISBN (ebook) 978-90-01-84271-0
ISBN 978-90-01-79092-9
NUR 801

Foreword to the Third Edition

This book, *Project Management*, is about approaching work activities as a project. A project can be defined as a number of people working together on a temporary basis to reach a specific goal with defined resources.

More and more organizations are performing their tasks in a project-based fashion. Employees often have little experience with this type of working method. Students in higher education are being trained in project-based work approaches, often even approaching the training they provide as a project. Before a project gets under way, the project group or project team needs to put a lot of time into deciding on a uniform way of tackling the task. If this stage is rushed through, the individual project members will find themselves working in completely different ways, with inevitably unsatisfactory outcomes.

Changes from the second edition

The third edition of *Project Management* has been brought fully up to date based on user feedback. In addition to a number of textual improvements and a more attractive layout, a number of improvements have also been made to the contents:

- In the theoretical section, there is added focus on project risks, making it possible to create more a more detailed risk analysis section of the project plan.
- Considering the importance of having a good relationship with the project 'environment', a stakeholder analysis is used to devote additional attention to mapping out all those involved and communication.
- The chapter on 'Drawing up a project plan' is often used in defining a project. This chapter is included in this edition as well and a new chapter entitled 'How to carry out a project' has been added, containing practical step-by-step instructions for carrying out a project from start to finish.
- Group collaboration has become even easier these days, thanks to the variety of ICT tools available, both online and off. Instructions on using these 'virtual' tools efficiently and effectively within a project group have been added to this edition.
- To prevent the book from becoming too cumbersome, the chapters on 'Making an offer' and 'Writing letters' have been omitted. If you still require this information, these two sections can be downloaded free of charge (by book owners) from the website.
- A number of textual changes have also been made for reasons of clarity, the most important being that the term 'project assignment' has been replaced with 'project result' and term 'intermediate product' is now 'intermediate result'.

Website www.projectmanagement-english.noordhoff.nl

- A number of the checklists that can be downloaded from the website and the MS Word and MS Excel models have been expanded.

- Tests for students and online lectures for students have been added to the website.
- The website also contains cases and an exam database for instructors.

The website accompanying this book is extremely popular. The book therefore makes clear reference to the website where relevant. This is shown in the text using the icon shown here. More detailed information on the contents of the website can be found in Appendix 2.

Who is this book for?

This book was originally written for students at institutes of higher learning and universities, though it is also a practical tool for use in non-educational organisations. It was written as a practical introduction to working on projects. More and more students of higher education are being lectured on the theoretical backgrounds of project management. This book emphasizes the practical aspects, not the theory. The central theme here is "How do you do that in practice?" The imperative voice (commanding) is therefore used in Section 2 of this book.

Project management in education

It is becoming increasingly more common in education to use a project-based approach in preparing for practical application. This includes detailed study assignments, internal projects, internship projects and thesis projects. A thesis project can – and perhaps should be – approached as a project.
In higher vocational education and at universities, Section 1 can be covered during a number of classes or lectures. In doing so, it is important that the philosophy behind a project-based approach is emphasised to students. In this instance, the instructor is more of an inspirer and motivator than a teacher.
Groups of two to three students can be formed and given the assignment of drawing up a project plan and management summary based on a small case. Assignments formulated for this purpose can be found at the back of this book. These have been tested extensively in an educational setting. Alternatively or additionally, small groups of students can carry out a 'real' project assignment. If none is available, a detailed case can be used. Several cases are available on the website. The instructor can take on the role of sponsor, while the other students and/or other instructors can provide expertise on the subject matter. However, a 'real' assignment, whether within or outside of the organisation, is more realistic and therefore preferable. The assignment should be carried out based on interviews with the sponsor or others and concretized in a project plan.

To practice project skills as effectively as possible, a large project group can also be formed. Because of its size, it will be necessary to allocate group tasks, while the supervisor of the group dictates which tools and techniques from this book are to be used: setting up a project, holding a meeting, drawing up a schedule, presenting the results and so on. See the relevant chapters on tools in the second section, as well as Integration Assignment 3 at the back of the book. In this case, the supervisor takes on the role of 'manager of the educational process', rather than instructor. This book makes it much easier for the supervisor to monitor the quality of the project.

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Emmen, Spring 2011
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Contents

Part 2
Project tools 105

Website www.projectmanagement-english.noordhoff.nl

Additional materials:
Writing letters
Making a project offer

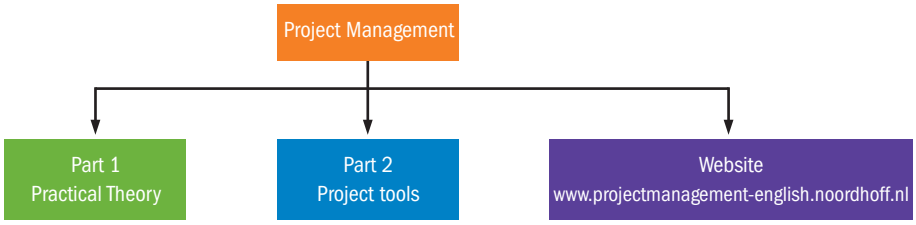
Downloadable tools:	*Chapter*
Sample schedule and MS Project (zipped)	4
PowerPoint presentation for Chapter 4	4
Spartavus case (for making a project plan)	5
Amalia Hospital case (for making a project plan)	5
DropCo case (for making a project plan)	5
Writing letters	6
Making a project offer	6
Agenda model	6
Minutes model	6
Sample project proposal	6
Sample project progress report	6
Sample weekly report	6
Initial interview checklist	6
Presentation checklist	6
Mini-Course on MS Project	6
Sample plan of approach	4, 5, 6
Sample planning	5, 6
Sample risk analysis (by Jurgen Winkel)	5, 6
Stakeholder analysis checklist	5, 6
Sample information matrix	5, 6
Time registration 1 model	5, 6
Time registration 2 model	5, 6
Practice tests	1, 2, 3, 4
Online lectures	some

Introduction

Structure of this book
The aim of this book is to provide those with little experience in working in a project-based manner the theory they need to do so. It also describes a number of practical tools for approaching project-based work activities.

