

## MODULE 1

# Scope for Professional Project Management

What is the first activity  
you do during a working  
day at office ?

# Dedication

I dedicate this e-book to my parents who cared to provide me good education.

I dedicate this e-book to my wife Jessy and daughter Rosanna who supported me throughout

I dedicate this e-book to all mission achievement professionals

Special thanks to Mr. Antony K Benito, my research associate, who helped me with his ideas and contribution.

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# Preface

Simplifying complexity – that is the theme of this e-book.

I keep on telling my project management students that understanding project management and getting any certification in project management is not as difficult as passing any single paper of their graduation. It is all about common sense, which is slightly uncommon.

This e-book will familiarize you with the project management concepts as explained in the project management body of knowledge of PMI (project management institute).

This book is divided into seven modules;

|          |                                           |
|----------|-------------------------------------------|
| Module-1 | Scope for professional project management |
| Module-2 | Project initiation                        |
| Module-3 | Project planning                          |
| Module-4 | Project execution                         |
| Module-6 | Monitoring and controlling project work   |
| Module-7 | Closing a project                         |

These seven modules together simplify further the concepts explained in the project management body of knowledge.

This book can be used for;

1. Acquiring the basic project management knowledge from the practitioners perspective
1. Preparing for the project management certification exams

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- 1) Register yourself at [www.pmrinstitute.com](http://www.pmrinstitute.com) or [www.classtube.com](http://www.classtube.com)
- 2) Log into ClassTube
- 3) Subscribe for the PM essentials program (free)
- 4) Complete all the modules
- 5) At the end of every module, submit it for evaluation (button provided)
- 6) An instructor will evaluate your submissions
- 7) The Project Management Research Institute will email successful candidates PM essentials certificate. This certificate will earn you 8 contact hours of instructor led program)

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# Module1

## The scope for professional project management



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| <b>S I<br/>no.</b> | <b>Topic</b>                                    | <b>P a g e<br/>No.</b> |
|--------------------|-------------------------------------------------|------------------------|
| <b>1</b>           | Understanding project selection methods         | <b>9</b>               |
| <b>2</b>           | Roles and responsibilities of project manager   | <b>14</b>              |
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| <b>4</b>           | Roles and responsibilities of a project sponsor | <b>17</b>              |
| <b>5</b>           | Project life cycle                              | <b>18</b>              |
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| <b>7</b>           | Project management lifecycle                    | <b>18</b>              |
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## What is the first activity you do during a working day at office (sometimes even on holidays)?

Very often, the answer is checking emails. If there are lot of emails, then these emails decide the activities of the day. What happens, if there are no emails at all?, then we get depressed. We get an 'unimportant feeling'. If it is the emails, which decide your day's activities, then it is the projects, which is managing you. You are not managing any projects. Your professional designations can be anything and what you are doing actually is project coordination.

In every stream of management, the underlying theme is Plan-Do-Check- Act (PDCA). Whatever we are planning to do, develop a plan of action. Then do things as per the plan. Frequently check the progress against the plan. If there is a variance, then take action. PDCA is coined by Schewhart. Deming modified it to PDSA (Plan-Do-Study-Act). As per PDSA, we plan a portion of a project, then do it, and learn from it PDSA is more applicable to projects which has high degree of research and development component in it.

The key characteristics of a project are;

- 1) Every project has a start and end date
- 2) Projects are performed by people
- 3) Delivers unique products or services
- 4) Has the 'progressive elaboration' characteristics

Progressive elaboration means, when we start a project we have very less information about the project and as the project progresses we gain more and more insight into the project. At the time of preparing a proposal for a project, we have very less information about the project. When we complete the estimation we have a better understanding. When we complete the design we gain further insights. During construction things get clearer. We call this process as progressive elaboration. Based on these additional insights plans can change.

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## Operations

What about manufacturing of standard products (iPods, Toyota Camry cars etc)?

