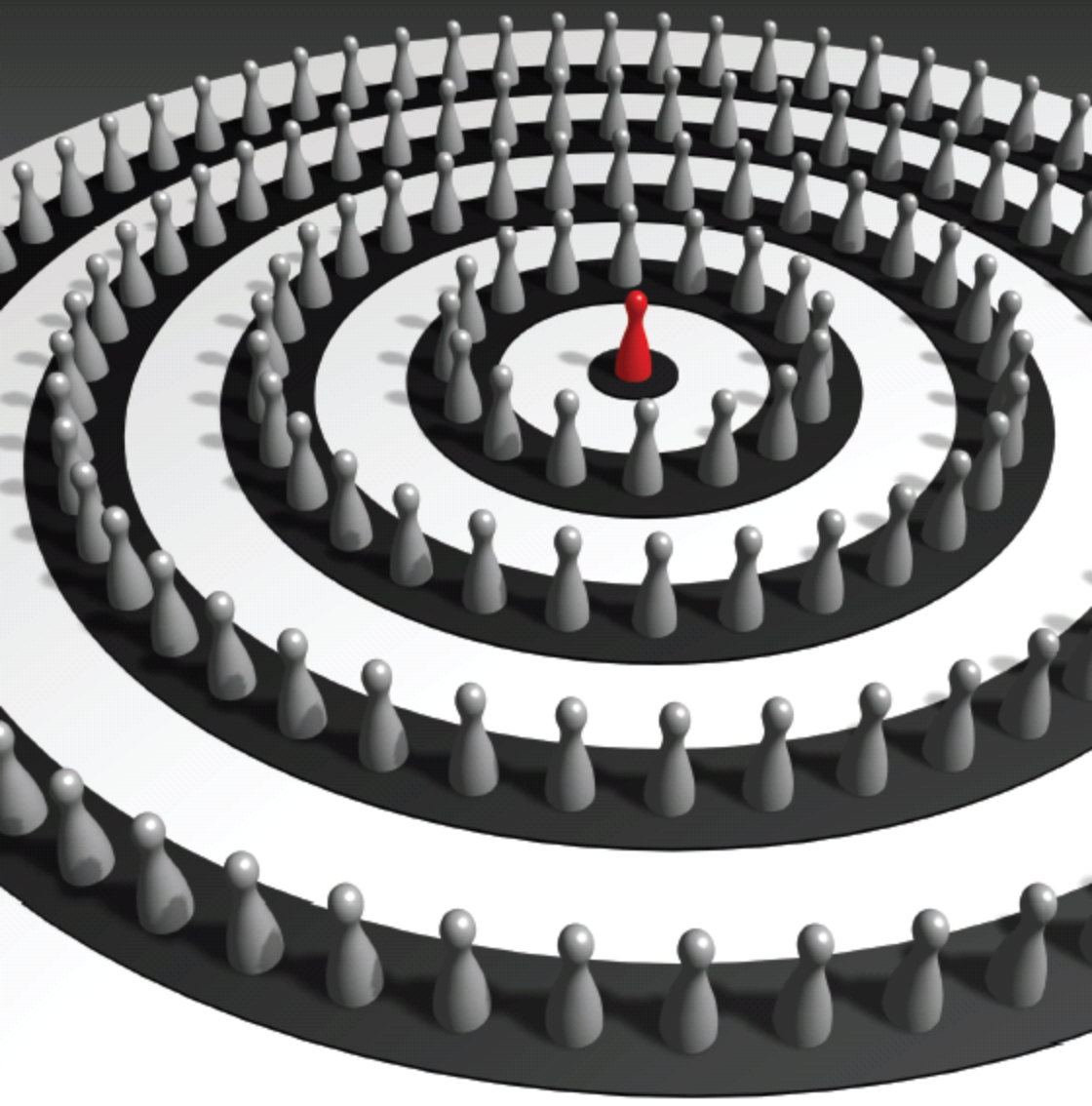
Luc De Ceuster

Focus on **Project Success**

Tools & Techniques for Successful Projects

First Edition



APraCom© Project Management

Focus on Project Success

Tools and Techniques for Successful Projects

First Edition, 2010

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Published in the Czech Republic by APraCom s.r.o.