Project Management consists of three parts:
- Part 1 of this book: Practical Theory
- Part 2 of this book: Project Tools
- Website: www.projectmanagement-english.noordhoff.nl

The structure of Project Management



Part 1 Practical Theory
The first four chapters contain a short theoretical background to working in a project-based manner. This section describes what a project-based approach entails, when it is appropriate to take such an approach and how to make it work. Chapter 4 deals with the scheduling of activities.

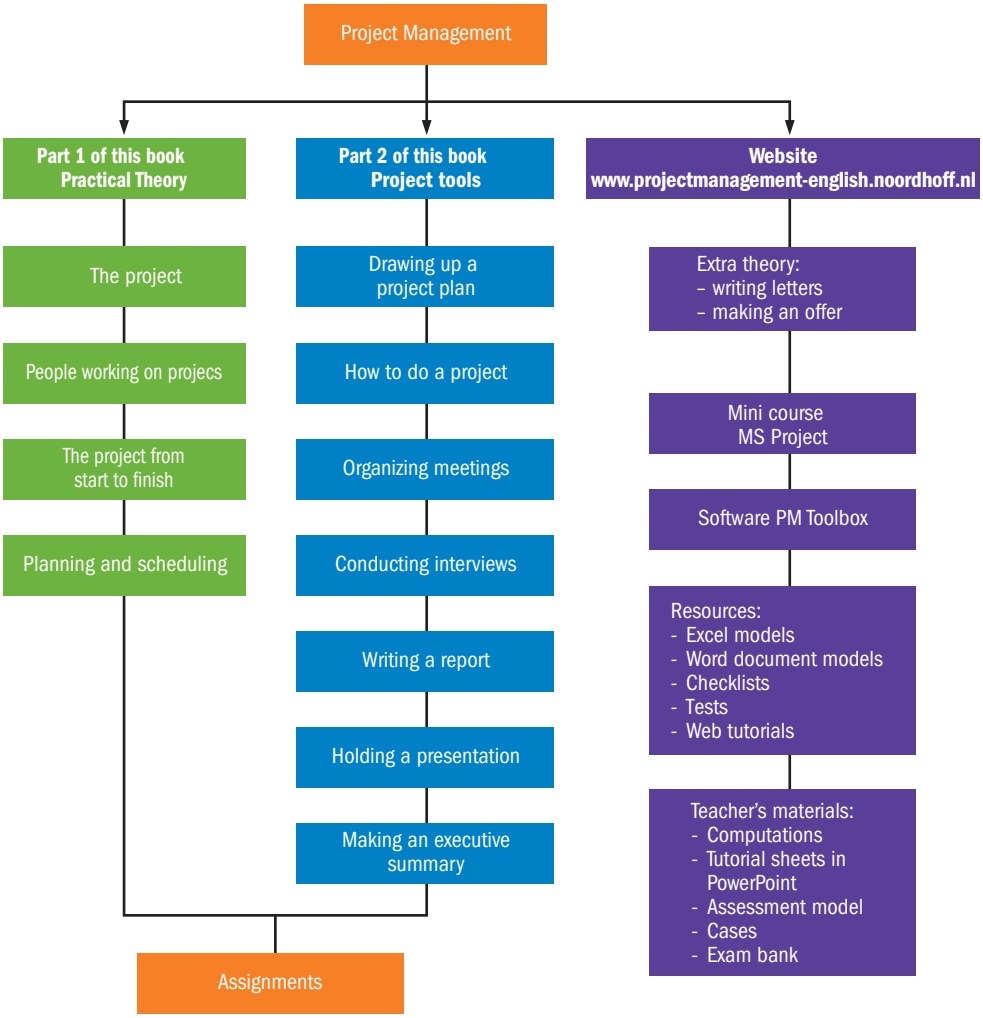
Part 2 Project Tools
The second section of this book describes a number of the practical tools and skills needed to tackle projects, including how to organize and hold a project meeting, how to make an executive summary and how to write a report. An important aspect of the early stages of a project – drawing up a project plan – is dealt with in Chapter 5 and Chapter 6, which explains how to approach a project in a step-by-step fashion.

A number of the skills that are dealt with in this section – organizing meetings, writing reports and holding presentations, for instance – are also useful in contexts other than those described here.

Website
There is a detailed website with a range of different tools accompanying this book (www.projectmanagement-english.noordhoff.nl).

Appendix 2 provides detailed information on the contents of the website. Two chapters can also be downloaded from the website that were omitted from this most recent edition of the book.

The structure of Project Management



Theoretically, there is nothing particularly difficult about project management. Projects nevertheless frequently fail to attain their objectives. Since project work is very dependent on the people involved in it, those involved need to be aware of the fact that there is a difference between ordinary ways of approaching work and working in a project-based manner. This section of the book deals with the theory underlying the project-based approach to work based on real-life situations.

