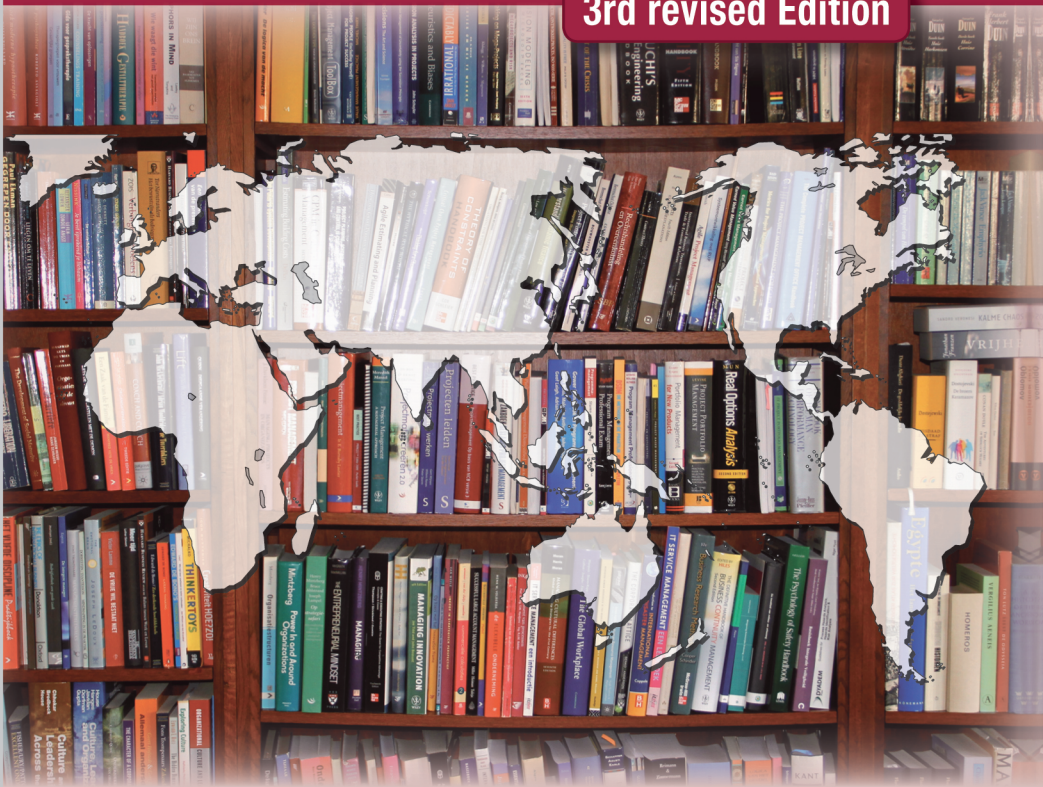


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# Better Practices of Project Management Based on IPMA competences

3rd revised Edition



John Hermarij

# The Better Practices of Project Management

Based on IPMA competences

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# The Better Practices of Project Management

Based on IPMA competences  
3rd revised edition

John Hermarij



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## FOREWORD

In front of you is a book, which, in my opinion, you are not going to read but use. It is a particularly informative and useful book, the content of which you not only need, but also must know, in order to become a better project manager. This book provides a significant contribution to achieving that. The profession and your skills are elaborated on from various viewpoints, also from an international perspective.

The project management profession, and with it the development of the project manager, has taken a significant forward step in recent years. As well as the project manager's knowledge and experience, the understanding has developed that, in particular, the project manager's professional behavior is essential to ensure the success of a project.

For this purpose, IPMA has developed three competence groups; technical project management competences, behavioral competences, and competences that determine the relationship between the projects and the organizational context.

The number of IPMA certified Project Managers is rapidly increasing, and furthermore, more and more organizations are choosing the IPMA model as the standard for the quality and development of the project manager.

This is the first international book covering all subjects and competences of the IPMA Competence Baseline (ICB), which makes it not only unique, but also important. This book offers every project manager the opportunity to learn, understand and apply the project management competences. It is self-evident that, if you want to successfully achieve international IPMA certification, this book is indispensable.

Projects and project managers can be found everywhere, and every different type of project contains its own complexities. You can devise as many methodologies as you like, but every country or continent has its own culture. Project managers, and their projects, are successful within their own culture and values, and when they understand their own stumbling blocks and political power relationships within another culture they can be successful everywhere.

John Hermarij has succeeded in combining his substantial knowledge of the project management profession with his international experience, and to look at the world of project management and the competences of the project manager from an intercultural perspective.

Over recent years, I have witnessed John Hermarij in many different roles; as trainer, coach, IPMA assessor and especially also as a positive critical conscience for IPMA and the advancement of the profession. John is able to put things into perspective, and is also sharp, but above all else, he always radiates pleasure. In my opinion it is this combination of qualities that has enabled John to compile this book.

*Foreword*

I wish you a lot of pleasure and success with your further development in our fascinating profession of Project Management.

Joop Schefferlie

President of the Board

IPMA Netherlands

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## Introduction

The primary objective I want to achieve with this book is to provide an overview of the project management competence that is as complete as possible. A book, in fact, that I would have liked to have had when I experienced my first adventures as a project manager in the early 1980's.

In 2002 together with Clemens Bon and Rinse van der Schoot, just like me, both IPMA assessors in the Netherlands we wrote a Dutch book based on the National Competence Baseline. The years following I've been expanding my vision more internationally, resulting in the need for book with an intercultural view on project management.

## The IPMA Competence Baseline

My starting point was the IPMA Competence Baseline (ICB), which covers the crucial elements of the project management competence. These elements are divided into three main areas: technique; behavior; context.

### Technique

In the first 20 elements, the ICB describes the most essential technical project management competences:

<b>ICB</b>	<b>Topic</b>
1.01	Project management success
1.02	Interested parties
1.03	Requirements & Objectives
1.04	Risks & Opportunity
1.05	Quality
1.06	Project organization
1.07	Teamwork
1.08	Problem resolution
1.09	Project structures
1.10	Scope & deliverables
1.11	Time & Project phases
1.12	Resources
1.13	Cost & Finance
1.14	Purchase & contract
1.15	Changes
1.16	Control & Reporting
1.17	Information & Documentation
1.18	Communication
1.19	Start-Up
1.20	Close-out

These twenty elements form the basis of what good project management is. As a project manager, when you have a command of the major part of these techniques, you can be assured that you are in a position to structure your project soundly, and to maintain this structure for the duration of the project. This is an important condition for success, but it is not enough.

## Behavior

The ICB then covers the following 15 behavior elements:

ICB	Topic
2.01	Leadership
2.02	Engagement & Motivation
2.03	Self control
2.04	Assertiveness
2.05	Relaxation
2.06	Openness
2.07	Creativity
2.08	Result orientation
2.09	Efficiency
2.10	Consultation
2.11	Negotiation
2.12	Conflict & Crisis
2.13	Reliability
2.14	Values Appreciation
2.15	Ethics

Here, the ICB does something which, in my opinion, is a stroke of genius, by describing for 15 behavior elements how these could be expressed in terms of a project management function. In this way, they accomplish a connection between, on the one hand technique, and on the other hand behavior. I shall make this clear, by way of a few examples.

The element 2.06 Openness: *“is the ability to make others feel they are welcome to express themselves, so that the project can benefit from their input, suggestions, worries and concerns”* i.e. a competent project manager ensures that within the project team, there is sufficient room for contributions to the plans he draws up. In this way, he achieves a qualitatively much better schedule than when he produces the schedule himself from behind his laptop. The technical element “Time and Project phases” is in this instance linked to the behavior element “Openness”.

Element 2.08 Results orientation: *“to focus the team’s attention on key objectives to obtain the optimum outcome for all parties involved”*, also demonstrates a link between the hard and soft sides within a project.

When we look at element 2.09 Efficiency, this link becomes even clearer: *“the ability to use time and resources cost-effectively to produce the agreed deliverables and fulfil the interested parties’ expectations”*. Here, the technique of Project Control is linked to efficient behavior - a competent project manager acts efficiently!

## Context

There is not one single project that exists in a vacuum, sometimes there are other projects battling for the same resources, sometimes there are commercial interests, which determine whether or not the project gets priority, and at other times something goes amiss in the operations of one of the parties involved in the project, whereby your project cannot progress any further.

In order to understand this, as project manager you need a certain amount of management knowledge, and that is what the third part of the ICB is about. In total the last 11 elements:

ICB	Topic
3.01	Project orientation
3.02	Programme orientation
3.03	Portfolio orientation
3.04	PPP Implementation
3.05	Permanent Organization
3.06	Business
3.07	Systems, Products & Technology
3.08	Personnel management
3.09	Health, Security, Safety & Environment
3.10	Finance
3.11	Legal

The first four are related to the professional implementation of project management in an organization, and the last seven are related to general knowledge about companies and organizations.

### **A complete picture**

To the best of my knowledge, there is currently not a more complete description of the necessary project management knowledge and skills available anywhere in the world. For this reason the choice of layout for this book was quickly made. In the following 46 chapters, I cover all of these subjects one by one, always using the ICB as my guiding principle. Because the Dutch IPMA is one of the associations in Europe that is very far advanced in putting the ICB into practice, I have used their exam terms in the choice of the various techniques, models and insights covered. Although some of them are only known in the Netherland, I'll think they will be of help to you.

### **An intercultural view**

This book has been written to support every project manager in the world, who can get along with the English language, so for those whose native language is English, and also for those whose second language is English. This has consequences for the style in which this book has been written; in straightforward and accessible English. For this, I am extremely grateful to Tineke Bruce-Feijen, who has translated my Dutch text.

In addition, the book had to be applicable to groups of project managers originating from diverse cultures. This is not a book that tells how a Westerner must behave in an Arab or an Asian country, but one which, from a number of cultures, looks at the different subjects covered in the ICB. For example, time in Western society is “*a line that goes from left to right in an upward slope*”, whereas in an Arab country it is much more “*a circle that finishes back at it's starting point*”. It is clear that this has an effect on the way in which you draw up a schedule, but also on how you cope with stress. For this intercultural aspect, Leo Kwarten, a well-known Arabist in the Netherlands, has carried out important work.

Furthermore, I went in search of non-western management literature and, where applicable, I have used this in describing the different elements, with the goal of trying to rise above the various cultures. This also makes the book suitable for training purposes, where the participants originate from different cultures, as long as they are able to read English. I have already successfully used this book for a number of years in such training groups.

### **Reader's Guide**

This is a book that, when I was first starting out as a project manager, I would have liked to have had, and also a book that serves as support for the IPMA certification exams (therefore I have used the end terms available), for both the trainer and the exam candidate. This book consists of more than 600 pages, and I can well believe that you are asking yourself where you can best make a start.

As I have chosen to keep to the same sequence as the ICB, this may come across as slightly confusing, and I am, therefore, proposing a number of reader's guides:

- The junior project manager
- The experienced project manager
- The IPMA certification candidate
- The project management training programme developer

#### **The junior project manager**

As a first-time project manager, the most important aspect of all is to ensure that your project is well-structured, and the first 20 chapters cover this. If you have little knowledge of project management, then I would concentrate on the following chapters, and read them in this sequence: 1.01; 1.02; 1.19; 1.05; 1.09 to 1.13; 1.15 to 1.17; and finally chapter 1.20. When you look at a chapter, you will see that it always consists of four sections:

1. Definitions
2. Introduction
3. Process Steps
4. Special Topics

Initially, you should read through the first three sections and concentrate on the process steps. In this way you can form a picture of the things you have to organise in such an element. Once you have formed that picture, the fourth section provides you with more in-depth information.

Each chapter is written in such a way that you can read each one separately. Chapters 2.01 to 2.15 are about behavior and you should look at the contents of these chapters to see what you need from them. The same applies to the last 11 chapters (3.01 till 3.16) about the contextual aspects, although if you are just starting out in the profession, you can best leave these alone to start with.

### **The experienced project manager**

Each chapter is written in such a way that you can study each one separately. You will see that the process steps that I have adopted from the ICB, form, as it were, a “mini methodology” for each competence element.

As you are experienced, you already have an overview of the profession, and you could just read the book all the way through from start to finish. An alternative, and much more efficient, way, is firstly to make a choice as to where your primary requirement lies. I would then suggest making a choice between:

- Technique
- Behavior
- Context

Dependent on this, you can again look at the contents of the relevant chapters and make your choice from these. Then read a chapter right the way through and use what is relevant for you in practice.

### **An IPMA certification candidate**

This book contains practically every subject that could arise in the IPMA theory exams. Given the IPMA structure (central organization with autonomous country associations), it is impossible to be up-to-date with all the terms. You should, therefore, always contact your own national IPMA association. In addition you should look for a good trainer. The bureau, to which the author is associated, (Dhirata, [info@dhirata.nl](mailto:info@dhirata.nl)), also provides English language training courses for the IPMA certification, and has a large number of training modules, which enable a training to be customized to meet your specific requirements.

When studying all the chapters, you should focus your attention predominantly on the various different techniques and models covered, as it is precisely these that can be examined on.

### **A project management training programme developer**

The author has training modules available for all chapters, and these can be acquired on a license basis, and we can also develop new ones for you if required, in line with the IPMA standard. Please do not hesitate to contact us on these aspects ([info@dhirata.nl](mailto:info@dhirata.nl)).

If you want to develop a training yourself on the basis of this book, then it is absolutely essential that you also purchase an ICB (download via [www.ipma.ch](http://www.ipma.ch)), and preferably also the national version (NCB) from the country where you want the actual certification to take place. Make sure that you are also well informed about the end terms applicable there.



## *Introduction*

As a reading guide, we advise you firstly to read the process steps (third section) in all the chapters, in order to form a picture of the complete field of the discipline. Following this, you can successively study in more depth the technique, the behavior and finally the context chapters.

### **The website with the book**

For this book, there is a section for trainers and students in the interactive learning environment [www.e-dhirata.nl](http://www.e-dhirata.nl). Please contact [info@dhirata.nl](mailto:info@dhirata.nl) for more information.

### **Project management as a discipline for life**

There are a lot of people, who from their profession are involved with project management, and initially, this book has been written for them. When you think about it some more, however, every person who wants to be successful in life, needs some of the project management skills. The organization of a removal, a wedding, a holiday with a family of three children, or the funeral of a parent, requires someone who consistently and in a structured way, knows how to keep a cool head. All these characteristics are embodied in a competent project manager.

I wish you a lot of pleasure in reading and applying what is contained in this book.

John Hermarij

# 1. Technical Competences



# 1.01 Project Management Success

NOT EVERYONE THINKS THE SAME ABOUT THIS

What is success and what is failure?

Ask this of ten interested parties.

Everyone one of them will have his/  
her own view. Success or failure is  
that what each particular interested  
party perceives it to be.

You'll just have to accept that.

## 1.01-1 DEFINITIONS

Project Management assessment	An assessment of the work carried out, and the performance achieved, by the project management team.
Project Management plan	The plan for carrying out a project, which describes how the project will be carried out and monitored.
Project Management success	The appreciation of the project management results by the relevant interested parties.
Project Management success and failure criteria	The criteria against which the success or failure of the project management in a project can be measured.
Project Management success and failure factors	The factors, which, to a large extent, contribute to the success or the failure of the project management of a project.
Project success	The extent to which, within the set requirements and the agreed restrictions, the actual result delivered is in accordance with the result expected, as seen from the perspective of the relevant interested parties.
Project success and failure criteria	The criteria against which the success or failure of a project can be measured.
Project success and failure factors	The factors which strongly contribute to either the success or the failure of a project.

## 1.01-2 INTRODUCTION

The 1996 *PMBOK Guide* version of the American Project Management Institute provides the following definitions of project management<sup>1</sup>: *Project management is the application of knowledge, skills, tools and techniques to ensure that the project activities fulfil, or exceed the expectations.*

The extent to which we exceed the expectations of the stakeholders, determines the extent to which they perceive the project as being successful. A later version of the *PMBOK Guide* is more precise and defines project management<sup>2</sup> as: *Project management is the application of knowledge, skills, tools and techniques to ensure that the project activities deliver the desired result.* ‘Exceed’ has been removed, because it could be a justification for giving in to customer demands for additional requirements without any limits. Project success here means that the project team delivers what has been agreed, no more and no less. As more people are involved, leading, therefore, to more expectations, you are confronted with different views on the alleged success of a project. This means that even though the project sponsor ultimately discharges the project manager and his team, it is not sufficient just to take account of him; there are more parties.