First Edition, December 2010

Content and Language review: Dan Fiala, PMP, PMI-RMP
Cover Design: René Slauka

ISBN 978-80-254-8707-5

Published by:
APraCom s.r.o.
Strakonická 15
150 00 Praha 5 - Smìchov
The Czech Republic
www.APraCom.cz

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For Franciscus De Ceuster
who left us too early

I want to thank my family and all my friends who have always supported me and were especially there for me at the end of last year when I was infected with H1N1 and had very small chances to recover. Their energy, concerns and help made it possible for me to recover remarkably well and finish this work.

I explicitly want to thank Guy without whom I surely would not be alive anymore. Of course my parents, my brother Steven and my family, Ludo, Dan, Michal, Miluše, Erik and Irena.

A special thank also for the Doctors and Nurses at the FN MOTOL Hospital in Prague for their remarkable persistence, professionalism and creativity for giving me my life back.

Introduction

When I started my career in the Belgian Military in the early eighties, project management was from the start an important part of my job. At that time, unfortunately we did not really follow a strict methodology as today; nevertheless projects were there from the beginning even without calling it a “project” as such. We were just combining the things we learned because we knew that applying them properly would lead to a correct and timely completion of the project. In the case of a military operation – which would be done in wartime – we never took into consideration the cost when planning the work. We only looked at time efficiency and resource availability.

After completing the Military Academy and obtaining my Masters Degree in Construction and Mechanics, I fulfilled specialized military training going from military tactics to military constructions and planning of operations. It was during this six month period in my military career that I learned about Pert and Gantt and other project related things like Critical Path.

The knowledge we obtained was then used in military operations which of course can also be considered as projects. The large projects start with the strategic considerations and plans of the general staff until the small tasks can be identified.

The initial lesson I learned, was that projects are a kind of cut-and-past type of systems which allow you to split up a large and complex work into small, simple and manageable chunks of work that, when executed properly, allow you to achieve the initial work you intended.

It is like the nice building boxes some of us assembled as kids or still do. Those of you who still remember these days or are still assembling these building kits - my grandmother, now 98 years old always said that it were toys for small children – know that you received a large number of numbered parts and a step by step building instruction.

Following these steps carefully, will lead to the completion of the model as it is represented on the box. You may also have noticed that, although the instructions are chronologically numbered, you could do some of the work in a different order than suggested.

Later, when working for the military construction agency, I was responsible for a large number of military construction projects. The work was very similar to the normal civilian building industry and comparable with developers: we would make the project description including all work to be done and then the company with the lowest or best bid would execute the plan. We then would be doing the follow-up while the contractor would build according to his own project plan.

Later on, after I left the military and spent some time in the aviation and the building sectors, I joined “Big Blue” or IBM and later moved to another famous blue chip company AT&T. It was at that time that project management came back to me and started with my certification through the AT&T training program and culminating in my certification as PMP.

During PMI chapter meetings I was surprised how many people were involved in IT projects while almost no other sectors were represented. It was as if Project Management was something only for IT people and not for the others. When starting my company in Prague and introducing my training program to the

Czech market I also found out that many people asked: “Can this also be used for disciplines other than IT?” Of course, I would then respond. IT is a very young discipline compared to all the other disciplines that built the experiences for the Project Management Institute’s (PMI) methodology as described in the Project Management Body of Knowledge or PMBOK©.

Project Management Methodologies have been built upon years of experience. Just think about some of the projects that were done in the past: Panama Canal, Hoover Dam, Minuteman and Polaris Missile projects and many others. Most of these projects have been done when the word ICT did not mean anything yet. Methodologies can be generalized or specialized or are adaptable. Some larger companies build their own methodology based upon one or more general methodologies like PMI, Prince2, IPMA and others. Building your own methodology makes it possible to fine tune them to fit your business and company specifics.

The elements you will find in this and other books will go deeper into other topics related to project management are based upon the PMI methodology and will use its specific terminology. However, everything relating to tools and techniques and practical situations are generally applicable with whatever methodology you are or will be using. Many examples are taken out of my years of experience doing project management. Do not forget, many of the skills we need are also used in many other disciplines and therefore can be very useful to learn.

This book consists of 12 chapters which will lead you through the different phases of a project. The first and the second chapter introduce a number of terms and terminology that will be used further in the book. Starting from chapter 3, we will define the project, start planning it and finally execute (chapter 11) and

close-out (chapter 12) the project. The entire overview is set up in a comprehensive way to lead you from start to finish through the project.