The following questions will be addressed in this part:

- What is the difference between project-based work and other work?
- How do I organize the project?
- How do I start the project?
- How do I monitor the project?
- How do I plan the project?

PART 1

Practical Theory

projekt

1 The project

Jobs for life are a thing of the past. With our society caught up in a process of constant change, organizations are finding that they have to both respond to each change while already anticipating the next one. Their responses often take the form of projects. Being able to manage projects effectively has therefore become a necessity. The important issues are not only when to take a project-based approach and how to tackle the project itself, but even what a project actually is.

This chapter describes how project-based work differs from ‘regular’ work.

1.1 Types of activities, types of work

Three groups of activities

All kinds of activities take place within an organization. They may be characterized in the following three groups of activities:

1 Improvised activities
2 Routine activities
3 Project-based activities

This book deals with the last type. To show the special position that project-based activities occupy, all three types of activity will be described.

Improvised activities

Improvised work
Ad hoc

An *improvised work* approach to new activities is one option. People usually improvise when something unforeseen that requires an immediate response occurs. Their reaction will be an *ad hoc* one: not according to a laid down plan, but decided on as events unfold.

Since there are no directions about what to do that can be given beforehand, it is hard to predict with any accuracy the outcomes of working in an ad hoc manner. The advantage of not having any directions is that the new situations can be met in a flexible manner. However, while the large amount of freedom may be welcomed by the improviser, it carries the risk of chaos and could put the organization under a lot of pressure. Workers in an organization in which there is a lot of improvisation going on are likely to be working under a certain amount of strain. Having to constantly adjust to changing working conditions is, after all, quite stressful.

Routine activities

Routine

Routine activities are activities that are repeated frequently and are relatively predictable. The work will be carried out according to predetermined patterns. Since there is a precedent, it is not necessary to constantly think about what has to be done next.

Work procedures

In order to be able to perform these routine activities efficiently, *work procedures* or instructions have to be developed. Most of the activities carried out within an organization belong to this type. Production line activities, sales procedures, purchasing procedures and administrative activities are some examples.

Project-based activities

Project-based activities fall roughly midway between improvised and routine activities. They are non-recurring and have a limited duration, but are reasonably predictable.

According to a plan

In order to increase this predictability, the work should be done *according to a plan*. Plans gradually illuminate each phase of the process. Before the activities get underway, some time needs to be spent on working out what the aims are and how to achieve them.

Phases
Project plan

For this to be effective, large projects are often divided up into a number of *phases*. After each of these phases, the aims and procedures may be adjusted. Before starting the project, a *project plan* is formulated, the instructions for which are given in Chapter 6. By working with a project plan based on fixed criteria, some degree of routine can be introduced to the project. In other words, 'You introduce routine to something you have never done before'. This greatly enhances the possibility of success.

Project organization

Projects often have an organization of their own, one created specially to

deal with the needs of the project. People who do not normally work together may do so as part of the project group. Each will have their own specific tasks.

Some of the activities of businesses such as shipbuilding, aircraft construction and information technology are regularly carried out as project-based activities. In other businesses, project-based activities may be the exception rather than the rule. Such a project might involve a departmental reorganization, moving into new quarters, or the introduction of a new computer network.

A project-based activity is not an objective in itself, of course. It is a way of structuring activities that are less predictable than others and that fall outside the scope of normal activities. These structured activities then become easier to manage and monitor.

Table 1.1 contains a summary of the properties of the various types of activities.

TABLE 1.1 Types of activities

	Improvised	**Project-based**	**Routine**
When?	Ad hoc (suddenly)	Predictable	Repetitive
Result?	Uncertain	Reasonably certain	Certain
Familiarity?	New, sudden	New, planned	Well-known
Freedom?	A lot of freedom	A suitable amount	Little freedom
Procedures?	Chaotic	Increasingly clear	Clear

1.2 Examples of projects

The following overview gives a number of examples of projects. The website accompanying this book (www.projectmanagement-english.noordhoff.nl) contains further examples.

- Building a new shopping centre, bridge, housing estate, nursing home or factory
- The technical development of a new product such as an electric razor, a computer or a car
- Developing a marketing plan or export plan for a new product like the iPad
- Reducing waiting lists in the field of healthcare
- Designing a new school course
- Formulating an information plan, sales plan, personnel plan or training plan
- Doing a theatre production such as *"We Will Rock You"* or producing a feature film or information film
- Doing the research for a thesis
- Developing a new house style for an organization
- Organizing a major exhibition such as a retrospective on Rembrandt

- Organizing a major event like Pink Pop, a major sports event or home fair
- Implementing a large-scale software package at an organization, such as financial software, logistics software, client management software or patient information system
- Setting up a website for an organization such as a hospital or commercial business
- Arranging a logistical system for providing meals in a hospital
- Adjusting a company's logistics in response to engaging in e-commerce
- Reducing the total drug expenses at a hospital
- Developing a project to improve communication between the hospital and family doctors
- Relocating a large company to a new location

Projects are not a modern trend.

- Ancient Egypt's biggest projects – building the pharaohs' pyramids – were even started during the lifetime of each pharaoh.
- Wars required a project-based approach even in times past. During a long campaign, the logistics of a large army demanded a lot of preparation. Napoleon was a great general because he was an excellent project manager!
- Columbus' preparations for his 1492 journey to America are a masterly example of project management. He was not as successful in executing his plans, however: India, and not America, was his destination.

1.3 What is a project?

This book is about project management, but what exactly is a project?

> A project can be defined as a group of people, usually from various fields of expertise, collaborating temporarily with the aim of reaching a predetermined goal within a predetermined budget.

