

Guide to Project Management Life Cycles

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Author's Note

This book consists of details related to Project Management Life Cycles, their selection and implementation according to the nature of the project. A detailed description of each project management life cycle along with their use is incorporated for the better understanding of the reader.

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Published by The Volpé Consortium, Inc., Texas

Printed in the United States of America.

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Abstract

The purpose of the initiation and completion of any project is to introduce new services and products into this technological business world. However, these projects must produce results within the given time frame and budget of the effort. As a project manager, one must be familiar with different project management life cycles in order to choose the best one for successful completion of their project.

In this book it is explained how different project life cycles have helped to achieve high quality results effectively and efficiently within the triple constraints of project management. Contained are detailed descriptions of different project management life cycles that include their history and some of their best uses in project management. This book also details the unique features of all frameworks and enables the reader to grasp the differences among them.

This book is dedicated to those friends in my life that are my true family. Also, to each and every one of you I have met along my journey that made life enjoyable and rewarding.

About the Author

William H. Volpé III is the founder of The Volpé Consortium, Inc., the creator of their proprietary project management process, the publisher of Project Victories, an online magazine dedicated to business success, and the developer of a three day flagship project management seminar. Mr. Volpé has more than 30 years of experience in project management and was a Master Business Analyst and Worldwide Manufacturing Program Manager at Hewlett Packard as well as the PMO Manager for the Ministry of Interior Saudi Arabia. His experience includes several multi-million dollar international projects and he holds an Associate Degree in Computer Engineering Technology, a Bachelor Degree in Electronic Engineering, a Bachelor Degree in Management, and a PMP (Project Management Professional) certification.

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Mr. Volpé began his project management career as a U.S. Government contractor under SECRET Clearance supporting Operation Just Cause, Operation Desert Storm, and Operation Restore Hope. He worked at Hewlett Packard in the NonStop Enterprise division and the Business Critical Servers Business Management group for more than five years; was a pre-merger Compaq employee; and completed several new product introduction projects for fault-tolerant, mission-critical customers such as the Pentagon and the world stock markets. Mr. Volpé has extensive international project experience and his teams have included members from Germany, England, Mexico, Australia, Scotland, Taiwan, and several other countries. Mr. Volpé still consults on project management today and can be contacted at contact@thevolpeconsortium.com.

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Introduction

With the rapid advancing in competition and globalization, industries are moving towards project based development rather than the typical processes used in every organization. Repetitive operations, also known as processes, were once useful for all kinds of organizations. However, since the advent of technology and rapid advancement in the business environment, the consumer's demands and expectations are changing at a fast pace.

Companies seek to meet these expectations at all cost and they opt for products and services that are unique in nature and will eventually satisfy the consumer. Coming up with unique ideas requires exceptional skills and abilities, which is not as easy as it sounds. The customer's taste, economic factors, and political issues to name a few have great impact on how the product will eventually turn out. Moreover, producing a unique product cannot be an on-going or never ending process. It is a unique one-time effort known as a "project."

What is a Project?

Projects, basically, are unique and temporary endeavors undertaken to achieve a specific goal, to produce a distinctive product, or provide a service that has never been offered before. Projects have defined beginning and end times and are under time, budget, and deliverable constraints (Institute, 2008). The temporary nature of the project does not always mean that the projects are of shorter durations. It implies that they are bound to end sooner or later. They can be as short as a week or as long as 10 years or longer.

Projects and processes are different because a process is repetitive by nature and is an ongoing activity, whereas projects are one-time unique endeavors (Stanleigh, n.d.). However, the project is completed following a process that has been designed for project execution. It consists of predefined steps that are carried out to meet the client's requirements fully (Current ITS Projects, n.d.). Projects can be executed at all levels of organizations. They are the means for implementation of organizational strategy and therefore they are planned and executed with great care.