We call these as operations. The main differences between a project and an operation are:

- 1) Operations produces standard out put where as projects delivers unique outputs
- 2) Operations are ongoing in nature, where as projects have definite start and end dates

## Programs & Program management

A group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. Programs are larger, often containing a series of related projects within a single program. NASA's space program as whole includes a number of smaller programs and each of these programs contain a series of projects.

## Project Portfolio management

What will you do, if you have 5 Crores INR (Indian Rupees) (1 USD = 37 INR).

If you have an answer, then the subsequent questions that will loom large in your mind can be;

- 1) What is the interest the bank will give me, if I deposit this money in the bank?.
- 2) Will the returns from the project be better than the interest I can gain from the bank?
- 3) Is this the best project to invest?
- 4) By doing this project, what are the other opportunities we are loosing?
- 5) When can we take the money out?
- 6) Is this business matching with our value systems?

Similarly, all the projects in the wish list of organizations cannot execute because

All the projects may not be aligned to the strategy of the organization. The organization will have the bandwidth to execute the most important projects only. When we say bandwidth, it is with respect

resources – manpower, money and machinery.

Hence it becomes important to organizations to pick up projects, that matches best with the organizational strategy. The entire process of selecting the right projects and tracking them for their alignment with the organizational strategies is collectively known as portfolio management.

## Understanding project selection methods

It is not practical to execute all the project ideas and organization have at one go. One need o prioritize the projects based on their benefits. For this the following methods are used;

1. Payback period
2. Net present value (NPV)
3. Internal rate of return (IRR)
4. Cost benefit analysis

## The time value for money

Money has a time value. A rupee today is more valuable than a rupee year later. Why? There are several reasons

1. Capital can be employed productively to generate positive returns
2. In an inflationary period a rupee today represents a greater real purchasing power than a rupee a year later

## Timelines and notations

When cash flows occur at different points in time, it is easier to deal with them using a time line. A timeline shows the timing and the amount of each cash flow in a cash flow stream. Cash flows can be positive or negative. A positive cash flow is called as cash inflow and a negative cash flow is called a s cash outflow.

## Future value of a single amount

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|             |                                      |       |
|-------------|--------------------------------------|-------|
| First year  | Principal at the beginning           | 1,000 |
|             | Interest for the year<br>(1000x0.10) | 100   |
|             | Principal at the end                 | 1,100 |
|             |                                      |       |
| Second year | Principal at the beginning           | 1,100 |
|             | Interest for the year (1100*0.10)    | 110   |
|             | Principal at the end                 | 1,210 |
|             |                                      |       |
| Third year  | Principal at the beginning           | 1,210 |
|             | Interest for the year (1210*0.10)    | 121   |
|             | Principal at the end                 | 1,331 |

The process of investing money as well as re-investing the interest earned thereon is called compounding. The future value, or compounded value of an investment after 'n' years, when the interest rate is 'r' percent is;

$$FV_n = PV (1+r)^n$$

In this equation,  $(1+r)^n$  is called future value factor

If we apply this formula;

$$FV_n = 1000 (1+.1)^3 = 1000 \times 1.1 \times 1.1 \times 1.1 = 1331$$

## Net present value

The net present value (NPV) of a project is the sum of the present values of all the cash flows, positive as well as negative, that are expected to occur over the life of the project.

The general formula for NPV is; (sum(present values of all future cash flows) – Initial investment).

To illustrate the calculation of net present value, consider a project, which has the following cash flow stream;

| Year | Cash Flow      |
|------|----------------|
| 0    | Rs (1,000,000) |
| 1    | 200,000        |
| 2    | 200,000        |
| 3    | 300,000        |
| 4    | 300,000        |
| 5    | 350,000        |

The cost of capital, 'r' for the firm is 10 percent.