It is quite a job to ensure that all interested parties perceive the project as being a success. Even if project plans have been approved, and the packages of requirements have been unambiguously established, it does not mean that this is exactly what the interested parties expect. This process, in which you, as project manager, must constantly monitor to ensure the expectations still tally with what was agreed at the outset, is often referred to as “*managing the expectations*”.

A lot of literature talks of project success as being when the end result has been delivered on time, according to specifications, and within the agreed budget. The focus of this definition is on the product or the result of the project. A narrow definition, because you can also look at the way in which that result has been achieved. In this case, success is about the product delivered, and *also* about the process that led to it. There is only real success, when both of these are successful.

In his thesis T. van Aken<sup>3</sup> gives a simple definition of project success:

*Project success is the extent to which the project result satisfies the actors involved.*

---

1 (1996), *A guide to the Project Management Body of Knowledge*, THE PROJECT MANAGEMENT INSTITUTE INC.

2 (2004), *A guide to the Project Management Body of Knowledge, PMBoK 3<sup>rd</sup> edition*, THE PROJECT MANAGEMENT INSTITUTE INC.

3 (1996), *De weg naar projectsucces*, T. v. Aken, ELSEVIER/DE TIJDSTROOM

## 1.01 Project Management Success

With this definition, he covers both factors in one go. Before I go into more detail on the various actors and the elements that contribute to satisfaction, it is interesting to summarize the most important findings from his research:

- For projects which are not so tangible, structuring is required.
- For tangible projects the opposite is true, less structuring is required.
- A goal-oriented style of working has a positive influence on project success.
- The more tools that are used, the less chance there is of project success.

These conclusions have to do with the way in which a project manager manages his projects. In short, when you, as project manager, aim directly at your goal, adapt the structure to what is needed, and do not lean too much on all different kinds of tools (such as super deluxe planning tools and very heavy methodologies), then you have already laid an important foundation for project success.

Research carried out by the Standish Group<sup>4</sup> into successful ICT projects, names the following success factors and the extent to which these contribute to success:

• User involvement	20%
• Senior management support	15%
• Clear business goals	15%
• Experienced project manager	15%
• Small milestones	10%
• Fixed basis of requirements	5%
• Competent members of the project organization	5%
• Good planning	5%
• Involvement	5%
• Various other factors	5%

The first three factors alone are responsible for 50% of the project success.

T. van Aken's research shows a number of other correlations:

- Small projects have a higher success rate than larger projects.
- Projects with a shorter time scale have a higher chance of success.
- Projects with a small team have a higher chance of succeeding than those with a large team.

In summary, it comes down to the fact that a smaller project has a higher chance of success, which, if you think about it for a while, is a logical conclusion.

Even though the *project manager's success*, to a large extent, depends on the success of the project, it is not the same. It is possible that the project manager does an excellent job, but a business justification can no longer be found for it. In such a case, a decision is made to stop the project and you can not talk of a project success, but on the other hand, you can say that the project management was successful.

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<sup>4</sup> (1999), *Chaos : a recipe for Success*, THE STANDISH GROUP INTERNATIONAL INC.

## 1.01-3 PROCESS STEPS<sup>1</sup>

1. Analyze before accepting.
2. Develop the approach.
3. Resolve conflicts and integrate.
4. Agree upon the approach.
5. Execute the management plan.
6. Collect, interpret and report.
7. Apply lessons learned

### 1. Analyze before accepting

The time at which a project manager becomes involved in the project differs per organization. It is best to do at an early stage, but in practice this is not always possible. This means that the project manager is often confronted with decision making, which in practice cannot be executed in the way in which the decision makers had thought.

It is now important, that, as project manager, you take the time to study this decision making and the information on the proposed project, to analyze whether or not you see the possibility of carrying out this project successfully. Also, if you take the project over from someone else, you have to “mark time” so to speak, in order to create the conditions required to make the project a success.

The following are essential conditions a project has to satisfy:

- A *decision* from line management has been made to achieve this ‘job’ in the form of a project.
- It must have an *overall objective* and an intended *result*.
- It intends to achieve a *pre-defined* result.
- It is *temporary*, with a defined beginning and end.
- There is *pre-defined work* to be carried out.

- There is an own *project organization*.
- There must be **resources** required, i.e. it doesn’t just happen by itself.
- It is often a *unique combination* of activities, which if take separately may well have a routine character.
- There has to be a *project sponsor*, someone who is interested in the end result, and who makes the resources available.
- The project sponsor is the person, who, as representative of the regular organization or customer, ensures that the project gets the priority required to bring it to a successful conclusion.

### 2. Develop the approach

The project manager must now translate the broad outline of the assignment into a workable approach. This, in fact, cannot be done properly until the core of his project team has already been formed, and ideally this should be done before the actual start of the project execution. We do not live, however, in an ideal world, and often the team members are not yet available. In this case, the project manager must realize that, when his team is complete, he might have to adapt his approach. An approach, in which the people carrying out the work have had a say, has more chance of success than one which the project manager has thought out himself, whilst sitting behind his notebook.

The project approach consists of *pragmatically* applying methods, techniques and tools:

- A *method*<sup>2</sup> is a systematic, carefully thought-out way of working in order to reach a result that contributes towards a goal.
- A *technique* is a way in which a certain activity or piece of work is carried out.

<sup>1</sup> Although process steps are based upon the IPMA Competence Baseline we have adapted them to some extent.

<sup>2</sup> (2011) *Wegwijzer voor methoden bij projectmanagement, 2de druk*, VAN HAREN PUBLISHING, Zaltbommel.



## 1.01 Project Management Success

- Tools are resources which help with this.

I consciously put the emphasis on the pragmatic application, keeping one of the conclusions from Van Aken's research cited previously in the back of my mind: *In projects which are not so tangible, structuring is required, and for tangible projects the opposite is true*. Complex projects require more structure than simple ones. *Over structuring* leads to a focus on the management of the project, whereas, the focus should be on the end result. On the other hand, *under structuring* leads to 'messy work', that is why I speak of *pragmatic structuring*.

### 3. Resolve conflicts and integrate

It is inevitable that each project has its discrepancies, and the project manager and his team must find a way to solve them. We are then talking about integration!

There may be discrepancies in the interests of the parties involved, but also between the requirements of senior management and the possibilities the project team has. Other projects may be competing to include the same people in their teams. In short, many "potential" conflicts of interest, which the project manager must try to resolve.

Many of these conflicts of interest are normal for each project, and I have already mentioned a few of them above. The project manager, therefore, has to identify them beforehand and include them in his approach. Foresight is the essence of good management!

### 4. Agree upon the approach

There has to be something like a document in which the requirements for the project deliverables have been defined. That alone is not enough, because apart from the requirements which have been explicitly set out,

there are often expectations which have not been voiced for both the end result, and the approach. Success is only possible when, in his approach, the project manager manages to find the biggest common denominator for all the different expectations. A good analysis of these expectations, and a translation of them in the approach to the project, will, therefore, contribute to the success of the project.

The project manager, therefore, starts (in cooperation with his team if it already exists) to incorporate this information in his approach. He defines the global deliverables and the approach in the project management plan and ensures these are approved by the project sponsor, and, where possible, by the most important stakeholders. The plan functions as a mandate for him to work accordingly.

### 5. Execute the management plan

The project management plan contains a description of the way in which the team will achieve the desired results. It contains a description of the duration and costs, scope, project organization, quality plan, risk management, change management and such-like.

It is the "*soldiers' manual*" for which the most important interested parties have given their approval, and it is the basis for carrying out the work involved in the project. Putting it into writing is one thing, but it is, of course, all about the execution. A project management plan is on the desks of the interested parties and not in a binder under a layer of dust; it is a working document.

We can hold an interesting discussion about the number of pages the plan should contain. Although that depends very much on the project, the plan must provide the reader with an insight into the project in a relatively

short space of time. A plan containing a few dozen pages achieves that aim better than one of a hundred pages. You may well ask yourself whether the project sponsor's signature on such a bulky document, which he probably has not read, is worth anything?

The project manager has ensured that all interested parties are aware of the parts of the plan which are relevant for them, and he must check that they keep to these.

### 6. Collect, interpret and report

Nothing goes according to plan as originally conceived and the reality will supersede calculated estimates and the planned approach. A good project manager will have set up an information system, which allows him to see in a *timely fashion* where things might *possibly* go wrong. The words *timely fashion* and *possibly* have deliberately been put in italics, because in that way I can emphasise the project manager's proactive predictive-ness, as opposed to the fire-fighting reaction when something goes wrong.

Note the difference between the following two statements of a project manager:

- We are running three months over time.
- If we don't do something, we'll end up running three months over time.

The first statement is reactive, the second pro-active.

Project managers, who only determine their progress by asking their employees for the actual figures (and overruns), haven't understood it very well. Project management is prediction; anticipating unwanted events and taking action on them at the right time.

As well as interpretation and prediction, there is also the reporting to relevant par-

ties, and this provides us with an interesting dilemma. When do you report? Remember that you are continuously busy analyzing and clarifying uncertainties and arbitrariness in order to be able to preventively act on these. The chance of something unwanted happening does not necessarily mean that this will actually come about.

Take the example of running three months over time, if you do not take any measures. Do you have to inform the project sponsor about this now? A lot of people will answer "yes" to this, but as I have a more considered point of view, if only because of the fact that the time overrun is just as uncertain as delivering on time.

You report it when the parties involved can influence the uncertainty with their input, or when they, as a result of the uncertainty, have to take measures that are outside the scope of the project. You also report it when there is virtually no uncertainty left, and it is almost certain that the negative event will happen. In this case, the time to report it is now, immediately.

Further, you report actions you have taken to prevent the uncertain event from happening. You could report the example of the three months time overrun as follows: *In the last period we have worked overtime, and through this we have managed to achieve a deadline. If we hadn't done that, we would have overrun by three months.*

### 7. Apply lessons learned

It is remarkable fact that a lot of people learn little from their mistakes or from history. This is a pity, because "re-inventing the wheel" always takes a lot of time and energy. Usually people keep to a certain approach without looking for new ways of working. Change quite often means admitting failure in the past.

## 1.01 Project Management Success

You cannot look at **project management success** without looking at the experience you have gained as a project manager in the past. You only learn from your experience when you try to fathom out what the reasons are for your success or failure. This is knowledge you then apply once more in the following project.

In job interviews, I always ask the candidate for his biggest failure as project manager. The manner in which he then explains how he has learnt from his mistakes, has a significant influence on my decision whether or not to hire someone.

### 8. Other standards and guidances

The process steps as identified by IPMA are only a suggestion. The process steps described in the *ISO 21500 Guidance*, the 'guide to the Project Management Body of Knowledge' (the *PMBOK Guide*) from the Project Management Institute, and in the popular PRINCE2 Project Management method are much more "binding". Without discussing it in detail I shall name, as a comparison, a number of items from these standards that are related to this competence element. What will be noticeable is the high level of similarity and overlap.

Both the ISO Guidance and the 5th edition of the *PMBOK Guide* contain a subject which cannot easily be fitted into the IPMA framework. It is the subject of Integration, which, because of its importance for project management success, will be discussed here.

#### ISO 21500

The processes in the ISO 21500 Guidance are differentiated as follows:

- Develop project charter.
- Develop project plans.
- Direct project work.
- Control project work.
- Control changes.

- Close project phase or project.
- Collect lessons learned.

It is immediately clear that these processes are spread across the IPMA framework.

#### *PMBOK Guide*

The processes covered in the 5th edition of the *PMBOK Guide* correspond, to a large extent, with those in the ISO Guidance. PMI differentiates the following processes:

- Develop project charter.
- Develop project management plan.
- Direct and manage project execution.
- Monitor and control project work.
- Perform integrated change control.
- Close project or phase.

As with the ISO Guidance, these processes are spread over the IPMA framework.

## 1.01-4 SPECIAL TOPICS

### 1. Initiation documents

This first chapter is about project management success, by which we mean: how the different people involved in the project rate the way in which the project was managed.

A condition for achieving this is to ensure that it is clear in advance:

- What the project team will deliver.
- The way in which this will be achieved.

The decision makers will assess these aspects from the perspective of:

- The expected benefits.
- The uncertainties present in this.

In addition to all the initiating discussions and meetings prior to the execution, it is good practice to document the approach in a collection of so-called initiation documents. This is derived from the PRINCE2 methodology<sup>3</sup>, which requires that all important decisions are tested against the so-called Project Initiation Documentation (PID). This consists of the project management plan and a documented business case.

The project management plan provides an overall impression of<sup>4</sup> the:

- Project life cycle.
- Customized project management processes
- The execution of the work.
- Procedures for changes and configuration management.
- The way in which project performance is made transparent.
- The manner of stakeholder management.

- The most important decision points in the project.

Obviously, in the project management plan we also find:

- Planning baseline.
- Budget.
- Scope description.

For a sizeable project it is often not possible to sum everything up in one plan, and the underlying detail plans are then added to the initiation documents, in this case providing plans for managing the:

- Scope.
- Requirements.
- Schedule.
- Budget.
- Quality.
- Process improvements.
- Personnel policy.
- Communication.
- Risks.
- Purchases.

By documenting these plans, decision makers can form a picture beforehand as to whether a lot of thought has been put in to managing the project, and whether or not they can agree with it. Furthermore, these plans are a basis for the project manager and his team for the daily management of the project.

We describe the documented business case in a different chapter.

3 (2009) *Managing Successful Projects with PRINCE2<sup>™</sup>*, OGC, UK

4 (2013) *A guide to the Project Management Body of Knowledge – Fifth Edition*, PROJECT MANAGEMENT INSTITUTE INC. USA

## *1.01 Project Management Succes*

## 1.02 Interested parties

EVERYONE WHO (THINKS THAT HE) HAS AN INTEREST IN THE RESULT

Every project has an influence on people.

Everyone with an interest in the project is an interested party<sup>1</sup>.

All of these interested parties together form the environment of the project.

These are not only the project staff and the users, but also the project sponsor and the project manager himself.

The management of this environment requires political skills.

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<sup>1</sup> **Interested parties** (is the ISO approved term adopted in here; 'stakeholders' is a synonym used for interested parties; 'client' and 'customers' are also used in the text to identify a subset of interested parties) are people or groups, who are interested in the performance and/or success (or failing) of the project, or who are constraint by the project.

## 1.02-1 DEFINITIONS

Culture	Everything that characterizes an organization in all its activities and actions.
Environment of a project	The totality of the external factors and interested parties having an influence on the project.
Interested party	Person, or group, who has an interest, or wishes to have an interest, in the performance or the success of an organization.
Support	The extent to which the interested parties support a subject.

## 1.02-2 INTRODUCTION

Projects do not take place in isolation. However annoying it can sometimes be, you are involved in the big “*game of interests*”. In the first instance, there is, of course, the project sponsor who has an interest, but don’t forget yourself and your team members, and what about people who are involved in the way in which your team carries out the project? Ultimately there are also the people who make use of the project deliverables and who, therefore, also have an interest. A specific group consists of the people who believe that they have an interest.

You often hear novice project managers moaning and groaning under the weight of the project’s *social, cultural and political environment*. This is what this competence-element is all about, because if you find that the environment is working against you, then in most instances it has come about because you have not recognized the different interests.

Being a good project manager is all about having the political skills to deal with the different interests. It is possible to do that with integrity, and indeed, I think that integrity is the only way to survive as a project manager without too much damage to your own feelings.



## 1.02-3 PROCESS STEPS

1. Prioritize interested parties.
2. Analyze their interests.
3. Communicate approach.
4. Develop a strategy.
5. Add strategy to PM plan.
6. (Include) Opportunities and threats.
7. Identify decision authority.
8. Satisfy them in each stage.
9. Deploy the strategy.
10. Communicate changes
11. Apply lessons learned

### 1. Prioritize interested parties

Van Aken<sup>1</sup> makes a distinction between the following interested parties: project sponsor, project manager, project team, internal and external suppliers, users, line management, direct and indirect interest groups and social groupings.

It is necessary to identify and analyze all interests, and when prioritizing these, you should look at:

- The *influence* that can be exercised on the execution of the project.
- The *consequences* of the project for the interested parties.

There are different techniques for this, and these will be explained later.

Many authors use the term “*Stakeholders*” to mean interested parties.

### 2. Analyze their interests

When the various interested parties and each of their interests has been identified, it is necessary to analyze all of them. Their (future) behaviors can be interpreted and deduced from the interests they have, which

can be focussed on the result, or on the way in which the project is executed.