Features of a project

A project should have the following features:

- A project should have a clear starting point, known as the project *start-up* or kick-off.
- Because a project has a **limited duration**, a finishing date needs to be set.
- A project has a *unique* and clearly **defined goal**. The project's outcome is the end product. This could be a variety of things, such as a new machine, building, report or even an event.
- The project goal tells why the sponsor has commissioned the project. The project result is the outcome of the project and contributes to the project goal.
- A project (usually) has a "**client**" who has commissioned the project and who pays for the project, commonly referred to as the "**sponsor**". This is the person who has an interest in the project result, provide the project team with clarity on the project and make important decisions.
- A project has a **budget** that needs to be determined in advance. The project group has to make do with that amount. The budget consists of money for funding the project and paying the project's staff. A project without a financial budget should at least have a time budget applicable to those participating in the project.
- The project group usually consists of people from **various fields** of expertise working together as a temporary team. The members of the project

may come from various parts of the organization and have their own particular skills. They include managers, financial experts, economists, marketing experts and technicians. Each is familiar with the terminology of his or her own field and has his or her own perspective on things. This makes working on a project both interesting and challenging.

- A project has its own **organizational set-up**. An employee who is temporarily relieved of his normal duties to take part in a project will suddenly have a different person to be accountable to: the project manager. The person (or body) the project manager is accountable to is the sponsor.
- A project is initiated as a purposeful move. It *never* starts *spontaneously*. It has to be initiated and organized consciously. The sponsor appoints a project manager with sufficient authority and the capacities to give shape to the project. The project manager then draws up a *project plan* in consultation with the sponsor. This project plan describes the project in detail. Chapter 5 explains how to draw up a project plan.

Never spontaneously

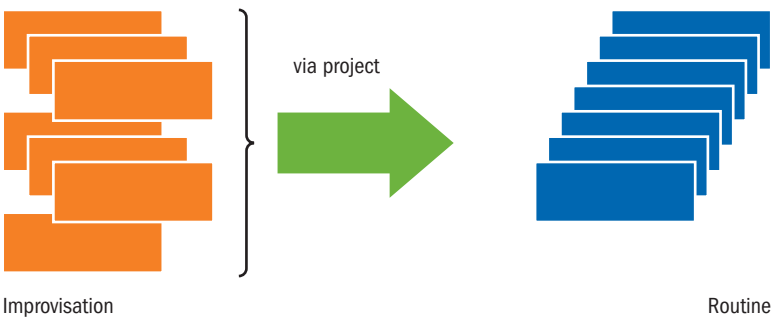
Since the members of the project team have to work together, they have to know what is expected of them. They must make mutual arrangements about such things as the resources to be used and where the meetings will be held. These are only a few of the matters that need to be arranged. It is also essential that all members of the project team be able to work in a *result-oriented fashion*. After all, the goal is to achieve the project results!

Result-oriented fashion

1.4 From improvised activities to project to routine

Improvised activities, project-based activities and routine work can be part of the same work sequence. There is likely to be a lot of initial improvisation when an organization takes on a new task. As soon as it becomes obvious that the task will have to be repeated, a greater degree of organization will become necessary. A project whose aim is to put things on the rails properly could then be undertaken. By the end of the project, standard working procedures will have been developed. Improvisation will be a thing of the past; the activities can now be carried out as the standard routine. Figure 1.1 shows this process as a diagram.

FIGURE 1.1 From improvised activities to routine



1.5 Types of projects

According to their character, projects fall into one of several different categories: technical projects, social projects, commercial projects, mixed projects and events.

Technical projects

Technical projects are projects whose aim it is to effect some change in technology or to come up with a new product. These projects are usually relatively easy to plan. The end result is usually obvious. The construction of a building, a bridge, a road, a pipeline or a railway line are some such projects. These projects are also known as "hard" projects.

Social projects

The outcomes of *social projects* are usually not quite as evident. In the business arena, their aim is very often to change the corporate culture or organizational structure of a company. They deal with the way in which people work together. Because people tend to resist changes, social projects are more difficult to execute than technical projects. Social projects include a reorganization of a firm or an adaptation of work procedures. Social projects are also known as "soft" projects.

Commercial projects

The ultimate goal of *commercial projects* is to earn money. Examples are conducting market research, developing a new product or introducing a new product on the market.

Mixed projects

Mixed projects combine some of the aspects of both technical and social projects. The design, programming and installation of an extensive computer program is an example of a mixed project. These kinds of projects can be especially complicated since the members of the project team come from a wide variety of areas of expertise and do not always "speak each other's language".

Events are a special kind of project, as the end result only appears at a certain point in time. Examples of events are a computer fair, pop festival, home fair or car show.

Projects can also be categorized in different ways based on content, such as those with an internal sponsor as opposed to those with an external sponsor. Another possibility is to categorize projects into those that provide a service (course, event) and those that yield a "product" (building, railway line).

1.6 Things to remember

Later in the book an entire chapter will be devoted to scheduling and organizing a project. This section will describe a few of the basic principles.

If you are the manager of a project, there are a number of things you will have to keep in mind. These are discussed below.

Request planning time from the sponsor

Systematism
Decision-making

To *work systematically*, a project plan is essential. Make sure that the sponsor allows enough time for planning the project. The *decision-making process* can slow things down considerably, especially in large organizati-

ons. It could be weeks or even months before the definitive project comes up for discussion and is approved. When you draw up your schedules, you should allow for the time needed to get the project approved. If not, you will have to deal with delays even before your project gets underway!
In a small organization, the opposite might be the case. People are often asked to start immediately. Nobody should expect a project manager to embark instantly on a task that has never been done before.