Our experience is that this way of presenting project management creates a lively view for our students and readers by showing what happens when we do projects. It also shows that we have a lot of freedom related to project success and that a good understanding of the initial needs is necessary to define a successful project. Many projects start with a definition of the final solution and nobody ever seems to wonder if the proposed solution is really the best solution to offer. In our competitive world, spending too much money because the project definition was not done optimally means that the profitability of your business case may be influenced negatively.

Chapter I

Terminology and Definitions

Project management has become a separate discipline in our everyday lives. Many people are using different methodologies and it is necessary for those people to use the same terminology in order to understand each other when cooperating. It is clear that a general methodology as defined in the PMBOK© by the PMI is generally understandable by all people who are using this methodology.

Some large companies like IBM, AT&T, KBC and many others have developed their own methodology taking into account their specific needs. In addition to the standard definitions as in the general methodology, they changed or added terms, developed forms and reporting procedures. In some cases, they even developed their own training program.

Not only large companies will have advantages when applying a proven project management methodology to improve performance, small and medium size companies may benefit from it too. There are many myths and misunderstandings related to projects and project management. Some of them, we will discuss or mention in this book. On the other hand, when you have already been working in the project management area or as a projects manager, you may have noticed that many things we regularly do have a lot in common with the project work we do in the office or in some distant location.

What do you think about going on a trip, planning your wedding or just doing the household? Of course, we will not always formally do as we do with large projects; nevertheless, these “small” things are also projects. We will see later what the specific characteristics of a project are.

It is clear that a good project management methodology has to be easy applicable, scalable and adaptable to a large number of situations and disciplines. It is clear that our project team when going on a trip will be significantly smaller than the project team that developed the new Airbus 800 or the Ariane V rocket.

The work of the project manager is not always a simple job. In many cases, he or she will be confronted with many new challenges and will have to find new and creative solutions to resolve issues related to technology, organization, finance and people. It is clear that a project manager is NOT and administrative person who receives papers, fills them out classifies them and send it back to the next level. Project managers need many people skills in order to negotiate with clients, team members and other stakeholders, motivate people, provide solutions for issues and many others.

I have seen many times that some secretary was promoted “project manager” since it is only an administrative job. It is clear that this is a great recipe for disaster. They finally will not understand what is happening and will not intervene as is expected from a real project manager. They probably will sit, wait and accept what is happening.

A project manager has to be able to work with people and these skills are the most difficult to acquire. It is the same with a good salesperson or painter. You can send anybody to any training hoping that they will become a top salesperson or a Rembrandt or a Rubens. Training will only give you tools and techniques and will of course improve your skills; however, courses will not turn a frog into a prince!

Next to the topics discussed in this course, a project manager should get specialized in many soft skills

areas and courses like negotiations, emotional intelligence, Neuro-linguistic Programming, presentation skills, leading successful meetings, assertiveness, leadership and many others.

In many cases, it may be easier to select a person who already has a natural tendency towards leadership, management and sales and train that person into the specific technology of the project. In many large projects, the technical mix will be so large that knowing the specific technologies that are used becomes impossible. It is however a clear fact that a project manager who also understands the underlying techniques and thus better understands the work the people in the project teams are doing will get more credit and respect than a person who doesn't know anything about what is going on.

During some meetings I organized, some people asked me the question about the knowledge of the project manager related to the project. I then explained to them that the training of the project manager is comparable with the training of a painter. The painter learns about techniques how to make the picture but he does not get the genius to be a Rembrandt, Rubens, Dali or Picasso. This genius is inherent to the person and can only be enhanced by the training they get. Somebody who does not have this genius will never get it because he or she went to an art school.

1 What is a “project”

The first step when talking about project management is to define what we mean with the word “project” is and what it is not. Of course, many definitions exist and interpretations may be different from person to person and from industry to industry. You may have heard the word already many times in different contexts around you, on TV or on the radio. Did you ever question if the meaning was the same every time?

Every project management methodology has its specific meaning for the word “project” and the definitions may be completely different to describe the same thing. Even different authors may have their own interpretation of a project. Every source we would consult may have a different definition.