There are different types of interests, and Licht/Nuiver<sup>2</sup> differentiate the following:

- *Business interests*, which can be firmly expressed in terms of money.
- *Idealistic interests* that are connected to someone's principles.
- The *political interests*; how the results can influence someone's position.
- *Management interests*; the necessity of following a consistent course of action.
- *Loyalty interests*, which are linked to personal relationships.
- *Emotional interests*, related to an affinity with, or aversion to, certain themes.

You may add to this cultural interests especially when operating in an environment in which parties with different values systems need to cooperate.

Those involved often have more, and sometimes opposing, interests. The interests of especially the most influential people play a role in the project. If the project manager and his team have analyzed these well, they can also anticipate them.

### 3. Communicate

The way in which the project copes with the interested parties is dependent on the influence that someone has on the project and the interest that he has.

The way of communicating can be:

- Strong involvement.
- Consultation.
- Informing.

The greater the influence and stake someone has, the more useful it is to involve him

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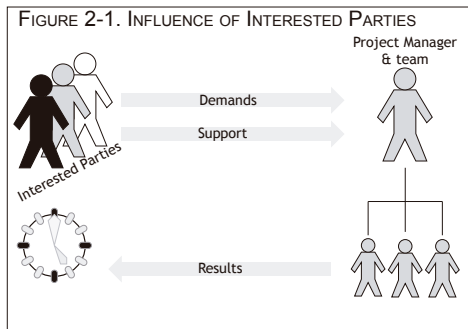
1 (2009) *De weg naar projectsucces*, Teun van Aken, vierde druk, VAN HAREN PUBLISHING, Zaltbommel

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2 (2001) *Projecten en Beleidsontwikkeling*, Hans Licht en Hans Nuiver, VAN GORCUM, Assen

in the project. I can best illustrate the way in which the actors will act during the project by using the diagram below.

Because of their interests, they will provide support and set demands on the project. The project translates this support, and the demands, into the final result to be delivered, and also the approach to be used to achieve it.



The extent and speed with which the team, in the perception of the interested parties, takes account of their interests, determines whether the support is maintained, or whether the demands are increased. Communication plays an important role in this. When everyone is working hard to satisfy the interests, but does not communicate this sufficiently, it can result in the interested parties gaining the impression that their interests are not being sufficiently looked after.

In connection with this, I would like to mention the importance of *managing the expectations*, meaning: the project manager actively intervenes when the expectations of the different interested parties look like deviating from what the project team is actually going to deliver.

#### 4. Develop a strategy

As well as the extent to which the interested parties set requirements and provide support to the project, there are also less tan-

gible issues such as the trust the interested parties have in the project manager, the project sponsor and the operational project staff, and the way in which the project is executed.

This trust also impacts the demands and the support given. The greater the trust, the higher the level of support, and the lesser the trust, the more the demands increase. In addition, the question arises as to how much the project manager will notice any of this. Sometimes you don't notice it until you meet resistance, and then it is often too late.

It is advisable to develop a strategy to get the most important stakeholders involved in how the project will be carried out by the project manager. This builds trust, as the strategy (approach) has, after all, been agreed collectively. In this way, the project manager also gets an idea of '*which way the wind blows*' in the organization; who is really in charge, and where the 'informal' leaders are situated.

The key word in developing a strategy is always TRUST! When you have gained the trust of the parties involved, then even those who don't agree with you will also approach you with a more open attitude.

The IPMA code of conduct anticipates this situation by stating that a member of IPMA in the Netherlands<sup>3</sup>:

*Acts in a way which commands trust from both the professional group and customers.*

You win trust by meeting commitments and fulfilling expectations.

<sup>3</sup> (2005) Code of conduct IPMA NEDERLAND

## 5. Add strategy to PM plan

In the project management plan you establish this approach and you have this plan signed by the steering committee. Preferably, such a steering committee consists of representatives of the most important stakeholders, who have the power to decide.

In any event, the plan is a means to sort out your authority in advance. If you need the cooperation of other interested parties, who are represented on the steering committee, then you must ensure that you also involve them in determining the approach.

## 6. Opportunities and threats

Everyone involved looks at the project in a different way, based on his own interests. For him, the project may be an opportunity, but could also pose a threat. An opportunity when it makes his work easier, or if he can develop himself further, and a threat if, for instance, he loses his job as a result of the improvements in efficiency achieved through the project.

You get support when the interested parties feel that the project offers them an opportunity, and when the potential threats have been sufficiently addressed. Depending on their influence, you give priority to proactively working on those opportunities and threats. Whether or not you do this well becomes evident from any changes in the balance of requirements/support from the third process step (more support and fewer requirements).

## 7. Identify decision authority

In advance, you consider how decision-making has to be arrived at. This translates itself into defined decision points in the planning, which make clear who has to take a decision and when. It also makes clear who can, and who must, take certain decisions, and when.

Because, as project manager, you may be confronted with conflicting interests, it is necessary to consider how the team will cope with this. Together with the interested parties, you establish the way in which, for certain issues, you will initiate an escalation.

## 8. Satisfy them in each stage

Acceptance comes in small chunks. As the project progresses the influence of the interested parties diminishes. At the end of each stage, there is a moment of "reflection" allowing the interested parties to formally decide the extent to which there still is a justification for the project, and, therefore, if they want to carry on with it.

Staging is also a tool to help in obtaining this acceptance. At the start you ensure that it is clear at which stages acceptance is required. The satisfaction of the interested parties at the end of a stage increases the support for the final result. Satisfaction then has a positive effect on the requirements/support balance.

## 9. Deploy the strategy

Developing a strategy is one thing, carrying it out is something else. Once the above mentioned points have been established, and you have decided on a strategy, it is important to carry this out, or if it does not appear to be working, to adapt it to the reality.

Management of the interested parties means that you are continuously busy influencing the parties involved. This is politics. Senior project managers spend a great deal of time on this, and are always up-to-date with the current state of affairs and what this means for the interested parties personally.

## 10. Communicate change

It may be necessary to change this strategy during the course of the project. When this

is the case, then you go through the same steps again as in the initial analysis. You have to involve the different parties again to ensure the support you already have is continues, and to possibly adapt the strategy. The steering committee then has to approve any changes to the plans, and you communicate the changes to the parties involved.

### 11. Apply lessons learned

During, and after, the conclusion of the project, it is good practice to record what you have learned from this project. This political skill grows over the years. However, it is possible to speed up this learning process by learning from the experience from others. The best sources can be found in history; it is here we see the impact certain actions have had on the course of history.

### 12. Other standards and guidances

The process steps as identified by IPMA are only a suggestion. The process steps described in the *ISO 21500 Guidance*, the 'guide to the Project Management Body of Knowledge' (the *PMBOK Guide*) from the Project Management Institute, and in the popular PRINCE2 Project Management method are much more "binding". Without discussing it in detail I shall name, as a comparison, a number of items from these standards that are related to this competence element. What will be noticeable is the high level of similarity and overlap.

#### ISO 21500

The Guidance deals with this topic in the subject group Stakeholder and differentiates between the following two processes:

- Identify stakeholders.
- Manage stakeholders.

#### PMBOK Guide

The 5th edition of the *PMBOK Guide* has somewhat more processes than the ISO Guidance:

- Identify stakeholders.
- Plan stakeholder management.
- Manage stakeholder engagement.
- Control Stakeholder management.

#### PRINCE2

PRINCE2 does not contain a separate topic on stakeholders. That does not mean the method does not give any consideration to it, but it is primarily covered in the topic of Organization. The following steps are named here:

- Identify stakeholders.
- Produce and analyze stakeholder profiles.
- Define stakeholder strategy.
- Plan their involvement.
- Involve the stakeholders.
- Measure the effectiveness.

## 1.02-4 SPECIAL TOPICS

### 1. The project environment

Projects are not carried out in isolation, and normally all the external factors that could influence a project are designated as being part of the project environment. These external factors consist of the following elements:

- Political
- Economic
- Sociological
- Technical
- Legal
- Environmental

These elements are sometimes abbreviated to the acronym PESTLE<sup>4</sup> (**P**olitical, **E**conomic, **S**ociological, **T**echnical, **L**egal and **E**nvironmental). I shall briefly describe each of these categories in turn.

#### Political

In the first instance, you are involved with political decision-making in a country where the project is being carried out. The way in which the power is divided can have a big influence on public projects. For large projects with a lot at stake, it is important that the project organization maintains good ties with the government, and lobbying is a part of this.

Due to the different ways in which things in different countries come into effect, when you are involved with projects that extend across country boundaries, the project organization can find itself caught between two stools. What people in one country find as being totally normal, people in another country can consider as being unacceptable or impermissible. There is really no good solution to this, and if, as project manager, you

are confronted with such a situation, you have to ensure that you understand the different expectations, so that you can make a choice or decision yourself.

Another challenge is the political (in)stability in a country where you carry out a particular project. Such risks are difficult to assess in advance, but that does not remove the need to take stock of them and monitor them during the project.

#### Economic

Decisions are also dependent on the economic circumstances in which the organization involved in the project find themselves. When suppliers or sub-contractors get into financial difficulties during a recession, this can have immediate consequences for your project. As project manager, you can do little about this, and if one of your suppliers goes bankrupt, it has a direct impact on your project. What you can do, however, is to keep an eye on developments in the situation.

The more suppliers you have, the greater the risk. On the other hand, a worsening economy also offers opportunities, because of the associated pressure on prices. It may then be possible to acquire qualified staff, or purchase materials, for a lower price, which will deliver a cost saving. As project manager, this is something you must always try to do, because, when your own organization or that of the customer hits hard times, you can anticipate that enforced savings will have to be made, and you can continue trying to assess what risks the project runs.

#### Sociological

This is about the way in which people interact with each other; the prevailing morals and beliefs. Is it a collective, or rather an individualistic oriented society? In one country it is fully acceptable to voice your disagreement to a senior manager, whereas

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<sup>4</sup> (2006) *APM Body of Knowledge 5th Edition*, ASSOCIATION FOR PROJECT MANAGEMENT, UK

in another country it is totally unacceptable. Primarily, this happens in projects where you cross cultural boundaries, and it can be stated that when you become involved with this, you have to really study how a particular environment works. Not that this necessarily has to involve an international project, as even within one country you can find many different cultures you need to take account of. The maxim is always: *wait with your judgement, and realize that you are the guest.*

### **Technical**

Technology can seriously influence the progress of the project i.e. new technology that has many teething problems, or a project for which no technology has been developed, or one where the technology is obsolete or outdated. As an experienced project manager, you are often divorced from the technology, and you have to ensure you become informed about it by experts.

### **Legal**

Legislation can impose all sorts of constraints related to what is, and what is not, permitted. Not infrequently, you need permits or licenses to build something or to allow people to work overtime, matters which you would rather not be bothered by. This does not alter the fact, however, that you are legally obliged to handle these matters, and so you have to include them in the project.

### **Environment**

As well as environmental law that applies in a country, and which I shall cover later, with respect to the environment there is also something called moral responsibility. You have to realize what it feels like, when, as project manager, you are responsible for pollution or contamination, which will affect future generations for years to come.

## **2. Interested parties**

### **The project sponsor**

He represents the 'business interests' in the project. Preferably, this is a line manager with sufficient hierarchical power in the organization. He is the person, who, in consultation with the project manager, translates the strategic choices i.e. the project objective, into the project result.

His main interest is:

- That the project provides value for money.
- A cost-conscious approach in relation to a timely delivery.
- A balance between the interests of the organization, suppliers and users.

As well as these obvious interests, there are always personal interests that play a role; something that is the case for all the parties involved.

### **The project manager**

Obviously, the project manager is also one of the stakeholders in the project. That is for the most part a personal interest; the successful conclusion of the project reflects on his professional recognition and further career.

The same applies to failure which may be considered as a personal failure in some cultures even loss of face.

### **The project management team**

The project management team consists of the project manager, various experts who support him, and the sub-project managers of the different sub-projects which are included in the project. The team carries out the daily operational management of the project.

## 1.02 Interested Parties

Within such a team, the interests may differ. Apart from all personal interests:

- The project manager will look for an optimum balance between the progress, cost and quality of the result, whereas...
- The experts will emphasize the importance of a qualitative solution, and ...
- The sub-project managers will, above all, protect the (sub-optimum) importance of their sub-project.

Whereas the project sponsor weighs up the interests between the project and the organization, the project manager considers the different interests between the team members.

### **The internal and external suppliers**

These are the operational project staff, who carry out the work that is coordinated by the sub-project managers from the project team. There is a distinction to be made between internal and external suppliers.

In principle the internal line manager's interest should be in line with that of the project, as both are, in fact, working for the same organization. Experience, however, tells a different story, because the focus of the project manager is only on the project, whereas the internal line manager has to ensure an optimum staffing for his unit. Despite all the developments in the area of priorities, programme management and portfolio management, this remains a problem which is difficult to solve.

The difference between project interest and that of an external supplier can be large.

In 1513 Machiavelli<sup>5</sup> already wrote about mercenaries: *“When someone bases his power on mercenaries, he will never be able*

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5 (1513) *Il Principe*, Machiavelli

*to feel strong and safe”*. And further: *“They want to be your soldier as long as you do not go to war, but as soon as war breaks out, they make ready to flee and make a run for it”*.

External suppliers have a different interest in a project than the project manager. For them it is all about keeping the margin of profit as high as possible, or to force a certain solution through, etc., whereas, the project manager is looking for a solution with the best price/performance ratio.

### **The users**

These are the people who will be using the final project result. Their interest is the quality of the project result. It is possible to divide up user groups further as follows:

- The operational users, who work with the system.
- The functional users, who work with the output of the system.
- The supporting users, who are responsible for maintenance and management.

If the financing does not come from within the user department, then this group will have a one-sided interest. Quality costs money, but the end user often doesn't feel that in his wallet. This results in him specifying a lot of new requirements when the project releases its deliverables. This in turn conflicts with the interest of the project manager (which is to deliver on time, within budget and according to the expected quality).

### **The line managers**

The line managers allocate resources. We already met them when we discussed the internal suppliers. The interest line managers have in making resources available is optimum staffing, and in line with that, an optimum cost coverage. If projects are carried out in a matrix organization, there is a cer-

tain amount of tension between the interests of the project manager and those of the line manager. The interests of the line manager are long term; the continuation of the organization. The interests of the project manager are short term; meeting the deadlines! The project staff are in between these.

### **Not necessary but important**

The following groups, as opposed to the previous groups, are not directly necessary for the achieving the project result. This does not make them any less important, because when they feel involved with a project, they can have a big influence on it.

#### **DIRECT INTEREST GROUPS**

These are people or groups of people who are involved in the project result in another way as mentioned before. Examples are: local village councils, a ministry, the quality department and in some countries the works council and unions.

#### **INDIRECT INTEREST GROUPS**

People who are not involved in the execution of the project, but are confronted with the consequences of it. For example the people living around a building project.

With these groups we are confronted with the local initiatives of interested parties, they may form a temporary action committee.

#### **SOCIAL MOVEMENTS**

These groups (like Greenpeace) looks similar to the previous one, but are further removed from the project result. They are organization with societal objectives, which they feel that project violates.

The difference with the indirect interest groups is that the social groups have more backing, and can mobilise more resources to slow a project down, or even prevent it from happening.

### **3. Analysis of Interested parties**

This analysis goes hand in hand with the identification. With the help of various matrices that will be covered shortly, an insight is provided into the influence, effort, interest, agreements and support of the different interested parties.

Matrices are useful tools for analyzing the different people involved in the project. The essence of these instruments is that you always weigh-up two dimensions against each other, for example:

- Influence versus interest.
- Influence versus involvement.
- Dedication versus importance.
- Agreement versus trust.

As well as these matrices we also have:

- The environment chart

#### **The influence matrix**

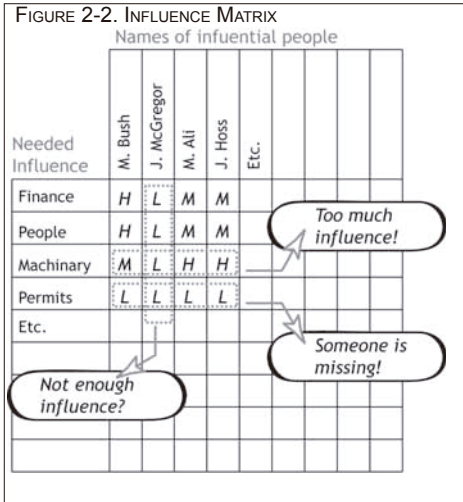
With the help of this matrix, you make an overview of the different interested parties on the project, and the influence they have on the different issues. We can find an example of this matrix in Milosevic<sup>6</sup>, which I've adapted a little.