Consult everyone involved
Since there are likely to be people from various fields of expertise working together on the project, it is imperative that the project be talked over with all parties involved. Make sure you have enough enthusiastic people and enough funds for the project. Make good arrangements about the contribution expected of every worker.

Mistakes

Mistakes made in the early stages of the project are best rectified there and then. If not, the team's hardworking members may find that the work they have done has been for nothing. At the beginning of a project a mistake can usually be easily rectified, whereas later on in the project it might take ten times as long to do so.
A word of warning: if you think that a project is doomed from the start, you should make sure that you are not the project manager!

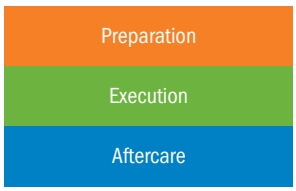
Work from the top down
Set out the main lines of the project first. Avoid getting bogged down in details: they should be dealt with later on. However enticing it may be to commence with the more minor aspects of the project, make sure you avoid doing this. You may find that you have lost sight of the whole. Dividing a project into *phases* is one way of keeping it manageable. Projects can generally be divided into the following phases (Figure 1.2):

Phases

- Preparation (think)
- Execution (act)
- Aftercare (maintain)

These phases will be described in detail in the following section.

FIGURE 1.2 The phases of a small project



Thinking things through: from start to finish and from finish to start
As the definition suggests, project work is work on a new situation. As such, you cannot rely on your experience. You need to determine what exactly needs to take place when carrying out the project. It is important not to overlook a single activity because your schedules will otherwise not be reliable.

It is also important to look at a project from two directions: from start to finish as well as from finish to start. When a new bridge is built, it is not only the initial steps that need to be thought through. The official opening of the bridge by the queen's representative needs to be thought through too. There may be tasks associated with the concluding stages that could easily be overlooked. Remember: if you overlook it in the beginning stages, it will return with a vengeance later on!

1.7 Doing things in phases

To manage

It is often difficult *to manage* large projects. Staying within the budget, getting the job finished by the deadline, and achieving the project result can all present problems. It is the task of the sponsor to ensure that the project is manageable. Projects such as the Channel tunnel between England and France and the Dutch land reclamation scheme were difficult to manage. On the whole, long-term projects are more difficult to manage than short-term ones. This is understandable in light of the changes constantly taking place within the world. The longer a project lasts, the more chance there is that the aims and goals of the project will have to be adjusted.

Project plan

There are a number of measures that can be taken to keep a project manageable. First, a project plan (*plan of approach*) should be made at the commencement of the project. This should contain a clear description of the project. It should also describe the project's objectives and the desired end products, and show the available funds and the schedules for the activities (see Chapter 5).

Phases

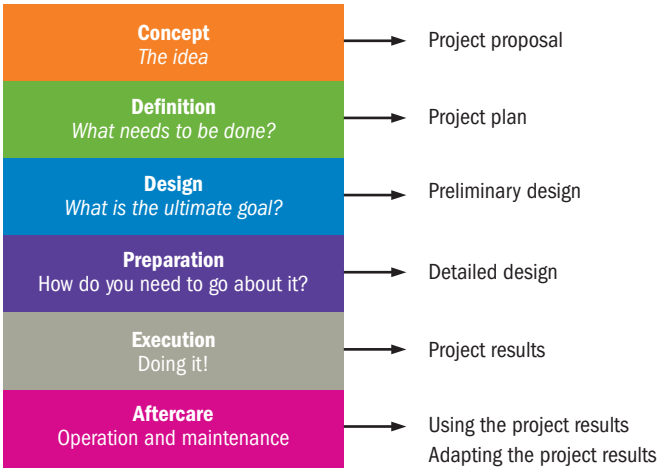
A large project is often divided into a number of *phases*. Each phase will, naturally, be shorter in duration than the project as a whole. A phase can be regarded as a series of project activities that have a logical connection to each other. Phasing minimizes the risks associated with the project.

The following are some common and useful project phases:

- *Concept*: the idea that sparks it off. The concept phase of a project often results in a *project proposal*. If the proposal is approved by management (the sponsor), the next phase may commence.
- *Definition*: defining the end result of the project and what needs to be done to achieve it. The result of the definition is a *project plan*. With complicated projects, it is common to carry out various **sub-projects**, each with its own project plan.
- *Design*: deciding what the project result will be, i.e. "how to go about it". What will the sponsor be getting for his money? This phase results in the design report.
- *Preparation*: detailing how to do it. This phase results in a detailed design, such as a building plan.
- *Execution*: doing it. This phase results in the end result desired by the sponsor.
- *Aftercare*: making it operational and providing aftercare. The result is maintained by adapting it to new desires and resolving any problems.

Figure 1.3 summarizes the above.

FIGURE 1.3 Phasing and the products of every phase



The various phases will now be described. Each phase will be illustrated using a concrete example: building a house (a technical project).

Concept

Idea

At this stage, the project exists only as a problem or an idea in the minds of those who have thought it up. They (the project's initiators) believe that something needs to be undertaken. If a decision to proceed is made at the managerial level, a number of activities may be carried out:

- An investigation into the current state of affairs
- A rough estimation of the extent of the problem
- A determination of the aims or the desired results of the project
- A determination of the feasibility of the project. If desired, a feasibility study or a *preliminary investigation* could be carried out.

Project proposal

This phase could result in an authorized commission or project proposal in which the sponsor gives the go ahead for starting the project. Alternatively, it could be decided not to take any further action and to let the matter rest.