My first research for a suitable definition started by consulting some old dictionaries I bought in Canada during some holidays and found a somewhat simplified definitions in the sense of “doing something in an organized way”. Well, this should certainly true for a project and for many other things too. Following this definition your everyday job – even when it is not project related – hopefully fits to this description. The work done in many factories also fit with this definition and much more. Many we finally will not categorize as a project. Therefore, our standard dictionary does not provide an adequate definition for project.

When we look at the different definitions which have been published by a large number of authors which have written books about project management, we can find a number of elements that are in common and that will give us a better understanding what we project managers mean with the term “project”.

Every project has at least the following six characteristics, which we will describe in detail further:

Objective
Activities or tasks
Unique
Time
Budget
Service or product
Specifications

1.1 Objective

The objective relates to the final goal to achieve of the undertaking. Some examples are build a warehouse, install a new Wide Area Network (WAN), build a new airplane, install new software, and design a new software package or whatever you can imagine you would want to do.

The objective should be clearly stated and success criteria should be available to verify if the objective was obtained or not.

Without an objective, we would not know in what direction to proceed. It may lead us to very exiting places nevertheless, any way we would go to would be good, but without an objective, there can be no project!

1.2 Activities or Tasks

When we define a clear objective there will have to be some action undertaken to reach the objective. In order to reach the (complex) objective, we will subdivide the work in activities and tasks that we can easily manage. Completing them will lead us straight to the objective.

The tasks will have their own natural order, which means that some tasks are completely independent of all others while most of them can only be started once its predecessors have been completed. The relationship that exists between all the tasks are unique for each project and will provide the project manager and team a logical sequence in which the project has to be executed. Changing the natural order will prevent you from completing the project as it was initially defined.

Some examples of natural order are:

- You cannot build the roof of a house before the walls have been completed[1];
- It is impossible to complete a flight test of an airplane before it has been completely built;
- You cannot put the septic tank into the ground before digging the hole.

1.3 Unique

Projects relate to endeavors, which have never been done before and thus are unique. It is in a way like the voyages of Starship Enterprise in the science fiction series Star Trek going to unknown places or like they said it in the series “To go where no one has ever been before”.

Of course, the term “unique” may be interpreted in a more general sense and does not have to be applied on everything we do in the project. Some

1 *The statement about the roof sounds very logical, nevertheless we could consider a different way of working were we would work with prefabricated elements. In that case, we could easily build a roof separately from the rest of the house and when the walls are completed, put the roof on top of the walls. Special techniques may have to be applied; nevertheless, the work could be done differently.*

elements may be generic or have been done before while others are new. The first airplane builders were really pioneers and did many things by trial and error. They probably did not use any of the project management tools we have today. Nevertheless, they were doing something unique. Since then, many airplanes have been built and many of them were unique.

The same, we can say about building a house. Even an identical house in a different place will be unique because of the specific conditions at that place. The construction of the house in some circumstances may be integrated in a process where a company has a factory in which houses are built on customer order. The house itself you could select from a catalogue, complete the necessary formalities like signing a contract, obtaining the financing and payments and the company will start building it. On the other hand, your house will be unique because it will have to be transported to your land and the final installation and completion will be unique compared to the others.

When I was working in AT&T, I was part of a team selling and implementing network services – including all security and other services that AT&T offered – for a set of customers. Although we were offering preferably standardized services, the final design for each customer was unique.

1.4 Time

Projects are limited in time. They start at a specific date and end after completion, preferably on time or even early. Once the project starts, the tasks are being executed – each task has its own duration – and project progress is measured. Ideally, tasks are completed within the estimated

time or earlier. In many cases, the duration is longer than estimated and in some circumstances, this may influence the project duration and completion date.

We all know these “small” projects around us like building your house, reconstruction of a road nearby or installing some new software in your company that started on time or not and which seem to be never ending due to delays in project completion. Although you were given the planned end date of the project, it did not complete on time.

Projects will finally end and thus are limited in time where processes keep on repeating the same thing repeatedly. We can consider the design of the first Lexus car including the production process with test runs by Toyota as a project while the production itself is repeating the same thing all over again until the model and the production process changes and is called a process.