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<sup>6</sup> (2003) *Project Management Toolbox*, Dragan Z. Milosevic, JOHN WILEY & SONS, Hoboken – New Jersey.



1.02 Interested Parties



For each interested party, you fill in a line and determine the influence (H, M, L) this person has on: the resources, the requirements, the project processes and the assessment and reward of the various performances. It is a laborious process, but it helps you to think of all the factors.

After completion, you carry out a vertical and horizontal analysis of matrix.

VERTICAL ANALYSIS

This analysis is aimed at determining how great the total influence of a person is. A lot of **H's** on a column indicate this. The more influence, the more important the person is for the project.

HORIZONTAL ANALYSIS

This analysis determines where the potential risks are in the decision making on certain project parameters.

A row containing many **H's** may be an indication that you will have to deal with a laborious decision making process, as there are a lot of people who have an influence on that parameter. A row containing mainly **L's** on the other hand, is an indication that in the project organization you potentially have too

little decision making power with respect to the subject in question.

**Stake Matrix**

This 3x3 matrix compares the influence of the interested parties with the stake they have in that project.

When there is a lot at stake for someone with a lot of influence, then you deal with that in a different way to when there is little at stake for an unimportant interested party. Top left in the matrix you involve, and bottom right you inform.

This matrix is useful in the development of the communications plan.

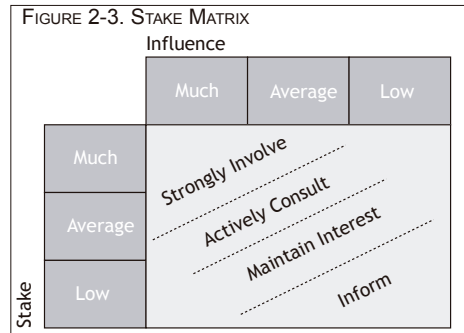
**Effort matrix**

This matrix compares three dimensions with each other:

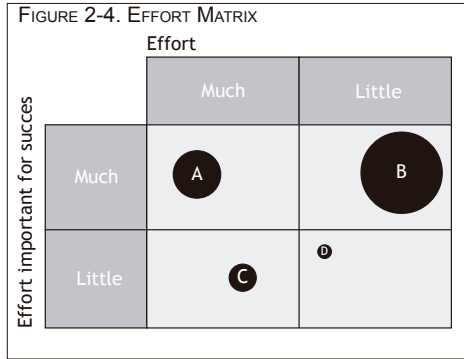
- How important the person is for the success of the project.
- The effort this person shows.

The third dimension, which can be seen from the size of the circles, is:

- The influence that someone has.

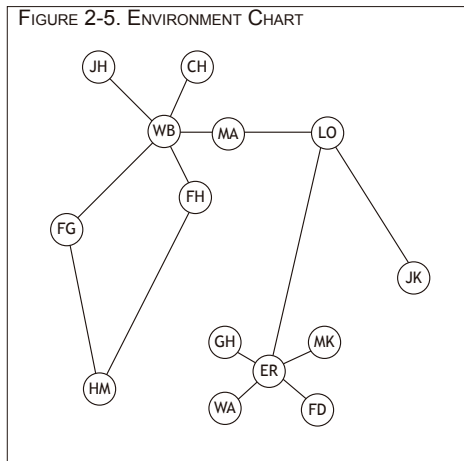


The matrix is a tool for determining the extent to which interested parties should be involved, more actively or less actively, with the project.



**The environment chart**

Using this chart, you can map out the various relationships between the interested parties.



It forms a useful addition to the previous matrix, and you use it to determine which interested parties you are going to use in order to exert influence for the benefit of the project.

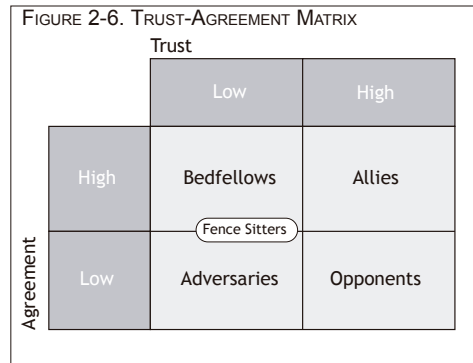
**Trust versus agreement matrix**

This matrix has been developed by Peter Block<sup>7</sup> and is applicable when analyzing the various parties you need to have in order to get “your own way” in a particular situation.

There are two dimensions that you use in this analysis:

- The extent of the **trust** that the different parties have in you as a person.
- The extent to which the different parties **agree** with you.

There are five groups that exist: allies, opponents, adversaries, bedfellows and fence sitters. Each group requires its own approach, the essence of which is that you negotiate on the basis of both trust and agreement.



**Allies:**

- Confirm the agreement that there is.
- Emphasis what you think of the relationship.
- Be open about the doubts that you have.
- Ask for advice and support.

**Opponents:**

- Emphasise the trust that exists in both directions.
- State clearly what you want to achieve.

7 (1987) *The Empowered Manager*, P.Block, JOSEY-BASS, San Francisco

## 1.02 Interested Parties

- Look for a common solution (in so far as this is possible).

Adversaries:

- State clearly what you want to achieve.
- Summarize their point of view (in so far as you understand it) in a neutral manner.
- Recognize your own role in the 'difficult' relationship.
- Afterwards, ensure that they are informed of your plans but do not specify any requirements.

Bedfellows:

- Confirm the agreement that there is.
- State the concerns you have over the relationship.
- Be clear about what you expect from the cooperation.
- Ask what they expect from the cooperation.
- Try to get agreement on the way in which, between you, you will cooperate.

Fence sitters:

- State clearly what you want to achieve.
- Ask for their point of view.
- Use some slight pressure to enable them to take a point of view.
- Ask them to think about their position.
- Ask them what is needed to gain their support.

## 4. Sensitivity

Sensitivity has to do with your capacity to project yourself into someone else's feelings. There are different forms of sensitivity:

- *Empathy*, the capacity to project yourself into someone else's feelings.
- *Social Sensitivity*, capacity to empathise with what is, and what is not possible, within a group.

- *Political Sensitivity*, judging how the formal and informal decision making works within an organization.

EMPATHY

Empathy is a road that leads to understanding the inner world of another person. During a discussion you let your own experience resonate with that of the other person. In this way, you feel and understand what the other person feels and understands.

You can further apply this capacity to empathize with others to groups and organization, thus creating the two other forms of sensitivity.

SOCIAL SENSITIVITY

You need this in order to assess which interventions, will, and which will not, work within a group. Instead of "*being like a bull in a china shop*", you take account of the existing values and standards that exist within a group.

POLITICAL SENSITIVITY

Here, you estimate what the chance is of getting people to agree with your point of view. There is a difference between being right and getting agreement to you being right. This sensitivity has to do with the power structures within an organization and knowing how to make beneficial use of this knowledge.

## 1.03 Requirements and objectives

AN APPROACH LEADING TO A RESULT WHICH IS USEFUL TO USE

A project manager is responsible for delivering the project results.

These results will help the line organization to achieve the objectives defined in their strategy.

We have to choose the right approach so that the results, and the way in which they are achieved, contributes to the strategic objectives of the organization.

During the execution, one of the central questions is: Are we delivering the results that the organization is expecting?

## 1.03-1 DEFINITIONS

Acceptance criteria	A defined value, on the basis of which can be determined whether or not a requirement has been fulfilled.
Business case	The justification of the investment decision.
Constraint	Restriction applied to the project objectives.
Fit for use/purpose	The product responds to customer needs, in addition, quality includes freedom from failures, plus good customer service if failures do occur.
Project approach	The way in which the project deliverables will be realized.
Project goal	The effect that the project sponsor wants to achieve through the project deliverables.
Project goal (in a narrow sense)	Achieving the project deliverables in accordance with in the defined requirements and constraints.
Project objectives	Criteria with respect to the execution of the project, against which project management success can be measured
(Project) Requirement	Explicit requirement (compulsory or optional) (either self-evident or not) regarding the to-be-delivered results.

Project review	An review of the feasibility and desirability of the project, taking due consideration of the business case.
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## 1.03-2 INTRODUCTION

In one way or another, every project begins with a need, which can be a shortcoming, a necessity, a wish, a statutory provision or just an arbitrary idea that arises in a manager's brain. Sometimes these are vague, and sometimes clearly defined. In order to achieve the wish, there is a great temptation to begin immediately, or as I once heard a project sponsor say in the first week of the project: "Where are the programmers?" This is understandable, but unfortunately not how things work, as we have realized through trial and error. Shortcomings, necessities, wishes, laws, and ideas change, and the hunter who shoots at the cornered hare, sees the hare move and suddenly change into a deer, a lion or an elephant, leading him initially to think about what is happening. Running around over the project terrain like a blind chicken does not lead to the desired success.

We have to consider the translation of a customer's vague wishes into defined requirements, and translate these into even better defined objectives, and so well defined that following the delivery, we can say: *This is exactly what we wanted to have, nothing more and nothing less.*

We translate the needs into requirements, which have everything to do with the environment in which the organization investing finds itself i.e. the opportunities and threats it is faced with. This project delivers a solution, for a certain price, within a certain time and then preferably also with an eye to the risks surrounding the project. All of these taken together we call the project objectives.

So Project Management is proactive working, therefore, and that is another aspect that belongs here; the project manager considers beforehand how he is going to achieve the objectives and indeed, how he is going to ensure that what his team delivers, corresponds to the original requirements. As the human mind does not excel in accuracy, it is a good habit to specify and record all of this.

With each solution, however, we again introduce a new challenge, in this case with the recording of the requirements and objectives. The pitfall involved is related to the translation of needs into requirements and the further translation of the requirements into objectives, for example with respect to the quality to be delivered. After all, with each translation round, we distance ourselves further from the original need, and it is questionable whether or not we deliver according to specification and also still then satisfy the original need. There have been whole books written on this subject, but in my opinion not satisfactorily, as we are still searching, especially for the less tangible projects such as an organizational change. I do not believe this is a reason, however, why we should not do it, as presently we do not have anything better, and so we make the best use of the instruments we have.

### 1.03-3 PROCESS STEPS

1. Document requirements.
2. Justify the project
3. Document project goals.
4. Manage progress.
5. Validate project requirements.
6. Assess compliance.
7. Set up a review process.
8. Apply lessons learned

#### 1. Document requirements

The programme of requirements is a document describing the criteria to which the project result has to comply. It is not sufficient just to specify what the customer wants.

Not all stated requirements are absolutely necessary, though some are; and besides, there may be additional wishes and even implicit expectations. It is, therefore, advisable to make sure all expectations are made explicit as far as possible. After that, one should apply some sort of prioritization (e.g. must-haves, should-haves, would-haves and nice-to-haves).

When drawing up a programme of requirements, it is important to clearly understand the strategic objectives of the organization. The strategic plan of the organization, division or unit can then be used as a control to ensure that what is delivered is in line with the organization's objectives.

We speak of constraints when we are talking about specific requirements set by the interested parties (the environment) for either the project result or the execution. Rules and regulations come into play here, and examples of these are: compliance with certain standards or environmental legislation; the project results having to be available before a certain date, or budget limits which must not be exceeded.

In order to draw up a good programme of requirements, it is important to know which parties have a stake and an influence on the project. These stakeholders of course, you have to involve in this process. The stakeholder analysis is an important prerequisite for drawing up the list of requirements. Those with much power and much at-stake are more involved than those with little power and/or less stakes.

#### 2. Justify the project

Before the project sponsor draws up a programme of requirements, there has to be a reason for the project. That reason is the basis for the **goal** (note that this is different from the project objectives).

You now have to differentiate between:

- **The GOAL IN THE BROAD SENSE:** this is what the project sponsor (or the organization receiving the result) wants to achieve with the help of the project result.
- **The PROJECT GOAL IN THE NARROW SENSE:** this is what the project team delivers under the responsibility of the project manager. These are the requirements mentioned earlier, translated into a specific end result.

#### EXAMPLE 3-1 GOAL IN NARROW AND IN BROAD SENSE

The team is responsible for a promotion campaign for a new collection of scented fabric softener on the first day of the Dubai Shopping Festival. This is the project goal in the narrow sense of the word. Before noon, they have to hand out about 300,000 samples at 75 shopping centres and other locations in the city. This is also a project goal in the "narrow sense" of the word. The overall objective of the fabric softener manufacturer is to achieve a 10% turnover increase. So this is the project goal in the broad sense.



### 1.03 Requirements and objectives

- The PROJECT OBJECTIVES: criteria with respect to the execution of the project, against which project management success can be measured.

We combine these three into what is now popularly called the “business case”. In this, we underpin the effort (documented in the objectives), which is necessary to achieve the results, the benefits (documented in the goal in the broad sense) the organization will achieve from it, and the extent to which the benefits stack up against the costs.

#### EXAMPLE 3-2 WHATEVER IT TAKES

The project sponsor told the project manager: “Whatever it takes, it has to work.” The project manager set to work with total dedication, duration was now the most important controlling variable.

Half a year after the project sponsor took him of the project, the project manager still wonders why the project sponsor had been so angry about the cost of the project.

With respect to the responsibilities, there is a separation of the roles; the project manager is responsible for delivering the project result within the defined objectives, and in his turn, the project sponsor is responsible for using the result in such a way in his organization that it achieves the goal of the project.

### 3. Document project goals

Traditionally the following objectives were always documented in a project plan:

- The scope of the project.
- The duration.
- The costs.

These three together formed the so-called “*triple constraint*”, a three-sided constraint we impose on the project team. Nowadays this concept has been extended with: quality, risk, and customer satisfaction.

The separate elements always have an influence on one another: the scope has an influence on the costs, reducing the duration means higher costs for overtime, etc.

At the start of the project the project sponsor considers which of the three is the most important. Based on this consideration, the objectives are set. The consideration selected now becomes indicative for the execution of the project. Of course, when for instance time is the most important indicator, this does not mean that you do not have to monitor the costs anymore.

The result of this consideration, and the way in which the team is going to realize this, is documented in the project plan and in any underlying detailed plans. When the parties involved have given their approval, you, as the project manager, cannot make any more changes to these objectives, without submitting a formal change request.

### 4. Manage progress

Progress is delivering results according to the requirements on time for the agreed costs. The project objectives provide the starting point for making the progress measurable. As the project manager, you ensure that during the execution, the progress is kept to, as agreed at the start of the project.

This topic, therefore, involves reporting on the performance the project delivers against the agreed requirements. By new insights as the project advances, it can be that certain requirements are no longer needed (the foundation of the project changes), or are no longer feasible. This means a change in the project, which has to be implemented in a *structured* way, and which always requires the approval of the most important stakeholders (represented in a steering committee).

The communication to the stakeholders has to be well-timed, because they must have the opportunity to make a well-considered decision.

### 5. Validate requirements

Acceptance comes in small steps, and, during the transition from one stage to the next, and possibly also at other points in time, the stakeholders are always given the opportunity to check whether or not the (interim) results still conform to the defined requirements and their expectations.

The way in which you plan in these acceptance points depends on what the project team is delivering. As you can imagine, there are less control points required when, from the outset of the project, the required end result has been clear, or when there is a lot of support. In other cases, it may be advisable to insert several “smaller” control points.

### 6. Assess compliance

The requirements have been translated into the project plan and the specifications, and the project team commences its work. This process step is discussed in detail in “Control and Reports”. It is, however, essential that you plan points in advance when the most important stakeholders are able to assess to what extent the project performance is in line with the expectations.

We find these so-called pre-defined decision points as a minimum at the transition from one stage to another, but it is also very possible to have very specific reviews carried out in between.

### 7. Set up a review process

For this, a review process is needed in which the team subjects the project and the project deliverables to a critical test. If necessary, an external party can do this. The project man-

ager describes this process in advance, and he makes sure that it is adhered to.

In order to design the review process, he uses a series of Deming cycles, namely:

- *Plan* what you want to achieve.
- *Do* what you planned.
- *Check* against plan.
- *Act* on your findings.

For all critical requirements, a cycle has to be implemented, ensuring that we do deliver what we have to deliver.

### 8. Apply lessons learned

There are organizations that suffer from the “changes syndrome”. At the start of the project, little time is used to think about what is needed; the consensus is “let’s get going”. That works for a while until the first deliveries take place. The requirements of the parties involved evolve or grow with the deliveries, and when this happens, an important learning experience presents itself with regard to this competence element.

