

# A Study on Project Management Based on PMBOK and PRINCE2

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Received: March 10, 2016  
doi:10.5539/mas.v10n6p142

Accepted: March 27, 2016

Online Published: April 10, 2016

URL: <http://dx.doi.org/10.5539/mas.v10n6p142>

## Abstract

The Project Management Body of Knowledge (PMBOK) is a group of processes and knowledge fields which are generally accepted as greatest practice within the project management discipline. The PMBOK Guide is also an internationally recognized standard which provides the fundamentals of project management as they apply to a wide range of projects. PRINCE2 is a project management methodology standard in the United Kingdom and Europe. This standard is the required method for all UK government commissioned projects. PRINCE2 is in the public domain and offers best practice guidance on how to manage a project. The aim of this study is to compare PRINCE2 and PMBOK to recognize the characteristics of these best practices in order to provide decision criteria for governments with regard to selecting IT project management methodology.

**Keywords:** Project Management Methodologies, PMBOK, PRINCE2, design

## 1. Introduction

Projects are considered at all levels of organization which may contain one or many business units and they can pay one or 100s of persons. This projects can last from a few weeks to many years. Projects can be simple to highly complex projects, which may be employed at one location or multiple locations across multiple countries. Traditionally, management development initiatives have included interventions such as formal training programs, performance appraisals and management coaching. Moreover, in most of the projects, post project analyses provide an important occasion for an organization to ease the learning of project managers and team members from their project skills. Consequently, methodology can be understood as a description of a simply group of tasks or something formal. The inventor team can create their own methodology or can use another method created previously by others.

Nevertheless, the most important thing is the chosen methodology, covers all the identified requirements of the new project to build. In the end, the methodologies are an indispensable tool used in project management, which allow measure the progress and tasks control. It is possible to Classify methodologies into two different categories: Project management methodologies and application development methodologies. Chin and Spowage (2010) classified methodologies into five different groups: "Best practices, standards and guidelines; Sector specific methodology; Organization specific customized methodology; Project specific methodology and Individualized methodology". They also included PMBOK, PRINCE2 and the Association for Project Managers Body of Knowledge (APMBOK) as a section of "Best practices, standards and guidelines" group. Best practices are not a factor of sector, organization and they can be applied to any other project. As a result of hard works "to codify the area of knowledge required for competent project management" best practices have been made by international organizations, such as Project Management Institute (PMI) or APM, (Meredith and Mantel, 2012). According to Project Management Institute (PMI) there are about 500.000 PMI certification owners in 180 different countries. Similarly, PRINCE2 is a universal recognized methodology, especially widespread in the Australia, many other European countries and in UK. APMBOK is also based in the UK and developed by APM. In this study we focus on two widely used best practices: PMBOK and PRINCE2.

## 2. Management of the Product Design Process

In advanced countries, efficiency increasing innovations which mark the variances between companies belonging to various economic sectors currently are related to organization of work. The international standard "ISO 9000" describes "process" as "the set of interrelated or cooperating activities which transforms inputs into

outputs". One of the most important requirements of ISO 9001 informs that the vital processes for the system quality management must be determined by the organization.

### *2.1 The Process Approach*

Any activity or set of activities which are connected together and uses resources and controls the transform inputs (specifications, resources, information, services ...) into outcomes (other information, services ...) can be measured as a process.

Processes are a set activities produced unceasingly, or they can also called a group of recognized actions which are being repeated whenever the conditions need it, Nokes et al. (2007), assimilated concept "routine tasks" by Gómez García et al. (2000) and "operations" by Horine (2010). The approach of process includes the certification and organization of the processes systematically while they are happening inside the organization. The special interactions which are happening between the processes are also included in this definition.

### *2.2 Product Design*

The product design level can be used to reach the all reasonable and desired requirements of the market simultaneously. All the accessible resources must be used to have an effective design. Abernathy et al. considered a freedom for some of the lately created products initially. These Freedoms are listed as below: not fixed products, informal and flexible flow of materials. The first stage of the project design, which is concept design, is one of the most difficult phases. One of the solutions is to use an original way of concept choosing. Products are evaluated against the other parameters by this method. Also this way increases the innovative ideas among the project design. A group of products or a single product is always emerges from an initial good idea and wide spreads among the market. By this products (which are called Dominant designs) that rate of systematization of process design can be increased.