The end date of projects may be set by some external factors and then becomes in fact the driving factor for the project. This was the case for the $Y2K^2$ project. All programs – in any case the most important ones – had to be adapted to the year 2000 by removing all the old programming

2 *Y2K refers to the Year 2000 project. At that time, all programs had to be verified and corrected if necessary. During the early time of computers, capacity was very low and expensive. The programmers at that time wrote the year 1975 as 75 which reduced capacity dramatically. The problem was that the programs using this method couldn’t make any difference between the year 1910 and 2010. This could have had a lot of consequences for example when calculating the interests on your money, navigation systems and other vital systems. It was therefore very important to verify all these programs and adapt them to the year 2000.*

simplifications. The time constraint, in this case, was the most important problem and it would have been nonsense to allow additional time to complete the work. Of course, some risks existed that delays would occur and that it would be difficult to complete everything up to the last program. In order to secure the most important programs priority lists were made so that the crucial programs would not be forgotten.

1.5 Budget

Since doing projects means working on things, it also means that the effort has to be paid. We need people and other resources to do projects, so we have to pay for these relative to the effort each delivers. Unfortunately we are not living in a world without restraints so, the people we work with, the resources we need and the money we have to work with are limited so we have to organize them optimally.

Once we know the cost for each task and the time the task will be executed, it is possible to specify the budget on a weekly basis and represent that budget in a diagram, which is the time-phased budget. Starting from these estimates, we can build the cumulative budget, which shows in time how much money we are planning to spend by the end of the project is known as the Budget at Completion or BAC.

It is clear that the initial budget or initial base line is just an initial estimate of how we expect to be spending our money from the beginning of the project. Once we have changes in specifications, costs, planning and other factors the real spending will differ from the initial base line or due to officially approved changes, a new baseline is defined taking into account the new information.

1.6 Service or product

The result of a project is either a service or a product in the most general way. The existence of the project is only justified by the fact that we want to realize something to fulfill a specific need. There may be many or just one reason to do the project.

The reason may be legal, environmental or purely business and may be motivated by a business case showing a profitability that has been projected to be obtained once the product or service has been completed or installed. The business case may also relate to savings that will be realized once the project is completed.

In fact, the project starts with a need and results in a solution. It is very important to identify clearly the need and not to mix this with the solution. The initial study of the need may lead to different possible solutions and selecting the best possible solution is a very important factor in assuring project success. We will discuss this further later in this book.

1.7 Specifications

Each project or service has to be described by the specifications it should have in order to comply with the initial needs and the selected solution. Identifying and describing these specifications in detail is very important.

Many people make the mistake only to describe what specifications have to be included and forget to specify what is NOT included. Unclear specifications will certainly lead to a bad project and that is certainly not our goal!

The deliverable specifications are the baseline for determining project completion and success and are included in the project charter. This document is in many cases a contractual agreement between the project manager and the project client. The project manager should at all times keep the specifications in mind when planning, executing and closing the project. He or she does not have the liberty to change the specifications.

Although the project specifications are an important part of the project charter, they are not written in stone and can be changed during the project. The project change process controls these changes. Once the project team approves a change, the project planning, budget and baseline will be adjusted to represent the changes. It is clear that all project members have to be informed about the approved changes and everybody should start working with the new data.

All uncontrolled changes, also called “scope creep” have to be avoided because they will influence the project result, planning and budget. Uncontrolled changes may be a reason for variances between baseline and actual. The project manager has to take the necessary measures to prevent any unapproved changes or additions.

2 What is a “program”

The term program refers to interlinked projects like for example the Airbus A380 program or the NASA Space Program. In fact, programs are mega-projects, which are so big that we have to split them to stay manageable. Even the different programs influence each other and are so-called “interlinked” which means that one projects depends on results obtained in another project.

Today's airplane development programs have become so complex that they are split up in interlinked projects which are each led by a dedicated project manager and team. These independent teams are dependent on results of the other teams to complete successfully their part of the work. Separate teams design for example the nose wheel system, the main wheel system, the instrument system, the wings system and many others. It is clear that the results of these different projects depend on other projects.

Programs are everywhere and even today you may be working as a project manager on a project which is in fact part of a larger program.

3 What is "project management"

Project management or the "art of project management" relates to the way we will be managing the projects, which tools and techniques we will be using and how we will deal with changes and problems.

In order to better understand what project management is about, we will first look at managers and leaders and determine what is the difference between both and what they have in common. During my career in different companies and industries, I had the opportunity to observe many managers and leaders. I also had the opportunity to identify people who taught being a manager was the same like being a leader and acted as such towards their subordinates. However, towards their up line managers and leaders, they showed a different behavior.