You can only start a project when you know what you want! It is better to take your time to document the requirements well, as opposed to just starting and seeing where it leads you. Many projects fail because the project sponsors, customers, and users, constantly change their requirements, and you then end up with an uncontrollable whole. An often used excuse is that the “market is asking for it”. This remains to be seen, as there are two options: it really is true, or they just don’t know what they want.

In both cases you have to make small steps allowing for the possibility of re-direction. With respect to this subject, learning to cope with changed requirements and translating these in a structured manner into the project execution, can give an organization an important competitive advantage.

## 1.03-4 SPECIAL TOPICS

### 1. Refining versus changing

There is a difference between refining and changing the requirements.

At the start of the project, stakeholders often cannot define their requirements in as much detail as during the course of the project, and so the extent of the detail will increase as the project progresses. The danger lying in wait is: when is something a refinement, and when is it a change?

#### EXAMPLE 3-3 REFINING THE REQUIREMENTS

Half a year before the actual move, the requirement states that there have to be at least 250 workplaces in the new office.

After a month of searching, an office has been found that can house the required number of people. The unit heads now discuss how they want to organise this.

### 2. The Business Case

The business case provides the connection with the organization, and is one of the driving forces behind the project control. Another name by which the business case is known, is the 'cost/benefit analysis'.

The business case is a tool for controlling the decision-making around projects. It contains many more uncertainties than a project plan, which contains a clear definition of the result, time and money. The business case looks further than the project horizon and considers the whole life cycle of the project result to be delivered.

At the outset, this tool ensures that the '*crystal ball gazing*' is carried out in a responsible way, and is more than just using intuition.

The business case considers:

- The reason for, and the purpose of, the project.
- The assumptions that have been made.
- The method for setting up the business case.
- The expected benefits, and the reasoning behind them.
- The extent of sensitivity for external change that the outcomes will have.
- The risks of the proposed undertaking.

The ultimate responsibility lies with either the project sponsor or a steering committee consisting of members of the senior management, who are often supported by financial specialists. It is preferable to ensure that the costs and benefits are, as far as possible, expressed in financial terms. This is not always possible, but the aim should always be to make this as specific as possible.

The business case is recorded in a document, which, after approval, forms the justification for the project, and the foundation for all other planning activities. During the planning, a number of iterations are needed to also 'finish off' or complete the business case.

At all major stage transition points during the execution of the project, a review is carried out to determine whether or not the project performance provides grounds for amending this foundation. Furthermore, the project sponsor looks at changes in the environment of the project, which might have an impact (positive or negative) on the business case. In an ideal situation, this would be carried out from the portfolio management function.

One of the project methods that strongly emphasizes the use of the business case is

PRINCE2<sup>1</sup>, and this method even goes as far as saying that this is a part of the definition of a project:

*A project is a temporary organization that is created for the purpose of delivering one or more business products according to an agreed Business Case.*

Although at first sight this appears to be a bit strange, when you look at it from a control viewpoint it is not at all bad. A project is about delivering something that the customer can use. That is, in fact, what you write down in the business case, and is, therefore, something you must continuously keep sight of. This definition necessitates that the project manager also pays more attention than usual to the business case for the project.

The business case is two things, on the one hand it is the reason why we carry out the project, and on the other hand it is a (decision) document in which we record this. This leads to the question as to which subjects have to be considered in the business case?

I would say (adapted from PRINCE2):

- A summary for the decision makers.
- A description of the reasons for the project.
- The different alternatives that have been studied.
- The benefits and disadvantages of the different alternatives.
- A summary of the project plan (time, money and quality).
- The most important risks.
- A qualitative and quantitative assessment of the investment.

These could be the different paragraphs of this document, which is leading for all important decisions both at project commencement and during the project. I have to make one comment that, of course, there must be something for the project sponsor to choose. A decision document with only one option is not sufficient, as that is a choice to either do something or not do it, without any alternative options.

As a minimum, therefore, we describe the zero option, describing what the benefits and disadvantages are if we do not carry out the project at all, and giving us something to assess the other option(s) against. It is now a question of how many options you include, and this will be different for each project, as it is strongly dependent on the expectations of the various people involved. The stakeholder analysis already produced, should provide an insight into the support there is for a particular solution. Every solution has its own scenario, and it is good practice to describe the main one.

We then get the following options:

- The zero option.
- One or more in-between options.
- The option with the most support.

The eventual choice is one that must be made by senior management, often represented by the project sponsor. Sometimes there are a number of project sponsors, and either agreement between them must be sought, or simply what the person with the most power wants.

#### **Who is responsible**

Senior management is responsible for the business case, and this is always a manager in a line organization, because the business case extends over the project boundaries and once the project is completed there is no longer a project manager to oversee,

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<sup>1</sup> (2009) *Managing Successful Projects with PRINCE2™*, TSO, United Kingdom

### 1.03 Requirements and objectives

monitor and maintain everything. I always say that “a project manager does not have to make any important decisions” and that certainly applies to the business case.

This does not alter the fact that we regularly come across project managers, who produce a business case. In this way they support senior management on the technical side of such a document, but the final responsibility belongs in the line organization. Involving the project manager in this process results in him becoming more involved in the reasons behind the project, enabling him to experience the importance and urgency of the project. This requires the project manager to have some knowledge of the environment in which the project will take place.

#### **Assessment of the benefits**

Much of the professionalization in projects was always aimed at the project manager and his team, and then strongly towards having a good project definition and delivering on schedule, within budget and according to the specifications. With the addition of the business case and a shift towards a “fitness-for-use” quality concept, the realization that the success of a project will be partly determined by what happens after the project has permeated through to the project manager’s job responsibilities.

A new area of expertise has arisen, going under the name of Benefits Realization Management<sup>2</sup>, and a part of this is formed by monitoring the effectiveness of the product (or result) delivered by the project, and in how far this project also delivers the projected benefits. PRINCE2 even prescribes that the project manager produces a plan early on in the project defining how these benefits

should be assessed both during and after the project.

The following subjects are then addressed:

- The general vision.
- The dependencies between the various benefits.
- The method of measuring and reporting.
- How the benefits correspond to the strategy of the organization.
- The time schedule.
- The responsibilities.
- The assumptions within the total business case.

There is something more to be said about this last point. At the commencement of a project, we often have an optimistic picture of the future, because we underestimate the costs and overestimate the benefits. Although, as far as possible, we try to make things measurable and preferably also financial, we must realize that everything is based on assumptions. My supposition now is that as well as managing the achievement of the benefits, it is furthermore important that we continuously track and monitor the assumptions made.

McGrath and MacMillan<sup>3</sup> have developed discovery driven planning, whereby line management continuously keeps track of whether or not the assumptions included in the original decision are still applicable to the project. When a change in these occurs, it can mean that a decision is made to stop after all, or, where possible, correct accordingly.

Such an approach allows the organization to keep the plan and reality in line with each other, also following project completion.

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<sup>2</sup> (2010) *Benefits Realization Management*, Gerald Bradley, GOWER PUBLISHING LTD, SURREY ENGLAND

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<sup>3</sup> (2009) *Discovery Driven Growth*, Rita Gunter McGrath en IAN C MacMillan, HARVARD BUSINESS PRESS, BOSTON US

Please note that this no longer has much in common with project management in its original sense.

**Business justification for commercial project management**

When a supplier takes on a project, you will become involved in two (possibly conflicting) business cases; one from the customer, and one from the supplier. As the supplier’s project manager, you may be faced with a dilemma; do you side with the customer (from your professional standpoint, you might be inclined to do this), or do you side with the supplier (your employer)? Such dilemmas are not easy to handle, and demand a significant level of seniority to resolve them.

**3. The GAP principle**

People are often far too positive about the benefits of a project, which, of course, makes the review less precise.

This can, however, be overcome by evaluating the foundation based on three scenario’s:

- Most positive scenario (Good).
- Most probable scenario (Average).
- Most pessimistic scenario (Poor).

This approach ensures that the person or group making the decision obtains a good insight into the feasibility of the project. The difference between positive and pessimistic says something about the uncertainty of the benefits to be expected. This so-called GAP scenario analysis (good-average-poor) then provides a good insight in the extent to which the estimations are realistic.

**4. Value Management**

Value Management is a structured approach in which the project team, in consultation with the key stakeholders, focuses on the value of the project deliverables.

Everyone has an idea of the concept of value; it is more than money. A kilo of gold costs more than a liter of water, but the value changes when you’re floating around for a few days on a life raft i.e. value depends on the situation you are in. Furthermore, it is about what you have to spend. Imagine, you are on the raft with someone who has two bottles of water and is prepared to sell you one bottle for € 10,000; unfortunate for you, as you do not have that money. The bottle of water has no value for you. If you were to have exactly the amount of money being asked for, then the bottle has great value. Should you have € 1,000,000 in your pocket, then the value of the bottle is less, because you can afford to buy it quite easily.

The concept of value is well expressed in the diagram, whereby the project team looks for the optimum balance between the quality delivered compared to the quality expected, and the resources available compared to the resources required.

EXAMPLE 3-4 SELECTING VALUABLE FUNCTIONS		
Suppose that the result to be delivered consists of the following functions 1 till 3. This is also the order of importance that the customer attaches to the various functions. After some investigation, there appear to be two possible solutions:		
Function	Alternative 1	Alternative 2
1	100,000	75,000
2	50,000	90,000
3	25,000	10,000
The cost of alternative 2 for function 2 is relatively too expensive, it is clear that, based on the importance that the customer attaches to the different functions, the preference must be for alternative 1.		

### 1.03 Requirements and objectives

Analogous to the story of the persons on the raft, we can now state that:

Value	Quality coefficient	Resources coefficient
Excellent	> 1	=1
Good	> 1	>1
	= 1	= 1
Poor	< 1	≥ 1
None	≤ 1	< 1

In order to find the right balance, the team concentrates on the functions required to meet the needs of the parties involved. This already happens fairly early in the project during that part of the development stage where we determine the requirements for the project. What is special about this approach is that the team does not yet look at the technical solutions or the actual project

deliverables, but focuses on which functions these deliverables will soon have to fulfil.

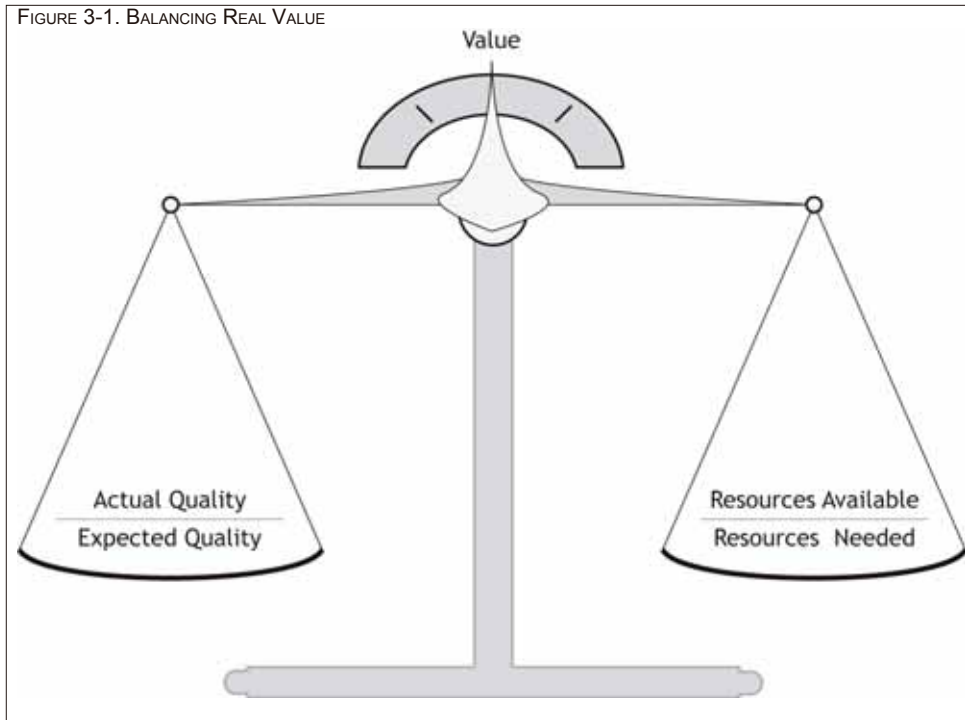
The functions are described by a *verb* and a 'measurable' noun. For example:

- Houses a family
- Carries a weight
- Relocates a weight
- Archives personnel files

If the focus had been on the technical solutions, then we would have talked of:

- A house
- A chair
- A lorry
- A filing cabinet

In value management, we consciously delay this until later. Firstly we focus on the functions the customer needs, and, after that, we search for the technical solutions. If you concentrate directly on the solutions from



the outset, then you lose sight of other potentially more valuable solutions.

The complete approach consists of the following steps:

- Describe the need.
- Translate this into functions.
- Generate alternative solutions.
- Make a cost-benefit analysis.

Which the participants work through in a number of workshops. You could say that the functions generated in this way are the benefits of the project, which are weighed against the costs of the alternatives. According to the British Office of Government Commerce<sup>4</sup>, Value Management has the following advantages:

- A better understanding of the business need and the desired flexibility.
- A simple and clear definition of the needs of the stakeholders.
- All options, alternatives and innovations are taken into consideration.
- The best value for money, whilst meeting the users needs.
- Prevention of unnecessary expenditure on waste and inefficiency.
- A better co-operation is achieved through having common ownership of the solution.

## 5. The project review

The project goal and the project result have been defined. The project sponsor, assisted by the project manager, must now, on the basis of clear criteria, keep track of whether the project is on course, and whether or not the (expected) result still contributes towards the bigger picture. He already did this at the start, but it is good practice to repeat this several times during the project. The aim of an interim review is to check whether or not the project still meets the basic criteria.

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<sup>4</sup> (2007) *Risk and value management*, OGC, London

## Review points

During a project there can be a number of points in time when an review is held, and the first of these takes place before approving the project. In this, the project sponsor pays particular attention to how the project fits in with the organization, and contributes to achieving the strategic objectives.

Further reviews also take place at important transitions between stages, and also in the event of large changes (or an accumulation of small changes) and calamities. The project sponsor should take the initiative, and if he doesn't, the project manager does, at the same time remaining attentive to the support of the sponsor, who is the person ultimately making the decision at the review.

## Organizing a project review

A review has to be prepared carefully, in order to arrive at a clear decision-making process. The final meeting is actually about making decisions on bottlenecks, and a good preparation is obviously required. Particular attention has to be paid to:

- Making a list of all the bottlenecks.
- Preparing alternatives.
- Making agreements in advance with the team members and the ultimate users to ensure that all views are known.
- Keeping focus on the more important problems.
- Preventing the session from becoming too informal.
- Ensuring the decision-making is explicit.

## Results of a project review

There can be one of four results from a review, and at it's conclusion, the decision must be clear. The four possibilities are:

- OK, continue.
- OK, continue, but implement specifically mentioned changes.



### 1.03 Requirements and objectives

- Examine a few more specific alternatives, and then come back.
- Stop.

Next, it must be clearly indicated who is responsible for carrying out the follow-up actions. The project manager often plays an important part in this. During the post-project review the following is determined:

- Whether or not the expected benefits have been achieved.
- Whether or not certain products cause problems.
- Potential adjustments or amendments.

#### Special reviews

Apart from the general reviews there are also reviews, which have a specific objective. These look at the total project, but then from a specific angle.

A number of examples are:

- HAZOP (Hazardous and Operability study, focussed on components).
- FMECA (Failure Mode, Effects and Criticality Analysis, the same as above, but focussed more on functions and processes).
- Design reviews, very common in complex technical projects.
- Risk Analysis.
- Environmental impacts.
- Internal project audit (project assurance; is the project being managed professionally in accordance with the agreements).
- Survey.

#### Methods for reviews

There are different methods for holding reviews. This mainly concerns the working procedure during the preparation of the reviews. A number of approaches are:

- Brainstorm (limited in structure and less suitable for well planned reviews).
- Delphi method (everybody is asked individually for their opinion about a subject and the results are fed back anonymously until ultimately there is a convergence of the answers).
- Fraternal audit (peer review, a colleague assesses your work).
- Official auditors.
- Second opinion.

Based on the available knowledge, the objective of the review and the culture of the organization, the project manager makes a choice from the options.