Definition

Formal objectives

Wishes

Project plan

The project's objectives emerge during the definition phase. The project has been given a fiat; the desired objectives must now be established. It is important to make a distinction between the project's *formal objectives* and the *wishes* of those involved. The project's objectives have to be met: this is mandatory. It is desirable that the wishes of those concerned be met, but there is no necessity about this. At the conclusion of the definition phase there should be a project plan in which the project is defined in detail. (The drawing up of a *project plan* is the subject of Chapter 5.) By the end of the definition phase there needs to be an answer to the following question: what will have been achieved when the project has been completed?

Design

The definition phase establishes what the project's objectives are. During the design phase, a way of resolving the problem has to be found. If the project is building a house, it is during this phase that a detailed construction drawing is made. This phase makes a demand on the creativity of the participants. It can be stimulated by holding *brainstorming* sessions with all the participants.

Brainstorming sessions

In order to determine whether the proposed solution conforms to the requirements as laid down, one option is to make a *prototype* of it.

Prototype

A prototype is a simplified version of the real thing, and it can be used to test the demands that are likely to be made of the design. For instance, when a new airplane is being designed, the prototype's properties are tested in a wind tunnel.

Design

At the end of this phase, there should be a *design* that does the following:

- Shows the sponsor exactly what he will be getting
- Shows those who will be actively involved in the next phase exactly what has to be produced.

Preparation

During the preparation phase, the design that was prepared during the previous phase is made ready for production. Attention is now focused on how the design can be produced. This could take the form of a detailed construction drawing that shows a metal worker exactly how to make a certain part, or assembly instructions showing exactly how certain parts should be fitted together. The product itself is not produced during this phase. The aim is to create the conditions to allow the production phase to take place without a hitch. The motto of this phase is look before you leap.

Execution

After all the preliminaries, the actual work can now get underway. Depending on how thorough the preliminaries have been, there will be a proportionally less risk of unpleasant surprises during the production phase. During this phase, the objectives of the project are achieved and the product constructed. It does not necessarily have to be a technical product such as a machine: it could also be the reorganization of a factory or the introduction of a new system for production planning.

Implementation

This phase is also the phase of *implementation*. Measures have to be taken to facilitate the introduction of the project's outcomes. In the case of a transition from an old to a new situation, these will take the form of *conversion measures*. If the project involves making a new computer program for the computerization of a production process, the employees will have to be trained to work with the program. When a manual system of personnel administration is computerized, all the personnel data will have to be fed into the computer. At the end of this phase the *project's outcomes* are delivered.

Conversion measures

Project's outcomes

Aftercare

In the aftercare phase the project's outcomes are put to use. Because circumstances alter as time goes on, the demands that are made of the products are likely to change as well. This may require making some adjustments to them. The finished products will also require aftercare. In the case of a technical project such as the building of a bridge, the aftercare should be provided by a maintenance crew set up for that

purpose. In the case of a computerization project, any change in circumstances will mean that the program has to be updated. In short, after the project is finished the job is not yet over. It is important not to underestimate this phase. The costs associated with maintenance can sometimes be many times greater than the cost of the project itself.

1.8 Why do things in phases?

Number of opportunities for decision making

Executing a large project in phases has the advantage that a *number of opportunities for decision making* are built into the project. At the end of each phase the sponsor has an opportunity to alter the project. The options available are as follows:

- Continue as planned
- Continue with some alterations to the project
- Termination of the project

To terminate a project requires a great deal of courage. After all, a lot of time and effort has already been invested in it. The benefits must outweigh the costs during every phase of the project. The amount already invested in the project should not be an argument to continue. If continuing the project has already cost half a million and another $400,000 is still needed, then arguing that we cannot stop now makes no sense if the benefits of the project will only be $300,000. Also see section 3.12.

1.9 The phases of a project: an illustration

In building a house, we might come across the phasing process mentioned above. We use a detailed example to indicate the types of activities that take place during every phase.

Concept

A family with two children lives in a village in the countryside. The husband is a lecturer in a large city relatively close by; the children have reached the age of attending secondary school in the large city. The husband is fed up with being caught up in traffic jams before he gets to work every morning. Since they have inherited quite a large amount of money from an unexpected source, they could have a house built in a new housing estate on the outskirts of the city. They contact a real estate agent to investigate the possibilities.

Definition

The real estate agent and the couple look into a number of things:

- The financial possibilities. How much money does the couple have, what is the family's income and how much money could they borrow to build the house/how much money do they want to borrow?
- The availability of a suitable piece of land to build on. What are the municipal regulations relating to building a house?
- What sort of house they want. This family wants four bedrooms, a large living room, a garage and a large backyard.

After the couple has made up their mind, they and the real estate agent go looking for an architect to draw up a plan for the house.

Design
The list of requirements is talked through with the architect. On the basis of this the architect does some drawings of the new house: the design. While he is working on the drawings he frequently consults the couple about various details: for example, the colour of the bathroom tiles and where to put the power points in the living room. The house design as well as a description of how it will fulfil all the requirements, budgetary and otherwise, is eventually ready. The drawings should give the future owners a clear picture of what the house they are commissioning will be like.

Preparation
On the basis of the drawings, additional technical drawings are made. The drawing of the electrical wiring will show the electrician exactly where to put the cables during the construction of the house. Drawings are also made of the sewerage system and the water and gas pipes. The capacity of the central heating system and the radiators is calculated. The drawings will give the builders and contractors of the next phase exact instructions on how to proceed. Now a building contractor needs to be found to do the actual building of the house.