Organizations place great importance on the successful execution of projects, because the higher the success rate of projects, the better the company image is. The time limit assigned to each project can vary according to the nature and requirements of the project. At times, companies join hands with other organizations to complete the project on time or to obtain additional resources (William R. Duncan, 1996, p. 4). For example, a software development company may develop a particular software on their own and for software quality assurance they may hire another company to oversee the process. This is also known as "outsourcing."

Projects also promote the concept of cross functional decision making. Different people with different skills and abilities are brought together to work towards a mutual goal. Therefore, different projects with different life cycles are all required to be completed effectively and efficiently.

The four main characteristics of projects are listed below (University).

- Projects are temporary endeavors that have a defined start and end date.
- Projects help in the design and execution of organizational strategy.
- Projects are the cause of new products and services introduced with the help of specific resources.
- Projects promote cross functionality in an organization. A team is formed to work on a project that is disbanded after completion.

Project Management

Whether it is the introduction of a unique product or a regeneration of an existing product, organizations are opting for project management to improve their worth in competing markets. Hence, project management can be described as the set of skills, knowledge, tools, and techniques needed to achieve the desired goals or objectives of the project within the triple constraints of project management (William R. Duncan, 1996, p. 6). The main constraints faced during the completion of a project are scope, time, and resources.

The project manager is responsible to make sure that these constraints do not hinder the completion of the project. Additionally, none of these boundaries are to be violated in any form by any team member. For example, after the distribution of resources the team members are bound to work with the resources assigned to them. They cannot use the resources assigned to another team member. Project management has become a crucial component of successful businesses all around the globe. Organizations are not only using project management for the introduction of their unique product or service, but they have synchronized their organizational goals with the successful completion of their projects and also to improve their internal operations and handle the external threats. Many challenges arising from the competing business environment are tackled through project management by organizations on a daily basis.

Project management consists of four main processes that are applied to each project for it to be successfully completed in the given time frame (Metafuse, 2014). They are discussed below.

Initiation: The initiation phase of the project management process consists of defining the need or the main purpose of the project. It can be a business problem or creation of an innovative product. After the problem has been identified the solution is proposed and all possible solutions are evaluated according to their pros and cons.

From the problem to the formation of the final team, everything is documented at this phase. The project is finalized and the work is broken down into activities and assigned to the respective team member. A project manager is assigned to oversee the progress of the project. No actual work is performed at this stage, only the documentation of the project for kickoff.

Planning: In this phase, the project is planned and the solution is further scrutinized to look for possible errors. All the steps required to complete the project successfully are identified and the resources are allocated accordingly. Sequences are assigned to the tasks according to their significance and a strategy is formed for the project's completion. The cost of the project is also estimated at this phase under the supervision of the manager. The cost of the labor, resources, and outsourcing in some cases is calculated and a budget is prepared before starting the project. Therefore, the three fundamentals of the planning phase include task identification, schedule, and cost estimation otherwise known as scope, time, and resources.

Execution and Monitoring: During this phase the actual work on the project starts. Each team member works on their individual task. Their work is continuously monitored by the project manager in order to avoid human errors that could result in the project's failure.

The overall progress of the project is also monitored. Progress is then compared with the project plan and in case of failure aggressive actions can be taken by the project manager. Sometimes, the project manager also has the authority to fire a team member in the case of poor performance that cause delays in the project. Once a project deliverable has been completed, it is reviewed to check the quality and performance before handing it over to the client.

Everything is documented for the convenience of the team and the stakeholders of the project. The tasks are continuously monitored throughout the project and the project manager is in control with final responsibility for all decisions. In case of a problem, it is the responsibility of the project manager to act rationally and to come up with a feasible solution with the help of team members. All along, the utilization of resources must be monitored in order to avoid waste.

Close-Out: The final phase of the project management process is close-out. Here the final deliverables are handed over to the clients along with all supporting documentation. In the case of IT projects, or the like, such as software, supporting documentation would include such things as user manuals.

The team makes sure that regular updates, if needed, are delivered to the client and any problem at the client's end is handled carefully. At the end, the project is evaluated and analyzed for lessons learned. This analysis is helpful for the team in future developments of similar products. The team formed for the project is disbanded after the successful completion of the project.