### *2.3 Design Management Standards*

Application of some fundamental rules to simplify the procedure of production is involved in British Standard (BS 7000-2: 2008). This standard considers the project budget and equipment. It also makes the products to meet the market and organizations satisfaction factors. Supervision on the project administration of all kinds of industrial goods is provided through this standard. One of the important features of this standard is that, this model arranges all the levels of the production process, from product concept to distribution, use and disposal. All the needed guides which are necessary for design management are defined in this standard. This code also raises awareness of management subjects.

## **3. Project Management Process**

The processes of project management are normally applied to all branches of industry. This paper highlights the situation of the implementation of project management. This information reveals that, in the companies in which the project management process has been applied, it has been noted that these companies improve overall business performance and they achieve cost and time efficiencies up to 50% in one or two years. It is distinguished from inside the product oriented that the plans which are attentive to enhance original useful abilities to the product with the aim of making it more adaptable or indirectly trying to make the projects more proficient. This is happening by reducing cost or varying procedures or further activities of the organization to get increased efficiency.

### *3.1 Project Management Modes*

“Unique set of activities needed to produce a predefined result in a certain date range and a specific assignment of resources” Is the definition of the project by the analytical plan administration. As the project achieves the intended purposes with the given budget and on time, it is considered successfully developed.

Information about of analytical plan administration growth affords certainty and quality guarantees on outcomes. This information is collected in the subsequent organizations:

- International Project Management Association (IPMA)
- Project Management Institute (PMI) and
- PRINCE2

The two first arose as professional organizations to develop methodologies and processes for project management and from the creation were planned to develop valid knowledge for any project. PRINCE2 was developed by the Central Computer and Telecommunications Agency (CCTA) of the British Government for definite projects of IT, but an analysis in 1996 extended its range of validity for any type of project.

Individual expressive helps of PMI and PRINCE2 plan administration processes have been developed. This organizations update their products by gathering new tendencies that pay to the achievement of projects. These highly valued guides are used by professional managers in different types of projects especially for the design of the manufactured goods.

### *3.2 PMBOK Project Management International Guide*

"A temporary effort aimed at creating a product, service or result" is the definition distinct by the Project Management Institute. In this note the definition of the five collections and five portions of information and their interactions is presented. The key tool of the processes of incorporation management is the conclusion of the expert and it is very important in the latest version of the PMBOK®. The decision of the version is proposed by companies and consultants which have expertise, understanding, and skill in a request field, information area, correction, manufacturing, and so on. For a defined project, the all members of the project always has the obligation to determine about suitable processes and the appropriate level of correctness for all process. This leads to an outline about the life of project and moreover about the life time of the products. The stages of the project and their association with each are described by this method. In Europe PRINCE2 is the generally accepted method which defines one project as "a management environment that is created with the aim of achieving one or more business products according to particular business model." The administration, regulate and organization helping for any kind of project is supported in the latest version of the PRINCE2. The fundamentals of the both PMBOK ® and PRINCE2 are the same. The aim of both of them is to decrease the risk and increase the quality of the projects more successfully by providing complementary techniques.

## **4. Comparative Analysis of Plan Administration Processes for Managing the Design of Manufactured Products**

At projects, it is possible to compare the design of products manufactured according to BS 7000-2: 2008 guide with the PMBOK® Guide and PRINCE2 model which are analyzed previously.

### *4.1 Process Description*

The following paragraphs deals with explaining the PMBOK ®.

#### 4.1.1 Planning

This part deals with developing project planning, aim planning, and aim definition, form WBS and action description. Creating series of actions, predicting duration of actions, creating the work schedule and cost estimations in big projects, are very significant and they all are predicted by the PMBOK ®. Planning of quality, human resources communications and risk management are another part of this program.