Execution
The building contractor makes a plan for the building of the house. Various tradesmen will be needed: bricklayers, carpenters, electricians and plumbers, for example. The technical drawings from the previous phase serve as a blueprint for the construction of the house. At the end of this phase the house is ready and the family can move from their old home to their new one. In a sense, moving house is the *conversion* from the old situation to the new.

Conversion

Aftercare
After the new owners have been living in the new house for a while – putting the outcomes of the project to use – they will have to make sure the house is maintained. The woodwork will have to be painted, the backyard landscaped and any necessary repairs done (a door repaired, for example). Because the husband is now spending more time working from home and he cannot do so with adolescents around him all the time, they decide to have an extra study attached to the house. All these activities are aimed at maintaining the project's outcomes and adjusting them to changing circumstances.

1.10 When to do it as a project

You are probably expecting a book on project management to recommend adopting a project-based approach. But that is not the case here. There are certainly advantages to a project-based approach, but naturally also disadvantages.

Advantages of a project-based approach
There are a number of advantages to a project-based approach:
- The project is not part of your everyday work; time has been set aside especially for the project.
- Since the members of the project team are able to concentrate on the project at hand, there is a greater chance of better results.

- There is a sponsor for the project who can make decisions when necessary.
- If there is a clear project plan (see Chapter 5), all parties involved will know exactly what must be done.
- The responsibilities of the project manager, sponsor and members of the project team are clearly defined in the project plan.
- If project is to be carried out in phases, it will be well organized.
- If the project team is well chosen, the members will complement and support one another, thereby increasing the productivity of every member.
- Since a project is started in order to achieve a specific end result, there is a smaller risk of failure.
- Working in a project team is a valuable experience and enables the members of the project team to develop and perhaps later on serve in a management position.

Disadvantages of a project-based approach

There are also a number of disadvantages to a project-based approach:

- Setting up and organizing a project costs time.
- A variety of individuals must be consulted and a project team has to be put together. It also takes time to formulate a good project plan.
- Since members of a particular department take part in the project, they leave behind a "gap" in their department that must be filled.
- A project-based approach can also be complicated. Inexperienced members of the project team sometimes must be trained first.
- Although the project team learns from the experience, it has less of an effect outside of the group since the most complicated tasks are carried out within a limited project group.

When should a project-based approach be used?

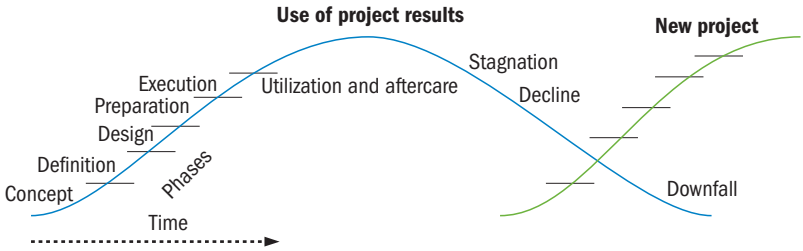
It is relatively time-consuming to set up a project organization for a rather minor "job". For example, if this "job" can be carried out in only a week's time, it would be unwise to use a project-based approach. A good rule of thumb is to only use a project-based approach if the duration of the project is at least two to three months. However, if a project is expected to take a year, it is worth considering whether it would not be better to divide it into several sub-projects.

1.11 Lifecycle of a project

The goal of a project is to achieve a specific goal. However, the end result is often only temporary. The results of reorganizing a car factory or manufacturing a new car model, for instance, will lose their value in the long term. After a number of years, the car factory will start up a new project in order to manufacture an even newer car model. The entire process from start to finish of a project is called the "project *lifecycle*". Figure 1.4 illustrates this.

Lifecycle

FIGURE 1.4 Lifecycle of a project



Utilization

You can recognize the phases of concept, definition, preliminary design, detailed design and production at the start of the project. At the end of the production phase, the end result is accomplished and subsequently used. This latter phase is also called "*utilization*". During the utilization of the project result, aftercare and maintenance are required to maintain the results and keep them up to date. After some time, aftercare might be insufficient and stagnation will occur. With the case of the car factory mentioned above, for example, sales of the model start slowing down or the factory becomes obsolete from a technical perspective. A decline then follows and the project result is no longer useful. In the meantime, a new project might be started up to manufacture an even new car model or build a new factory, and the lifecycle of a new project begins.

1.12 Project goals should be SMART

SMART

Projects are carried out in order to achieve a certain goal. It is therefore important to examine ways in which goals can best be described. Project goals should be defined using the SMART principle. SMART stands for:

- Specific
- Measurable
- Acceptable
- Realistic
- Time-bound

Specific

The project goal must be specific, i.e. described in detail. In other words, what exactly are we going to do? There should be no misunderstanding as to the end result. For example, "We're going to improve the delivery of our products" is not specific enough. More specific would be to say "We need to shorten the delivery time for our products".

Measurable

The goal must be measurable. This means that it should be possible afterwards to determine whether the project goal has been reached (or not) with regard to time, money, quality and quantity. Measurability is also important for determining when the goal is actually reached: When am I finished? For example, "The delivery time of our products must be reduced from five to two days."

Acceptable
A person or group must be responsible for achieving the goal. So who will that be? The goal must also be acceptable for the person who must achieve it. For example, "The Logistics Department must reduce the delivery time of our product from five to two days."

Realistic
The goal must be feasible and realistic. Can we achieve this goal? If the goal is not realistic, the project members will have little interest in pursuing it and will quit. For example, "The Logistics Department must reduce the delivery time of our product from five to *three* days" (since "two days" was not realistic).