The net present value of the proposal is;

$$\text{NPV} = (200000/1.10^1) + (200000/1.10^2) + (300000/1.10^3) + (300000/1.10^4) + (350000/1.10^5) - 1000000 = -5,273$$

The net present value represents the net benefit over and above the compensation for time and risk. Hence the decision rule associated with the net present value criterion is;

Accept the project if the net present value of the project is positive and  
reject the project if the net present value is negative.

### The benefit cost ratio

Benefit cost ratio BCR = PVB / I where

PVB = present value of benefits and I = initial investment

To illustrate the calculation of these measures, let us consider a project, which is being evaluated by a firm that has a cost of capital of 12 percent.

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|                    |        |
|--------------------|--------|
| Initial Investment | 100000 |
| Benefits Year 1    | 25000  |
| Benefits Year 2    | 40000  |
| Benefits Year 3    | 40000  |
| Benefits Year 4    | 50000  |

The benefit cost ratio measures for this project is;

$$BCR = ((25000/1.12) + 40000/1.12^2) + (40000/1.12^3) + (50000/1.12^4) / 100000 = 1.145$$

Decision rules

When  $BCR > 1$  accept the project

When  $BCR < 1$  reject the project

IRR – internal rate of return

The internal rate of return (IRR) of a project is the discount rate, which makes its NPV equal to zero.

To illustrate the calculation of IRR, consider the cash flows of a project being considered;

|           |       |       |       |       |       |
|-----------|-------|-------|-------|-------|-------|
| Year      | 0     | 1     | 2     | 3     | 4     |
| cash Flow | 10000 | 30000 | 30000 | 40000 | 45000 |

The IRR is the value of 'r', which satisfies the following equation;

$$100,000 = 30000/(1+r)^1 + 30000/(1+r)^2 + 40000/(1+r)^3 + 45000/(1+r)^4$$

The calculation 'r' involves a process of trial and error. We try different values of 'r' till we find that

the right hand side of the above equation is equal to 100,000.

In this case, the value lies between 15 and 16 percent.

The decision rule for IRR is as follows;

Accept, if the IRR is greater than the cost of capital

Reject, if the IRR is less than the cost of capital

## **Payback period**

The payback period is the length of time required to recover the initial cash outlay on the project. For example, if a project involves a cash outlay of RS. 600000 and generates cash inflows of Rs. 100000, 150000, 150000 and 200000 in the first, second, third and fourth years respectively, its pay back period is 4 years because the sum of cash flows during the four years is equal to the initial outlay. According to the payback criterion, the shorter the payback period, the more desirable the project.

## **Programs & Program management**

A group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. Programs are larger, often containing a series of related projects within a single program. NASA's space program as whole includes a number of smaller programs and each of these programs contain a series of projects.

## **MBO – management by objectives**

MBO stands for management by objectives. Again MBO can be visualized from the PDCA angle. In MBO, the objectives for performance are set first, then the team performs to meet the objectives, the progress is checked and corrective actions are taken if necessary.

## **Project stakeholders**

Any person, community influenced either positively or negatively by the project execution or by the lack of execution in the project is a stakeholder of the project. Many times, stakeholders have conflicting interests. It is the project manager's responsibility to understand these conflicts and try to resolve them. As a project manager, be certain to identify and meet

with all key stakeholders early in the project, to understand all their needs and constraints.

Typical stakeholders to a project are;

- a) Project manager
- b) Customer / user
- c) Performing organizational
- d) Project team members
- e) Project management team
- f) Sponsor
- g) Influencers
- h) PMO (project management office)
- i) Investors
- j) Sellers
- k) Contractors
- l) Individual citizens
- m) Competitors

## Roles and responsibilities of project manager

Roles and responsibilities vary from organization to organization. Project manager is ultimately responsible for the success of the project (cost, schedule and quality). The other responsibilities include;

- Development of a project plan
- Executing the project as per the project plan
- Maintaining the project plan
- Project tracking
- Scope management
- Risk management
- Project integration management
- People management

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- Communications management
- Procurement management
- Quality management
- Causal analysis and corrective actions
- Stakeholder management

1. As a project manager one deals with;
2. The senior management
3. Project sponsor
4. Project team members
5. Functional managers
6. Suppliers
7. Contractors
8. Government agencies
9. Fellow project managers, contributing to the same project
10. Different cultures
11. Legal
12. Finance
13. Statutory bodies
14. Other companies
15. Competitors
16. Society at large
17. Research and development organizations
18. Competitors
- etc.