## 1.04 Risk and opportunity

NOTHING VENTURED, NOTHING GAINED

Projects are surrounded by risks and opportunities.

The success of a project depends on the ability to anticipate risks, and to react effectively when they occur.

## 1.04-1 DEFINITIONS

Business risk	A risk, which has an impact on that which the customer wants to achieve with the project deliverables.
Disaster plan	A plan made in advance to control the consequences when a risk occurs.
Expected monetary value	The expected value expressed in a unit of currency.
External risk	A risk, which has its cause outside the scope of the project and/or outside the responsibility of the project organization.
Expected value	The size of the risk calculated by multiplying the probability (opportunity) by the impact of the risk.
Fall back plan	A plan to fall back to the original starting point, when a risk manifests itself.
Impact	Compared to the status quo or plan, the change as a result of a risk or opportunity when one of these occurs.
Internal risk	A risk, for which the cause lies within the scope of the project and/or within the responsibility of the project organization.
Opportunity	The probability that a fact or circumstance will occur in the future, and the extent to which this will have positive effects on the project.
Project risk	A risk, which may have negative consequences on the achievement of the project result.

Residual risk	The risk remaining after carrying out the risk containment measures.
Response plan	The plan for carrying out the agreed risk containment measures.
Risk	The probability that a fact or circumstance will occur in the future, and the extent to which this will have negative effects on the project.
Risk analysis	The investigation of the risks, including risk identification, risk assessment, and determination of suitable responses.
Risk assessment	Assessment of the probability and the possible impact of the risks.
Risk aversion	The negative attitude of the management with respect to a risk.
Risk category	A group of similar risk causes.
Risk cause	The possible event or condition which causes the risk.
Risk identification	Identifying potential risks.
Risk log	A log containing the registration of all relevant risks registered during the project.
Risk management	The totality of management activities that have to be carried out to control the risks.
Risk owner	The person who within the project organization has the ownership and responsibility for a certain risk.

#### 1.04 Risk and Opportunity

Risk profile	A graphical representation of the probability (%) and the impact of a risk.
Risk response	An activity to control the risk of a possible event or condition.
Risk term	The potential term over which, and the period within which, a risk may occur.
Risk tolerance(line)	The boundary, within which risks are acceptable for the management.
Scenario planning	A planning technique that is aimed at possible alternative future scenarios and the related management response.
Sensitivity analysis	Analysis of the relative effects certain variables may have on the end result.
SWOT analysis	An analysis of the strong and weak points within an organization or project compared against the opportunities and threats from the surroundings.
Successive Principle	A method of decreasing the uncertainty, by splitting up the uncertain aspects further step-by-step.

## 1.04-2 INTRODUCTION

Risks and opportunity go hand in hand, as both contain an amount of uncertainty. Your project sponsor wants to do something with the project result and both the result, and the road leading to it, may ultimately be better than expected, or may prove disappointing. You are playing a game of uncertainty.

A risk or opportunity is an uncertain event or condition, which has potential negative or positive consequences. Usually project managers focus on the risks instead of on the opportunities, whereas the focus should be on both.

A key supplier on the project increases his rates, meaning you cannot remain within your budget.

<b><i>Event:</i></b> An increase of the rates	<b><i>Impact:</i></b> Exceeding the budget
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At the commencement of the project, the users have specified a programme of requirements. It is questionable whether or not these requirements represent what they really want.

<b><i>Event:</i></b> New requirements	<b><i>Possible impact:</i></b> Exceeding the budget
--	--

In these examples, it can be seen that the impact is the same for both events. That is why in normal speech, we sometimes confuse impact and risk with each other, and state that exceeding the budget is one of the risks on the project, which is incorrect. Suppose that both refer to the same project, then that would mean we are dealing with two risks:

A key supplier who may increase his rates causing us to exceed the budget.

Users, who during the project, may come up with new requirements which we have to accept, causing us to exceed the budget .

This may sound like a play on words, but by focussing on the uncertain event you are closer to the origin of the risk, which sets you on the track of responses to reduce the chance of that event happening.

Agreements have been made regarding the availability, however, it is almost certain that the employees will have insufficient time available to spend it all on the project.

#### 1.04 Risk and Opportunity

<b>Condition:</b> Employees are not available full-time on the project	<b>Possible impact:</b> Exceeding the original duration
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It is the unfavorable condition of not obtaining resources who can be allocated full-time to the project, which might have a negative impact on the duration. It is not yet certain whether or not this will happen, and also not to what extent.

An important sub-division is:

- *Project risks* which have to do with the project deliverables, and issues (the project goal in the narrow sense), which may have a (negative) impact on the project execution.
- Furthermore, there are *business risks* related to the expected advantages (the project goal in the broad sense), which can be achieved with the project deliverables. Think of the *risks* an organization runs, when a project is not implemented successfully.

In the review of the project, you include the risks together with the costs and benefits in the considerations. The extent to which people are willing to run a risk, and to make use of opportunities, has a significant influence on the ultimate decision whether to start the project.

### 1.04-3 PROCESS STEPS

1. Identify and analyze.
2. Plan responses.
3. Incorporate responses.
4. Assess attainability objectives.
5. Track and monitor risk profile.
6. Track and monitor responses.
7. Record and apply experience.

#### 1. Identify and analyze

##### Identification

Identification can be top-down as well as bottom-up. In the top-down method, the focus is on similar projects and experiences gained from the past, which are then applied to the current project. This can be done by using checklists or brainstorming techniques. This top-down approach is best suited to the start of the project development stage.

Bottom-up is a much broader method, which is used at the end of the planning stage. Use is then made of the different products delivered during this stage, such as, for example:

- The *product description*; to a large extent, the result to be delivered determines the risk. For example, a project with a tangible result, such as a piece of technology which has proven itself over time, will bring with it less of a risk than a project, for which the end result is the merger of two organizations.
- The *estimates of costs*; the way in which the process of estimation has been carried out is an important indication for the level of this risk. If the estimation has been on the basis of little information, you run a high risk that the estimate is wrong, resulting in the budget being exceeded.
- *Planning people and resources*; how many irreplaceable people have been

planned into key positions, and to what extent can they be employed full-time. Also the knowledge and experience of the allocated people may pose a risk.

- The *purchased and outsourced* products and services; how sharp have the negotiations been, and what level of quality can you expect from your external suppliers.

It is, therefore, only possible to conclude the risk identification process successfully once the above points have been clarified.

As well as these sources, you can also look at the historical information (if this is available within the organization), i.e. project files from similar projects, commercial databanks and, obviously, the knowledge and experience of the various project members.

##### Analysis

The following dimensions are defined in the risk analysis:

- The event or the condition.
- The origin or cause.
- The probability that the event will occur.
- The possible consequences.
- Signals, which are an indication of the occurrence.
- The period within which the risk might manifest itself (proximity).

The *event* or *condition itself* has already been described during the identification. During the analysis, the project manager must describe this as clearly as possible. As long as you are not able to phrase it properly, you have not got a clear picture of the event or condition. A clear description is the foundation on which you can build further.

The second dimension the project manager has to investigate is the *origin* or *cause*. This partly determines the possible responses



## 1.04 Risk and Opportunity

you can take. Prevention is better than cure, should be an important motto.

As always, one difficulty is estimating the probability and the impact level, is there a low, medium, or high risk, and if high, how is this defined? This is highly dependent on the attitude the parties involved have towards the risks. Most people unconsciously make choices which are contrary to their long term objectives<sup>1</sup>. You do the project decision makers a favour by making the risk management process as rational as possible.

When the event or the condition manifests itself, this will have an impact on:

- The costs.
- The duration.
- The quality of the result.

As well as these, Groote and others also mention<sup>2</sup>:

- The quality of the information the project provides to the parties involved.
- Not being able to meet other requirements and standards set.

Also, of course, the impact on achieving the objective the project sponsor wants to attain with the result delivered.

You do not estimate *probability* and *impact* on your own, but in consultation with the main stakeholders and the most important operational staff, who provide the so-called expert opinions.

You estimate both probability and impact in two steps:

- Qualitative (high, medium and low).
- Quantitative (70% probability and the damage is usually divided by an

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1 (2001) *Risk and decision analysis in projects*, J. Schuyler, PROJECT MANAGEMENT INSTITUTE, Newton Square, USA.

2 (2007) *Projecten leiden* – Groote e.a., SPEC-TRUM, Utrecht

average of € 100,000 and a standard deviation of € 1,000).

Following the *qualitative* analysis, you can make a first selection between issues to be further investigated, and issues you leave for what they are. You investigate this first group further, by making actual estimates, which then provide the *quantitative* analysis. The results of this form the basis of the decision as to which responses you have to take.

The last dimension you have to analyze is at what point in time the event or the condition may manifest itself (proximity), and the 'early warning' signs which are an indication of this time approaching.

## 2. Plan Responses

The ICB<sup>3</sup> mentions the following responses in projects:

- Exclude (or use for an opportunity).
- Mitigate (or increase for an opportunity).
- Share.
- Transfer or insure.
- Develop disaster plan.
- Passively accept.

*Exclude (or avoid) the risk*, means that you take measures which have the effect of preventing the risk from occurring (again). The most rigorous form is not carrying out activities which have the risk attached to them, because when you doing nothing, nothing can go wrong. By taking this approach, you often introduce new risks. A patient who has to undergo a heart operation runs a certain risk that if the operation goes wrong, he can die. When he decides to avoid this risk, he still has an increased risk of having a heart attack and dying anyway.

It is much better to change the activities

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3 ICB Version 3

in such a way that risk disappears, for example when a certain part has to be transported from one city to the other and there is a threat of strikes by lorry drivers. The risk can be eliminated by transporting by plane (if available), or by changing the schedule in such a way that the part concerned is not needed until much later.

*Use* is the equivalent for the responses you take when an opportunity occurs. This means that you ensure the opportunity in question does actually arise.

*Mitigate* responses are responses taken by the operational organization to decrease the probability or the impact of risks. When, for instance, one of the risks is exceeding the deadline, which can cause a lot of damage, tight progress control can reduce that risk. Obviously the costs of such responses must be compared with the potential consequences of such a risk. If, for instance, you make additional costs of €100,000 for progress control, then this is only sensible when the consequences of such a risk are a lot higher than this amount..

*Increasing* responses do the opposite and are connected with grasping opportunities. For instance, by working overtime for two weekends, you are in a position to deliver a month earlier, which may give the project sponsor an interesting advantage if the company is the first to bring a new product onto the market.

But what do you make of one month of extra design to add a piece of extra functionality to a product, which will distinguish it from many other similar products on the market.

*Sharing impact* have to do with agreements you make with parties involved to share either the risks or the opportunities. For example, so called 'incentive' contracts in which

the customer and the supplier share cost reductions, or when the supplier receives an extra bonus if he delivers a part of a product one month earlier.

When *transferring*, the consequences of the risk are passed on to another party. For example, in a fire insurance the possible financial consequences are passed on to the insurance company. In this way there is still the same risk, but an important part of the consequences are carried by someone else. Take note that in some Islamic countries insurance differs from the most commonly used contracts.

A fixed price contract is another example. Here you pass the price risk on to the supplier, and in this situation, it is good practice to place this risk with the party that is also able to control it.

*Developing a disaster plan:* In advance, you think about what to do in the event of certain disasters. In this way, you can limit the damage when disaster strikes. You draw up a plan you can activate immediately the risk actually manifests itself. By having this plan, you are prepared, and are able, to limit the impact of the risk to a certain extent.

When parties involved are in danger, it is important to hold a 'fire drill' (simulate and act out the disaster).

Although the ICB only speaks of *passive acceptance*, the *PMBOK Guide* makes a distinction between *passive* and *active* acceptance. The difference is that with active acceptance, you separate out a part of the budget to use when the risk manifests itself, whereas you do not do this with passive acceptance.

Every response has a price tag, with which the decision makers have to agree. The

## 1.04 Risk and Opportunity

outcome of the risk analysis determines the choices the decision makers have to make with respect to the responses the project manager must, or is allowed to, take. You are then left with a *residual risk*, which the organization can accept.

### 3. Incorporate responses

Now it is a question of incorporating the different responses into the planning. These responses form part of the basis of the management cycle implemented by the project manager.

The response exclude will, in all probability, result in a change in the size (scope) of the project. We can identify the response mitigate by an increased control on the execution, or in the form of disaster plans added to the project plan as sub-plans. The response *transfer* may possibly be translated into a “*make or buy decision*” or by insuring the risk through an insurance company or broker. The response *acceptance* can be recognized in the form of extra budget (in the event of active acceptance) or as an assumption (in the event of passive acceptance) in the pre-conditions or conditions on which the planning is based.

#### EXAMPLE 4-1 RISK RESPONSE PLANNING

Not having sufficient capacity available in time is an uncertain condition for a project. Even though agreements have been made (conditions) with the line managers, they cannot give any assurance.

One of the responses the project manager makes is to study the employees' time sheet records to see whether or not there is a change in their work activities. He does this on a weekly basis and this response is explicitly described in his project plan.

We have to differentiate here between the owner of the risks, and the team member who has to execute the actions related to the planned responses; the latter is the so-called action holder (actionee). The owner is

ultimately responsible for tracking and monitoring the risk i.e. the changes in probability and impact. He can be the actionee himself, but it is also possible for him to delegate this to someone else.

Does this exempt the project manager from managing the so-called residual risk that remains when all responses have been implemented? I believe not; suppose that the risk owner does not carry out his work properly, or the actionee neglects to implement the responses? It is then ultimately the project manager who must ensure there is a solution. Besides what you have organized and agreed, it remains necessary for you, as project manager, to keep a very close watch on the risk profile of your project.

### 4. Assess attainability objectives

After the risk analysis and the planning of the responses, the organization must again assess to what extent the project objectives (costs, duration and quality of the result) are still attainable, and also to what extent the goal the project sponsor wants to achieve with the project still fits within the scope, which may possibly have changed, and the new risk profile. It is also possible that through this, the investment decision will ultimately be made based on other reasons.

The stakeholders, who have the power to make decisions, must assess this attainability at set times, which as a minimum are the times of transferring from one stage to the next. As time goes on, the future of the project becomes increasingly clear, with respect to both the attainability and the expected benefits to be derived from it.

### 5. Track and monitor risk profile

The risk analysis is carried out at the start of a project, but also during the execution, attention continuously needs to be paid to the risks. The nature and size of the risks

change during the life cycle of the project and therefore, during the execution of the project, you will have to update the initial risk plan.

In fact this means that during the whole project, you are actively busy monitoring the risks. At certain points in time during the project, it is advisable to carry out a formal re-evaluation of the risks. These points in time are:

- After an *important change* has taken place in the project environment or in the organization in which, or for which, the project is being carried out.
- At *important milestones*, which are logical points to review the risks again.
- Before *important decisions* that have to be taken during the project.

## 6. Track and monitor responses

As well as monitoring the opportunities and risks themselves, you must also check to what extent the responses actually have an impact. The big problem with risk management is that it is nothing more than an exercise in 'rational fortune-telling'. The same applies to the planned responses. During the execution of the project you continuously have to test these assumptions.

## 7. Apply lessons learned

As always it is an open door, but only if you are consciously thinking about the impact of your actions, can you actually learn. This is also true for risk management, but there is more to it than that.

When you work in an organization that carries out a lot of projects, you will notice that it is often the same things that cause projects to go wrong. That is why we have the Risk Breakdown Structure, which is explained later.

This **RBS** already contains all problems that frequently occur, divided into categories. Every project manager has to study this RBS at set times, and decide which risks might arise for his or her project. At the end of a project, the RBS can be updated again.

## 8. Other standards and guidances

The process steps as identified by IPMA are only a suggestion. The process steps described in the *ISO 21500 Guidance*, the 'guide to the Project Management Body of Knowledge' (the *PMBOK Guide*) from the Project Management Institute, and in the popular PRINCE2 Project Management method are much more "binding". Without discussing it in detail I shall name, as a comparison, a number of items from these standards that are related to this competence element. What will be noticeable is the high level of similarity and overlap.

### ISO 21500

The Guidance deals with this topic in the subject group Risk, and differentiates between the following processes:

- Identify risks.
- Assess risks.
- Treat risks.
- Monitor and control risks.

### PMBOK Guide

Again, the processes in the 5th edition of *PMBOK Guide* are very similar to those of the Guidance, although the naming convention is slightly different. The following processes are included:

- Plan risk management.
- Identify risks.
- Perform qualitative risk analysis.
- Perform quantitative risk analysis.
- Plan risk responses.
- Control risks.