Therefore, it is good to try to demystify both necessary positions within a company or within an organization. Understanding both roles will help all

people to better cooperate and act in the correct way.

3.1 Managers and Leaders

The following bullet points summarize the main responsibilities of managers:

- Execute tasks received from the management;
- Verify if the tasks can be done as requested;
- Organize and plan the work in the most efficient way using the resources at disposal;
- Report to management about progress, problems, estimates and other information;
- Direct the team members;
- Hire and fire people for the team the manager is responsible for;
- Propose solutions for encountered problems;
- Provide training and support for the team members;
- Lead and motivate the team in the best manner to obtain the best results.

This list is not extensive but gives you a short overview of what the manager is in fact doing for the team for which he or she is responsible. You also see that the manager does not have the authority to determine the mission; the leadership team of the company in fact does this. Management is done at different levels in the company or organization. The managers just under the leadership team send “orders” or instructions down to the lowest management level – sometimes also called first line management.

The managers cannot change the mission that has been determined by the leaders or leadership team! They will however organize their workforce to execute the mission in the best possible way.

The difference between leadership and management can also be compared to strategy and tactics. Managers are responsible for working out the tactical way to reach the defined strategies.

Leaders as said before determine the strategies the company, organization or army has to follow to be successful. They create the vision how the organization will operate.

The strategic or visionary statement gives direction to and builds a framework within which the management has to organize the work. Management will finally execute the “orders” received from the leadership team to bring the company to the final objective.

Some of these phrases remind me a lot of military strategies and tactics. In fact, they are very similar. The Chief in Command determines the final goal or strategy and orders are sent down to the lowest levels. Each of these intermediate levels has its own responsibility and determines strategies and tactics to realize the general strategy. Finally at the lowest levels, the platoon commanders will be the first line managers to implement the tactics that support the strategies.

During the cold war, which started at the end of WWII and ended in the late eighties in Europe, both sides had strategic and tactical nuclear weapons at their disposal. The strategic nuclear weapons were destined to destroy the supporting infrastructure of the homeland and take away the lifeline of the armies fighting in the field. On the other hand, they also had tactical nuclear weapons, which had less destructive power for use at close range on the battlefield supporting the tactics of the fighting troops.

Another nice comparison between leaders and managers brings us to a simple example of constructing a road through a forest. The leader will determine which way the road has to go and the manager will use his or her means and resources in the most effective way to build the road. The manager will not determine the path of the road while the leader will not organize and plan the work.

3.2 Project Management

Project management is like the word says, a management discipline which include the following functions:

- Plan;
- Organize;
- Control;
- Direct.

In the above 4 points, you will see that the “staffing” function is not added. This is because a project manager will not have any authority over the people working on the project. He or she will request for the resources that are needed for realizing the project to the management of the company and the different managers will delegate the team members. The project manager will manage them related to the project nevertheless; their “people” manager will manage them for other purposes.

The project manager will negotiate with the functional managers or other people in the organization to get the people he or she needs to complete the project. In case the people do not have the necessary skills or less people are available, it will have an impact on the project. Since the project manager does not have any

impact on this, it is important to observe what is happening with the people that have been assigned to the project for specific tasks.

The functional managers may withdraw people from the project even without informing the project manager. This of course can seriously influence the project outcome and as a project manager it is important to ask for support from your project sponsor in case you have one. Those of you have been working on projects may recognize this and already have experienced that people are withdrawn from your projects and you just cannot do anything against it. Of course, at the end of the project you are still the project manager and you are accountable for the results.

This course of action may look very unfair to you nevertheless it may be part of doing good business. The goal of the company is to make money and it may be a good decision to withdraw people from a less important or delicate project and allocate them to projects that are “more important”. Of course, the management should also take into account the effect on your project and a good idea would be to rework the project plan with the new information and have it approved at least internally. When you are dealing with external parties, this may be more difficult and your external customer may be very unhappy.

In the following chapters, we will describe the project management process, which we will repeat whenever we start a new project. Each step of the process has its own set of deliverables, which have to be completed in order to complete the project. Project management uses techniques to plan, organize, direct and control the company resources during the duration of the project in order to complete the project obtaining