Time-bound
There is a specific deadline by which the goal must be achieved. For example, "The Logistics Department must reduce the delivery time of our products from five to two days by December 31 of this year."

The following are two examples in which goals have been defined according to the SMART principle.

EXAMPLE 1.1

A personal goal

The goal "I want to live a healthier lifestyle" defined according to the SMART principle: "I (A) want to lose (S) five pounds (M) over the next three months (T)." The feasibility (R) of losing five pounds in three months is for you to determine.

EXAMPLE 1.2

A project goal

The goal of reducing waiting lists: "The Surgery Unit (A) must reduce (M and R) the waiting lists for hip operations (S) by 20% by December 31 of this year (T)."

1.13 Carrying out the projects in this book

This chapter provides a brief introduction to project management. A more detailed theoretical explanation of project management can be found in the following three chapters:

- Chapter 2 People working on projects
- Chapter 3 The project from start to finish
- Chapter 4 Planning and scheduling

The second half of this book contains a number of practical tools, such as how to formulate a project plan, step-by-step instructions for carrying out a project, how to hold a project meeting and how to present the end result. To

properly understand project management, it is advisable to closely read through the first four chapters of this book before getting started. But if you are eager to get started right away, you can begin directly by formulating a project plan (Chapter 5). The project plan is used to define the project before you begin carrying it out.

If you want to carry out a project from the very first step to the very last, it is best to start with Chapter 6 "Carrying out a project". This chapter cleans clear-cut practical steps – divided into activities – that take you through this process. This step-by-step plan refers to Chapter 5 on drawing up a project plan.

Figure 1.5 below provides an overview of the process (with the chapter numbers between brackets) that can be used to carry out a project from start to finish.

FIGURE 1.5 This book and carrying out a project

Project start-up	Project execution	Project completion
• Theoretical preparation (1, 2, 3) • Carrying out a project (6) • Interviewing (8) • Drawing up a project plan (5) • Project start-up (3) • Initial planning (4, 5, website) • Making a project offer (website)	• Carrying out a project (6) • Execution and mastery (3) • Updating the planning (4, website) • Meeting (7) • Interviewing (8) • Presenting the intermediate results (10) • Writing letters (website)	• Carrying out a project (6) • Writing reports (9) • Presenting the end result (10) • Writing a management summary (11)

Assignments

1.1
a For which of the three groups of activity that have been mentioned in this chapter is it possible to draw up working procedures?
b Give three examples of situations where activities could be carried out in an improvised manner.
c Give three examples of routine work.
d A vacation can be approached in a routine, improvised or project-based manner. Give an example of each.

1.2
a Which six phases in the execution of a large-scale project are used in this book?
b Describe in your own words the contents of each of these phases.
c Which phases can be combined for a small project?
d Explain why projects are broken down into phases.
e Why should a project not take too long?

1.3 Name three projects in your own area of expertise.

1.4
a Define a project.
b Which persons participate in a project and what are their roles?

1.5 Explain the following statement: “Improvisation can be turned into routine using a project-based approach.”

1.6 What are the different types of projects? Explain which type you believe is the most difficult to carry out.

1.7
a Why is it advisable to work from the top down?
b What does “Projects are sometimes difficult to manage” mean?

1.8 In which phase of a project do the following belong?
a Design report
b Project plan
c Building plans
d Project proposal
e Project result

1.9 Suppose someone wants to start a copying company.
a Which phases would you recommend?
b List a number of activities for every phase.

1.10 Large "jobs" are not always carried out as projects.
- **a** List three advantages of a project-based approach.
- **b** List three disadvantages of a project-based approach.

1.11 Describe the following goals using the SMART principle:
- **a** I want to be a journalist.
- **b** I want to use my time better.
- **c** I want to be a better student.
- **d** The cafeteria needs updating.
- **e** I want to improve my relationship with my sponsor.
- **f** The communication in my project group must be improved.

1.12 What is meant by:
- **a** A discipline
- **b** Brainstorming;
- **c** A prototype
- **d** The implementation of a project
- **e** Conversion
- **f** A project plan

1.13 This assignment should be done in groups. Each group is assigned to list as many activities associated with the following projects as possible:
- **a** Organizing a big party
- **b** Organizing an excursion to Brussels
- **c** Putting a new product on the market
- **d** Computerizing the financial administration system
- **e** Designing a mould

The various groups work on the same assignment should then compare their results, paying special attention to the differences between them.

1.14 Should a final thesis project for an institute for higher professional education be regarded as a project? Comment.

1.15 Explain why projects are being carried out more frequently now than in the past.

1.16
- **a** Chose five of the examples given in section 1.2. Ask your trainer or teacher for assistance if necessary.
- **b** Give a clear description of the outcomes of each of these projects.
- **c** Compare your answers to **b** with those of someone who has chosen the same examples.

1.17 Clothing manufacturer X is not doing well.
- **a** List three possible causes.
- **b** For every cause, come up with a project that could resolve or turn around the problem.

1.18 Company Y never works with projects. Explain step by step how the company can implement a project-based approach.

1.19 Discuss the following statements in groups:

a Working in a project-like way is a trend that is likely to be short-lived.

b Devising a project plan takes up a lot of time and is better left out, especially if it is a small project.

c You cannot terminate a project that has already had 100,000 dollars invested in it.

d Routine work makes you unhappy.

e Working together in a project is a good opportunity to develop your own capacities.

f Carrying out a project in phases is not always necessary.