## *1.04 Risk and Opportunity*

### **PRINCE2**

For Risks, PRINCE2 contains a separate topic, in which the following steps are covered:

- Identify
- Assess
- Plan
- Implement
- Communicate

## 1.04-4 SPECIAL TOPICS

### 1. Checklists

Based on lessons learned from other similar projects, checklists are used, in which certain questions are asked that could put you on the trail of potential risks.

A number of examples of such questions for a system development project are:

- Are the end users being interviewed?
- Do end users participate in the acceptance test?
- Are the documentation standards described?
- Has an acceptance procedure been agreed?

Organizations can make their own lists of questions, or use standard lists.

One of the PMI<sup>4</sup> publications gives an extensive list of specific project risks, which is divided up into the following groups:

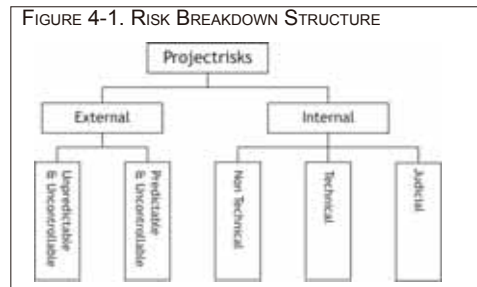
- External, unpredictable and uncontrollable.
- External, predictable but uncontrollable.
- Internal, not technical but in general controllable.
- Technical and in general controllable.
- Legal and in general controllable.

Checklists work fast and are easily applicable to similar projects. The main objection to this method is that new risks are not automatically recognized. In a checklist of this type, you build further on the errors made in similar projects in the past, but that doesn't mean that a future risk profile is the same.

### 2. Risk Breakdown Structure

A special checklist is the so-called Risk Breakdown Structure, in which the checklists are grouped hierarchically.

The specific risks can then be included under the last blocks.



### 3. Risk matrix

The risk matrix is a tool which is used during the qualitative analysis, and it provides a number of handles for classifying the identified risks. It looks as follows:

FIGURE 4-2. RISK MATRIX

Impact \ Probability	Low	Med.	High
	High	Med.	High
Medium	Low	Med.	High
Low	Low	Low	Med.

The probability is then either the probability of the uncertain event, or the probability that a certain condition will have a negative impact on the results of the project.

<sup>4</sup> (1992), *Project and Program RISK MANAGEMENT*, R.Max Wideman, THE PROJECT MANAGEMENT INSTITUTE INC.

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FIGURE 4-3. QUALITATIVE SCALE OF IMPACT

	Impact				
	Very Low	Low	Medium	High	Very High
Measurement Control factor	0,05	0,10	0,20	0,40	0,80
Costs					
Duration					
Scope					
Quality of the result					

### 4. Qualitative scale of impact

A problem with the qualitative analysis is that every participant has a different view of the concepts high, medium and low. Therefore, before you carry out an impact analysis with the team, it is advisable to first calibrate the different views of the participants.

PMI<sup>5</sup> has defined a yardstick for measuring the level of impact that particular uncertain events may have on a project. The cells now contain a global quantification of the cell in question. For instance a low impact on the cost is described as *less than 10% budget overrun*. The calibration now consists of agreeing a description for each impact that is to be qualified during the analysis. Together you decide which description to use.

### Set Priorities

The risks having the highest probability and impact for the product should get the most attention. Both in terms of preventing them, as in cushioning the blows should they happen anyway.

Prioritizing can also be carried out both qualitatively and quantitatively. The general guideline for qualitative priorities is:

	Probability			Impact		
	H	M	L	H	M	L
1	x			x		
2		x		x		
3	x				x	
4		x			x	
5			x	x		
6			x		x	
7	x					x
8		x				x
9			x			x

Quantitatively prioritization is based upon sorting the number “*probability x impact*”.

5 (2004) *A guide to the Project Management Body of Knowledge 3<sup>rd</sup> Edition*, THE PROJECT MANAGEMENT INSTITUTE INC.

**Other methods**

The following methods are based on a team, in which the various members each score the risks separately. For example:

- Each team member puts the risks in sequence. After that, all the separate ranking numbers are added together and the list is sorted.
- Each team member divides 100 points over the risks. Add these up and sort again.
- Each team member gives a mark from 1 to 5 for probability and for impact and multiplies both, after which the scores of the various participants are put into sequence.

**EXAMPLE 4-2 QUALITATIVE PRIORITIZATION**

A pharmacist has invested tens of millions of Euros in the development of a new medicine and approval has been given to start testing it on humans. In this next stage, a request will be sent out to general practitioners to look for patients who want to participate in the research. The research will then take place within this stage in four iterations.

The following risks have been identified and qualitatively analyzed.

<b>Probability</b>	<b>Event description</b>	<b>Impact</b>	<b>Impact description</b>
M	1. Not enough patients participate	M	Size of random sample not representative
L	2. Patients drop out	M	Size of random sample not representative
M	3. Medicine has side effects	H	Medicine cannot be put onto the market

Using the prioritization table, a qualitative prioritization then looks as follows:

<b>Probability</b>	<b>Event description</b>	<b>Impact</b>	<b>Impact description</b>
M	3. Medicine has side effects	H	Medicine cannot be put onto the market
M	1. Not enough patients participate	M	Size of sample not representative
L	2. Patients drop out	M	Size of sample not representative

The basic assumption of this approach is that within the team there is consensus on the scores. Furthermore, this guideline assumes that a higher impact carries more weight than a higher chance.



## 5. Variance

### EXAMPLE 4-3 VARIANCE

We have the following estimate for duration: making the ground ready for building on will take between 10 and 15 months. The actual **uncertain** result will be somewhere in the 'middle'. However, our project sponsors will want to know how much grip the project manager has on this uncertainty, and a level of statistical knowledge is necessary for this. I will explain this concept by using the example "making the ground ready for building on". The key question is: with how much certainty can the project manager say that making the ground ready for building on will take between 10 and 15 months? The estimate has been determined by investigating thirty projects and processing the outcomes in the following table, of which we show a part (note: projects 3 to 28 are hidden but are included in the totals).

	1	2	3
	Duration	Duration -/- Average	(Column 2) <sup>2</sup>
1	12	0	0
2	9	-3	9
....	....	....	....
29	13	1	1
30	16	4	16
Average	12	5	603

In *column 1* we see how the project manager has calculated the average. To obtain an impression of the extent to which the different durations vary from the average (the variation), he calculates the difference between the duration and the average in *column 2*. As some of these results are negative, the sum of this column does not mean that much, this is solved by multiplying every difference by itself (squaring) to make everything positive. The total of the third column now does mean something: the higher this number, the further, in general, the different durations are away from the average.

Statisticians use this number (603) as starting point to determine two criteria for the variation of the different durations. The first is the **variance**, this is equal to the total of the third column divided by the number of durations minus one, which in this case is  $603/(30-1) = 20.8$ . The second often used is the **standard deviation**, which is the square root of the variance, or in our example: 4.6. The normal distribution helps us answering the question regarding the extent of certainty there is that the duration will fall between 10 and 15 months.

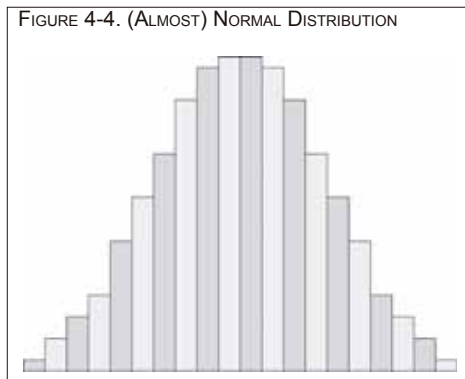
From the normal distribution you can derive a table, with which you can determine the probability that an outcome will be under a certain value. To do this you first have to convert the boundaries in the 'number' of standard deviations from the average. The standard deviation is 4.6: the 10 months boundary (2 months before the average) is  $2/4.6 = 0.4$  standard deviations before the average. The 15 months boundary (3 months after the average) is  $3/4.6 = 0.7$  standard deviations after that. By using a Z table, we can read off the related chances. The columns always give the first number behind the comma, and the chances are in the cells. In our example: The chance the duration will be less than 15 months is 75.8%. We are looking for the chance between 10 and 15, and therefore we must still subtract the chance that it will be less than 10 months from it. The chance that the duration will be between 10 and 15 months is  $75.8\% - 34.5\% = 41.3\%$ . It is now up to the project sponsor to determine whether or not this is acceptable.

Z	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
-2.0	0.0228	0.0179	0.0139	0.0107	0.0082	0.0062	0.0047	0.0035	0.0026	0.0019
-1.0	0.1587	0.1357	0.1151	0.0968	0.0808	0.0668	0.0548	0.0446	0.0359	0.0287
-0.0	0.5000	0.4602	0.4207	0.3821	0.3446	0.3085	0.2743	0.2420	0.2119	0.1841
0.0	0.5000	0.5398	0.5793	0.6179	0.6554	0.6915	0.7257	0.7580	0.7881	0.8159
1.0	0.8413	0.8643	0.8849	0.9032	0.9192	0.9332	0.9452	0.9554	0.9641	0.9713
2.0	0.9772	0.9821	0.9861	0.9893	0.9918	0.9938	0.9953	0.9965	0.9974	0.9981

When we make an estimate for the duration of a certain activity, it is often not possible to do this with any certainty. In fact, it is better to take an upper and lower limit between which the possible result can lie.

When we now count how often a certain duration occurs and put this in a histogram, then it could look like the diagram.

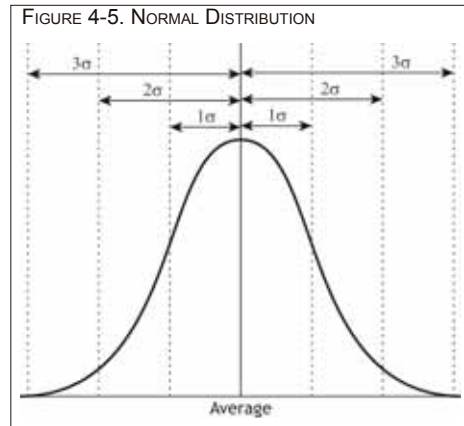
### The normal distribution



The standard deviation is, next to the average, one of the parameters that determines the shape of this distribution.

In our case, the highest bar is now exactly above the average and the greater the standard deviation becomes, the higher the bars further away from the average will also be.

If we were to measure it precisely to the second, we would get a graph that looks like the well-known normal distribution.

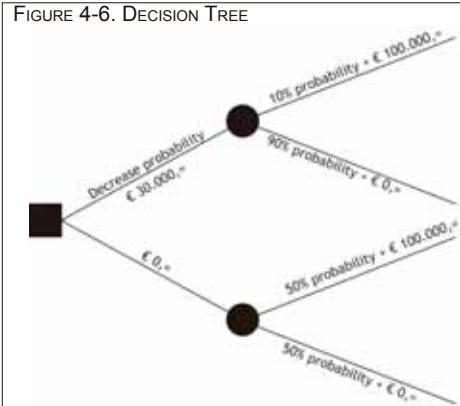


## 6. Decision trees

Now consider the following option: the risks on a project have been analyzed. One of the risks concerns a probability of 50% of exceeding the costs for a certain cost component by € 100,000. This percentage can be reduced to 10% by responses which will cost a total of € 30,000, and there is a budget available. Do the responses have to be applied or not? This can be decided with the help of a decision tree.

A square represents a choice; in this case the project manager must decide whether or not he will apply responses. If he does this, he has to spend € 30,000 of his budget on doing it. A circle represents a possible effect. There is only a 10% probability left of exceeding the costs of € 100,000 and a 90% probability of not exceeding the costs. Should he decide not to apply the responses, then he incurs no extra costs. The probability of the costs being exceeded then remains at 50%.

## 1.04 Risk and Opportunity



The decision tree shows the structure of the decision he has to make. Before the project manager takes the decision, he can consider four possible outcomes:

- He decides to apply the responses, without these having any effect.
- He applies the responses, and these do have the intended effect.
- He does not apply the responses, and the costs are exceeded.
- He does not apply the responses, and the costs are not exceeded.

When he calculates the monetary value of each decision, it is not difficult to see which choice he should make.

The monetary value (economic monetary value, expected monetary value or EMV) of the choice to apply the responses is:

€ 30,000 for the responses + 10% of € 100,000 + 90% of € 0, which comes to € 40,000

The monetary value of the choice not to apply responses is:

€ 0 + 50% of € 100,000 + 50% of € 0, which comes to € 50,000

This shows that the choice to apply the responses is the most profitable, as in that case you only take the 'lowest'.

## 7. Risk log or Register

There is a need for a tool to track and monitor risks over the duration of the project. We often see risks listed as a table in a project management plan, or added in this way to the appendices. The danger of this is that you lose sight of the risks, and therefore it is better to construct a separate register, which you regularly look at to check whether the suppositions made at the start of the project are still valid.

It is best to construct such a register in the form of a spreadsheet or a database, as in this way you are in a position to make quick selections, and yet still retain an overview. It is a good idea to include the following columns in such a register:

- Description of the risk.
- Status.
- Cause.
- Event.
- Uncertainty and impact before responses:
  - o Uncertainty of the event.
  - o Impact on the costs.
  - o Impact on the duration.
  - o Impact on the quality.
  - o Impact on other projects.
- Responses implemented.
- Responses deadlines.
- Risk owner.
- Risk actionee.
- Uncertainty and impact after responses:
  - o Uncertainty of the event.
  - o Impact on the costs.
  - o Impact on the duration.
  - o Impact on the quality.
  - o Impact on other projects.
- Warning signs.
- Proximity of the risk.

- Underlying assumptions.
- Proximity of assumptions.
- Reporting level.
- History.

The register is one of the first things you construct and functions as a “repository” with respect to risks.

### **USE DURING THE PLANNING STAGE**

There is a risk as soon as someone thinks of one, and although that does not mean you have to actually do something with it, initially you should record each risk in the register. A risk can have the following status:

- Identified.
- Qualitatively analyzed.
- Quantitatively analyzed.
- Responses proposed.
- Responses approved.
- Proximity.
- Occurred.
- Analyze again.
- Accepted.
- Closed.

This is self-explanatory and the more the status develops, the more information on the risk becomes available. Once you have recognized the risk, you analyze how big it is and make proposals for implementing responses. The status changes from “analyzed” to “responses proposed”. If a steering committee or project sponsor decides not to implement any responses, then the risk changes to the “accepted”. If you then leave the risk in the register, you cover yourself against accusations from management should the risk occur. Acceptance of risks is a decision that should be taken by a steering committee.

### **USE DURING THE EXECUTION**

Risk is another word for ‘uncertainty’, with the consequence that you, as project manager, must regularly look at the analyses you

made at the start of the project to make sure that the risks are still valid. Dependent on the project and the required control cycle, you look at the risk register at fixed times (weekly or monthly). The recommendation is to choose a fixed time to do this (for example, always after a project meeting), thus ensuring that you do not forget, because of the everyday pressures, to look forward.

In the first instance, you look at the deadlines for the responses to be implemented, and, when necessary, you speak to the risk owners and actionees. Next, you look to see if there are any new risks, and if that is the case, you carry out a new analysis with accompanying responses. By sorting the risks in order of proximity, you obtain an overview of the most urgent risks. The risk register also contains a column with possible warning signs you have to look out for. When a risk threatens to occur, it has consequences for the complete risk profile and possibly also for the responses implemented.

As well as keeping an eye on the risks, you must also check whether or not the assumptions are still valid. Just as with the manifestation of warning signs, the risk profile also changes when certain assumptions are no longer valid. For each risk, an entry is made in the register of the level that has to be reported to. In this way, the risk register is a useful instrument for monitoring risks during the execution, and ensuring these are handled adequately.

### **AT THE CLOSE-OUT OF THE PROJECT OR THE END OF A STAGE**

It is advisable to enter the history of the risks in the register. You can then use this data when you carry out an evaluation at the end of a stage or the project, on how well the project has gone and has been managed.

### 8. The 'insurance premium'

When probability and consequence can be expressed in figures, this can serve as the basis for determining an extra risk reservation. We explain this further by using the following example.