The figure below clearly explains each phase of a typical project management life cycle. These processes are carried out for each project with the help of different project management life cycle methodologies. Project management life cycle methodologies are various ways that a project is planned, executed, and completed using multiple techniques and methods. Each methodology will be discussed individually later in this book.

Using these methodologies, each project is broken down into multiple tasks. These tasks are then completed individually or in a sequence depending on the project model selected for the project. In some cases these divided tasks are also the deliverables for the client and at times the final project is delivered all at once to the client without any periodic deliverables.

Project life cycles are used as roadmaps to determine the actions that must be taken to complete a project successfully. Since the project is divided into multiple tasks, the selection of critical activities and their sequence is easy to identify. The activities are then completed according to their sequence. Any delay in the preceding activity will delay the overall project if the activity is on the critical path for the schedule. The project manager makes sure that each activity is completed on time to avoid project failure. Project life cycles usually drive the definition of two main criteria that are listed below.



Figure I.1 Basic Project Management Life Cycle

- The technical work to do in each phase. The technical aspects of each phase are described in detail in order to avoid any confusion and eventual failure of the project.
- The person responsible to carry out the technical work. The person who will be carrying out the actual task is identified and assigned the task.

Once the project's details have been finalized the company can choose the best methodology suiting their requirements and execute their project accordingly. The following is a list of project management life cycle methodologies that a company might use.

- Rational Unified Process (RUP)
- PRINCE2
- System Development Life Cycle (SDLC)
- Capability Maturity Model (CMM)
- TenStep
- Agile: Extreme Programming (XP)
- Agile: Scrum
- Agile: Crystal
- Agile: Dynamic System Development Method (DSDM)
- Agile: Lean Development
- Agile: Feature Driven Development (FDD)
- Rapid Application Development (RAD)
- Unicycle Model
- Code-and-Fix Approach
- Scaled Agile Framework (SAFe)
- V-Methodology
- Waterfall Model
- Prototype Model
- Spiral Model
- Synchronize and Stabilize
- Reverse Engineering Development
- Structured System Analysis and Design Method (SSADM)
- PRAMIS
- Open Source

Project management life cycles are the foundation of project delivery. The selection of the method depends on the nature of the project. For example, for software based projects a project manager may opt for using an Agile development model rather than another project management model because Agile development is better suited for software projects. Though these models share some similarities among themselves, each has its own unique features that make them more suitable for certain projects. These methodologies are a complete set of guidelines needed for the successful completion of a project. From the start of the project until the end, all requirements and documentation details are explained clearly. The selection of the method is a critical decision as the wrong selection could lead to project failure hence affecting the image of the company negatively.

The methodologies provide a common process for team members to work in agreement with. Their main aim is to achieve the objectives and goals of the project in the given time frame and with efficiency. Using one methodology also makes the monitoring process easy, as it provides guidelines, framework, and documentation templates. In case something goes wrong, tracking will be easier since everything has been documented. The project manager as well as the team is provided with documentation for their assistance.

How to Use This Book

This book is not meant to be the definitive source on all aspects of project management or even the individual life cycles reviewed. Instead, it is meant to give a detailed overview of the project management life cycles that are available and a basis for choosing one. While many of these life cycles were developed for specific environments, they can be used in other unintended environments. However, that said, this doesn't mean that all project management life cycles can be used successfully in all project management environments.

Throughout this book you will see many references to software industry projects and practices. This is because many project management life cycles have been developed for the software industry or so that the reader will have a common theme to use for life cycle comparison. This does not mean that the particular life cycle can only be used for software projects or that it should be used for any industry other than software. It is up to the reader to understand the nature of their business environment and projects as well as the life cycles available and choose accordingly.

Each of the above mentioned methodologies are discussed in depth in individual chapters that follow as well as detailed in a selection chart in the Conclusion of this book. Their history, usage, and pros and cons are described in great length. Before selecting any

method for a project, it is crucial to go through them all to identify the model that is best suited for the project at hand to avoid failure and wasted resources.