#### 4.1.2 Execution

To complete the project PMBOK ® has to manage many options. Here some of the options which PMBOK ® have them are named. This program can Lead and manage project implementation, acquire project team and perform quality assurance. Improving the project group, distribution info among the members, handling investor prospects and application replies from sellers are also considered in this program.

#### 4.1.3 Observing and Control

Observe and control project is one of the important parameters of the PMBOK ®. Controlling the changes during the project, confirming the aim, controlling the project schedule, controlling the costs and performance of the members are also considered in this program

#### 4.1.4 Close

Closing the project and also finishing work with the members are taken in this part.

A typical project administration system for industrial products is mentioned in BS 7000-2: 2008. The different stages of this project is as follow:

#### 4.1.5 Concept

The purpose of this part is to introduce the new innovative or improved products. Analyzing the chance, training experts Introduction of an innovative or improved product, chance and products failure analysis, designing the are also done in this part.

#### 4.1.6 Feasibility

All the jobs leading to design a proposal consist of Planning, research and practicality studies, features modification, valuable requirement development, development of the plan sites and work program, estimate and

endorsement of the project by the collection and promise of capitals.

#### 4.1.7 Plan and Progress

Gathering of plenty of experts in different fields to assume the plan, plan idea expansion, customer-product knowledge challenging, project arrangement.

#### 4.1.8 Application and Realization

Complete strategy, formation and challenging of pre-production project, complete plan contract ready for manufacture.

#### 4.1.9 Production Stage and Starting Authorized Duty

Subsidy industrial plan, production and spreading provisions, creation performance, starter, raise and continuous client funding, auctions and practice, in-use routine observing for response and better plan if needed, consecutively testing of the goods, comprehensive plan assessment and documentation of zones for development in the group of the project procedure for the improvement of new plans.

#### 4.1.10 Finishing

Concluding of the plan, formal project completion, and extraction of the goods are all the parts of this section.

Getting a feedback at all of the stages of the projects is a huge help to improve the project design. Se processes are provided by PRINCE2 process model. Managing, starting up, introducing, controlling, managing shown in table 1 the phases of the project and product delivery, and closing the project are these 7 stages. These stages are shown in table 1.

Table 1. 7 stages of PRINCE2

Directing a Project	DP
Starting Up a Project	SU
Introducing a Project	IP
Controlling a Stage	CS
Managing a Stage Boundary	SB
Managing Product Delivery	MP
Closing a Project	CP

#### 4.2 Comparative Table

A comparison among three described models is presented in table 2.

Table 2. Comparison among three project management PMBOK, PRINCE, BS 7000-2.

<b>PMBOK® Processes</b>	<b>PMBOK® v. PRINCE2 Differences</b>	<b>BS 7000-2: 2008 Processes</b>
<b>Beginning</b>	Starting up Guiding a project	Idea
<b>Preparation</b>	Starting a project Handling a stage limit Handling product delivery	Feasibility Design and development
<b>Implementation</b>	Controlling a stage Handling product delivery	Implementation and realization
<b>Observing and control</b>	Managing a project Controlling a stage Handling a stage limit	Manufacturing Opening authorized responsibility
<b>End</b>	Handling a stage limit Closing a project	Finishing

#### 5. Conclusions

It can be understood from the PMBOK ® guide that the process of project management and product oriented processes have interaction on each other and they are overlapped during the life cycle of a project. Both of these

processes are mentioned in PMBOK ® guide. An analytical methodology for project management is provided by The British Standard (BS7000-2:2008). This model is similar to the PMBOK ® guide. It also explains the plan administration processes. Both these processes are documented as highly good models for most of the big projects. It is necessary to say that these defined processes can always be applied to all different projects. It is the duty of the manager of the project and his team members to determine what process with which level of management is needed for the project.

Nevertheless, by using the PRINCE2 model it is easy to clarify what and when most of the events should occur in the project to run the project in a right route, but more significantly, this model helps to regulate the processes to the requirements of a defined process which is being guided by this model. The importance of PRINCE2 model is the management phases. All the phases are planned, observed and controlled as well by this model. Product delivery is also considered in this model to ease the process of production.

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