Description of risk event & consequence	P	Impact	EMV
Product milestone does not meet the specifications, whereby a part of it must be done again.	10%	€ 25k	€ 2,5k
Product is delivered too late, whereby a loss in turnover can be expected.	50%	€ 100k	€ 50,0k
Total reservation to cover the risk.			€ 52,5k

The column 'Impact' contains an estimate of the amount that must be used to finance the consequences of the risk. In the column 'EMV' you find the result of multiplying the costs of the consequence by the probability percentage. By totalling these you arrive at the insurance amount for the recognized risks. This premium has to be included in the project's financial plan. It would, however, be a mistake for the project manager to see this as an amount to be used for unexpected expenses. In the example above, this amount would indeed be insufficient if the risk of were to manifest itself. It would be better if the organization were to take account of a 'setback', which is equal to the total of all risk reservations for all the projects in existence.

The complete risk analysis is an iterative process in which we identify risks, estimate the probability and consequence, and on the basis of this, define responses, whereby the

probability and consequence change. Before taking the risk premium as an insurance, we must adjust this amount based on the risk responses that have been taken.

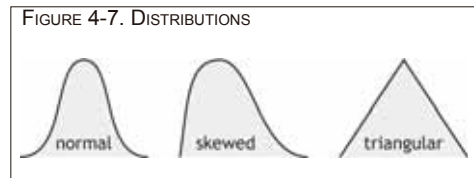
This amount should be taken in to consideration in the investment decision. It does not, however, form part of the budget the project manager has to spend.

### 9. Monte Carlo Simulation

The Monte Carlo simulation is a statistical technique, in which with the help of random numbers, a particular event is simulated. Its name is taken from the casinos in the capital of Monaco, because roulette is one of the simplest random number generators there is that exists. In each round, roulette generates a number between 0 and 36 inclusive. Other "random number generators" are the dice (1-6) or a coin (1-2). Every spreadsheet contains a **random** (aselect) function.

We look at the activity: "make a project plan", for which there is some uncertainty about the duration. You could do a Monte Carlo simulation in which you have to ask yourself the question how the results would be distributed when you and another 99 'doubles' of you write the same report at the same time. In this case, we are then looking for the statistical distribution.

There are various statistical distributions available, for example:



We choose for the normal distribution. The average duration to produce a project plan is 30 days. The results are distributed according to a normal distribution, for which the

standard deviation is three days. In a normal distribution, 68% of all results lie between one standard deviation below and above the average, and 95% lie between two standard deviations below and above the average.

For a Monte Carlo simulation, you can make use of a random number generator, spreadsheets, or software applications specially developed for this.

The benefit of a Monte Carlo simulation lies in a number of factors. Because you have to consider beforehand which distribution you use, you become more aware of what the distribution of the risk is, and the determination of the standard deviation indicates how certain or uncertain you are. It gives a handle on working out how much extra time you must plan in to provide a particular amount of “certainty” of success.

## 10. Sensitivity analysis

With a sensitivity analysis, we investigate which risks have the largest consequences for the project. We input the various uncertainty factors into an arithmetical model. We then repeatedly change one of the factors, each time keeping the other factors constant, allowing us to determine which factor has the most effect on the end result.

## 11. The Successive Principle<sup>6</sup>

This principle of step-by-step refinement is a risk analysis method for handling risks in a proactive manner. The method is applicable in all management areas where uncertainty is a significant factor. It combines hard statistical techniques with the softer aspects, such as an open and honest atmosphere with respect to uncertainty.

There are two stages that I will cover in summary, which you, as project manager, have to take account of when you want to apply the method.

### The qualitative stage

#### FORM THE ANALYSIS GROUP

There are two important conditions which must be satisfied before you can begin with this approach:

1. The relationship with the project sponsor is such that you can confront him openly and honestly with the reality.
2. It is possible to form a team with competent members, who are prepared to enter into an open and honest discussion about the uncertainties in the project.

As well as competent members, it is important that the analysis team also contains the different team roles (e.g. from Belbin) that are necessary. In my opinion, an ideal team should contain at least the following team roles:

- Both a RESOURCE INVESTIGATOR (existing ideas) and a PLANT (new ideas).
- A number of MONITOR EVALUATOR (to warn).
- A number of specialists.
- A CHAIR to lead the team.

The chair should be chosen above the Belbin team role of ‘former’, as the latter has the tendency to steamroller over others, whereas it is important in this method that the members can discuss everything openly and honestly.

Firstly, the team makes a description of the project that they will analyze for uncertainty.

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<sup>6</sup> (2000) *Proactive Management of Uncertainty using the Successive Principle*, Steen Lichtenberg, POLYTEKNISK PRESS, Copenhagen

### 1.04 Risk and Opportunity

The description of the scope should be sufficient for this. During the various meetings, and especially in the beginning, the project sponsor can participate in the process.

#### IDENTIFY ALL SOURCES OF UNCERTAINTY

Even before checklists or risk breakdown structures are used, a number of brainstorm sessions must be held on the uncertainties that are present.

These brainstorm sessions generally result in a list with numerous so-called “General Points for Attention”, and often it is useful to classify these in a matrix.

Next, the general points for attention are divided in such a way that independent groups are created. These “Overall influences” form input for the qualitative analysis which follows. For example, the sphere of influence of “legislation” with respect to “technique”.

For each group, the following is now determined:

- The “*base-case*” definition, which is the starting point on the basis of which the further analysis will be carried out
- The “*future case*” which is the deviation from the base-case definition which is expected.

EXAMPLE 4-4 BASE/FUTURE CASE  
 “*base-case*”: current employees.  
 “*future-case*”: declining labour market conditions

Following this, the first stage of the process is completed and a deeper analysis is carried out in the quantitative stage.

#### The quantitative stage

In the stage, the team starts work on the actual calculations. To do this, they use the list of “Overall influences” and also the scope description as described in the Work Breakdown Structure.

#### THE WORK BREAKDOWN STRUCTURE

The elements from the first WBS level form the basis for the first calculation. For each element, the analysis team makes a three-point estimate:

- The most likely (W).
- The most optimistic (O).
- The most pessimistic (P).

The average is now calculated using the following formula:  $(P + 3xW + O)/5$ .

The standard deviation is then:  $(P-O)/5$ .

The priority number, or the variance, of a WBS element is the square of the standard deviation. When we do this for the cost estimates we make a calculation sheet consisting of two parts. The first part contains the cost estimates under normal circumstances, as described in the base-case definition.

Look for example at the next table, the following estimates (x €10k). In this table the uncertainty included in the rates under normal circumstances has been taken into account, but not yet the uncertainties that are present according to the *actual-future* definition.

		O	P	W	V	S	P
1	Design	2	8	4	4.4	1.2	1.4
2	Build	16	32	20	21.6	3.2	10.2
3	Test	4	12	8	8.0	1.6	2.6
4	Implement	2	6	3	3.0	0.8	0.6
	Total				37.4	6.8	46.24

For this purpose, we shall make a correction table.

#### CORRECTIONS

When we take the example above, and the *actual-future* definition foresees a sharp rise in the rates as a result of the labour short-

age, then the following correction could be applied for the build.

		O	P	W	V	S	P
2	Build	2	4	3	3	0.4	0.16
	Total						

REFINING STEP-BY-STEP

After this, the actual step-by-step refining or detailing of the recognized uncertainties begins. When we carry on with our example, we research further those uncertainties with the highest priority numbers. On the basis of the WBS we look further.

		O	P	W	V	S	P
2	Build	16	32	20	21.6	3.2	10.2
2.1						1.2	1.44
2.2						0.6	0.35
2.3						0.8	0.64
	Total 2				21.6		

The effect of this action is that the variance/ the priority number (a criterion for the variation) of the components is, in general, a lot smaller than the total, which also makes the uncertainty smaller and, therefore, more controllable.

There comes a point when refining no longer really provides any improvement (i.e. extra certainty).

CREATING AN ACTION PLAN

Ultimately there is a risk profile left over, on the basis of which we can determine the required responses. The complete risk management process then carries on further as described.



## *1.04 Risk and Opportunity*

## 1.05 Quality

### QUALITY COSTS MONEY

Quality is a concept that is difficult to describe. Everybody knows what it is, but there is not one single definition that does the concept justice.

Quality has not only something to do with satisfaction, but also with price (better quality is more expensive).

Quality also has to do with the extent to which expectations are exceeded, and with the delivery of a certain level of service.

## 1.05-1 DEFINITIONS

<p>Audit</p>	<p>Systematic, independent and documented process for collecting proof and assessing objectively, in order to determine to what extent the totality of policy guidelines, procedures or requirements are being met.</p>
<p>Concession</p>	<p>Permission to use or release a product, which does not comply with the specified requirements.</p>
<p>Continuous improvement</p>	<p>Coordinated activities aimed at the increasing the ability to comply with the requirements.</p>
<p>Corrective measure</p>	<p>Measure to effect the correction of an observed deviation, or other unwanted situation.</p>
<p>Defect</p>	<p>Non-compliance with respect to the intended or specified use, in terms of meeting a requirement</p>
<p>Detection measure</p>	<p>Measure to determine whether or not a product complies with the specifications and other required situations.</p>
<p>Deviation (from a specification)</p>	<p>Non-compliance with a requirement.</p>
<p>Effectiveness</p>	<p>Extent to which planned activities are realized, and scheduled results achieved.</p>
<p>Evaluation</p>	<p>A subsequent Investigation to determine points for improvement.</p>

Failure costs	Costs for rectification and corrective measures.
Feature	A distinguishing characteristic.
Preventative costs	The costs made to remove causes of a possible future deviation or other unwanted situations in order to prevent it, or them, from occurring.
Preventative measure	Measure to remove the cause of a possible future deviation, or any other unwanted situation, in order to prevent it from occurring.
Process quality	The extent to which a totality of the features and characteristics of a process conforms to the requirements.
Product quality	The extent to which a totality of the features and characteristics of a product satisfies the requirements.
Project quality	The extent to which a totality of the features and characteristics of the project result satisfies what the customer wants.
Quality	The extent to which a totality of the features and characteristics satisfies the requirements.
Quality assurance	The implementation, maintenance, testing and evaluation of the project quality system.
Quality control	Coordinated activities aimed at complying with the quality requirements.

## 1.05 Quality

Quality costs	Those costs caused by effecting and ensuring the required quality, and the losses that are incurred if a required level of quality is not achieved.
Quality feature	Intrinsic distinguishing characteristic of a product, process, or system with respect to a requirement.
Quality improvement	Coordinated activities aimed at increasing the ability to comply with the quality requirements.
Quality register	A log containing the registration of all planned and executed quality assessments during the project.
Quality management	Coordinated activities to direct and control an organization with respect to quality.
Quality management system	The totality of coherent elements, or elements influencing each other to direct and control an organization with respect to quality.
Quality manual	Document specifying an organization's quality management system.
Quality plan	Document specifying how the project will comply with the quality requirements.
Quality policy	General aims and direction of an organization with respect to quality, as formally made known by the management.

Release	Permission to carry on to the next step in the process.
Review	Qualitative assessment of certain areas of attention carried out by a number of experts.
Specification	A precise description of (sub-) deliverables, products and services.
Validation	By providing objective proof, confirming that the requirements for a specific intended use, or specific intended application, have been met.
Verification	By providing objective proof, ascertaining that the specified requirements have been met.

## 1.05-2 INTRODUCTION

Quality is an interesting subject, because everyone has a certain view of it, but when you try to find a definition for quality, this turns out to be very difficult. In the 20<sup>th</sup> century, quite a lot was talked and written about quality, and broadly you could deduce the following meanings from the discussion about it:

- Delivered in accordance with the specifications.
- Fit for use.
- At minimum costs for society.
- Satisfies all expectations.
- A good feeling.

The last meaning has the greatest importance when we speak of a disappointing quality. Quality is mainly an emotional issue, and as project manager you can't do a lot with that, so you look for the possibilities to make quality measurable. In itself, there is nothing wrong with that, as long as you don't forget that the feeling people have about it determines the actual quality experienced.

There are a number of steps in this process of making quality measurable. We have already seen that needs translate into requirements that the customer stipulates for the delivered product, or project result. However, something always gets lost in the translation process, because no matter how precisely you define everything, the initial expectations of your customer will always be playing a background role.

It is, therefore, not sufficient to just write good specifications, as during the project you must also develop an effective quality management process. 'Effective' means that what is delivered matches expectations, and that this process, from the start, helps the customer to match his expectations to what is possible within the agreed budgets and time frames.

Ultimately, quality is a good feeling.

## 1.05-3 PROCESS STEPS

1. Develop a quality plan.
2. Select, build and test.
3. Approve the final version.
4. Assure and check.
5. Log tests and get approval.
6. Correct and repair.
7. Apply lessons learned.

### 1. Develop a quality plan

First think, and then act! If we have an idea of the requirements, we investigate what the quality requirements are. The first step is thinking about the way in which we are actually going to achieve this quality. The project quality plan describes how the team organizes the quality of the result.

This plan contains:

- Quality expectations and acceptance criteria.
- Responsibilities.
- Relevant standards.
- Quality processes/procedures.
- Change management procedures.
- Configuration management plan.
- Possible tools.

### 2. Select, build and test

Depending on the required quality and the available skills within the organization, the parties involved select the required solution. This can mean doing the building yourself, have the building carried out by someone else, or a combination.

Building has to be viewed in a broad perspective, and it has nothing to do with a physical

product. For carrying out a particular service, you can also think of some designing work (selection of the required solution). The preparations in order to actually carry out the service are then the building and testing. Before actually carrying out the service, you go through the description of the service to be delivered with the project sponsor. The delivery is then the actual service.

### 3. Approve the final version

Testing the result to be delivered is usually carried out in a number of steps, whereby each version delivered moves a step closer to the final result. The last test, also called the acceptance test, is a formality in which the customer tests whether or not the pre-defined acceptance criteria have been met.

### 4. Assure and check

#### Quality Assurance

Assurance contains all scheduled activities to ensure that the employees use the available quality procedures. The diagram shows that when the team has delivered accepted results, and these are under 'configuration management', then the change procedure serves to protect and assure the quality already achieved.

#### Quality control

During the complete (historical) development of products, and the further life cycle of a product, the quality has to be kept under control. This is shown in the quality circle above and everything that happens with a product is managed this way. That means there will be no chance, or casual, actions,

**The risk of ignoring quality is  
that of not achieving the project  
objectives**



## 1.05 Quality

but that each step that does something with a product will be considered by the appropriate people.

The quality circle is the basis for the project quality plan. This ensures that all steps in the circle are managed uniformly.

### 5. Log tests and get approval

Within the project team, it is good practice to document the course of events in tests in a so-called test log. This allows you to keep an eye on the complete course of events in the test, and afterwards to be able to reconstruct the testing stage.

The responsible sub-project leaders approve their team member's tests, and ultimately the users have to approve the final version.

### 6. Correct and repair

During the tests the testers find deviations from the specifications, or defects. Both must either be corrected or repaired, but before this is done, the impact on other parts of the project has to be studied and this work has to be re-planned if necessary.

### 7. Apply lessons learned

In this paragraph it is good to refer to a statement from one of our most well-known specialists in the area of quality, W. Edwards Deming<sup>1</sup>, who said:

*“Experience alone, without theory, teaches management nothing about what to do to improve quality and competitive position, nor how to do it.”*

You must always put experience into a theoretical framework, and there are a number of reasons that illustrate this. When certain things in a project do not run as smoothly as you would like, you must sometimes im-

prove them and in other situations definitely not. This is all about coincidental and structural causes, and is the theory of uncertainty. In addition, it is useful to be aware of what innovations have already been thought of before re-inventing the wheel yourself, and in this aspect, cost effectiveness is a consideration.

Practical experience and theory always go hand in hand, and they reinforce each other. Furthermore, a lot of theory is formulated out of the practical experience of others who went before you, and why should you not make use of that experience in your own project. Learning from experience in the area of quality means, therefore, that you go and investigate how others have delivered quality in similar situations. Read what is available in the area of quality, as this is a pre-condition for improving the competitive position of your organization, and it is not only Deming who thinks this.

Furthermore, learning from experience is not something which you just do following completion of the project. Applying experience is something you begin with even before you start the planning of a project.

### 8. Other standards and guidances

The process steps as identified by IPMA are only a suggestion. The process steps described in the *ISO 21500 Guidance*, the *'guide to the Project Management Body of Knowledge'* (the *PMBOK Guide*) from the Project Management Institute, and in the popular PRINCE2 Project Management method are much more “binding”. Without discussing it in detail I shall name, as a comparison, a number of items from these standards that are related to this competence element. What will be noticeable is the high level of similarity and overlap.

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<sup>1</sup> (1982) Out of the Crises, W. Edwards Deming, MIT, USA