The list can go on and on, depending on the nature of the project. The eco system in which the project manager has to operate and to take decisions is very complex. In order to be successful in such a complex scenario, the project managers need to have an 'ethics baseline' around which the decisions can be taken, with conviction (without fear and unfair influences). The significance of

the awareness of the professional responsibilities and ethics of the project management profession becomes critical with this awareness.

## Skills of every good project manager

### Communication skills

One of the most important skills required being a very successful project manager is excellent communication skills. Written and oral communication is the backbone of all successful projects. Project managers spend around 90% of their time in project communication. Many forms of communication will exist during the life of a project. It can be in the form of emails, telephone calls, video conferencing, project documents etc. It is the project manager's job to ensure that information is explicit, clear and complete, so that the audience of the communication will not have any trouble in understanding the contents of the communication, in the right manner. Once the information has been distributed, it is the responsibility of the person receiving the information to make sure that they understand it.

### Organizational skills

Organizational and planning skills are probably the second most important skills a project manager can possess. Closely associated with the organizational skills are the time management skills.

### Budgeting skills

Project managers establish and manage budgets and therefore need some knowledge of finance and accounting principles. Especially important in this skill area is the ability to perform cost estimates for project budgeting.

### Problem solving skills

Involves the skills to;

- a) Define the problem very clearly, without associating it to any person, process, solution
- b) Applying a fix
- c) Formulating the corrective action
- d) Proofing the corrective action

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- e) Rolling out the corrective action

## **Negotiating and influencing skills**

Negotiation on projects is necessary in almost every area of the project from scope definition to budgets, contracts, resource assignments and more. This may involve one on one negotiation or team negotiations. It can occur many times, throughout the project. There can be;

- Win-win negotiations
- Win-loose negotiations
- Loose-win negotiations
- Loose-loose negotiations

Influencing is the ability to convince the other party into your way of thinking. Power and politics are techniques used to influence people to perform.

## **Leadership skills**

Leaders and managers are not synonymous terms. Leaders impart vision, gain consensus for strategic goals, establish direction, inspire and motivate others. Whereas managers focus on results and are concerned with getting the job done as per requirements.

## **Team building and human resource skills**

Project managers rely heavily on team building and human resource management skills. Project manager will set the tone for the project team and will help them to work through the various team-forming stages of forming, norming, storming and performing, to become fully functional.

## **Roles and responsibilities of a project sponsor**

Project sponsor's primary role is to make the needed resources available to the project. This includes;

- 1) Approval for starting the project

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- 2) Approval to the cost budgets of the project
- 3) Approval to the product road maps, if it is a product development project
- 4) Decision to short close the projects, if the project deliverables are not viable or do not add value in changed scenarios.
- 5) Decisions to progress into the subsequent phases
- 6).Decisions not to progress into the subsequent phases

## Project life cycle

Defines the phases that connect the beginning of a project to it's end. Each phase definition generally comprises of;

- 1) Technical work to be done in each phase
- 2) Quality control and assurance of the deliverables
- 3) Who is involved in each phase
- 4) How to control and approve each phase

## Product life cycle

Follow the stage gate approach. Idea conception, prototyping, validation, elaboration, beta and release. Typically, a product will be an out come of a project or a group of projects.

## Project management lifecycle

Project management life cycle comprises of the project phases of:

- 1) Initiation
- 2) Planning
- 3) Execution
- 4) Monitoring and control
- 5) Close out

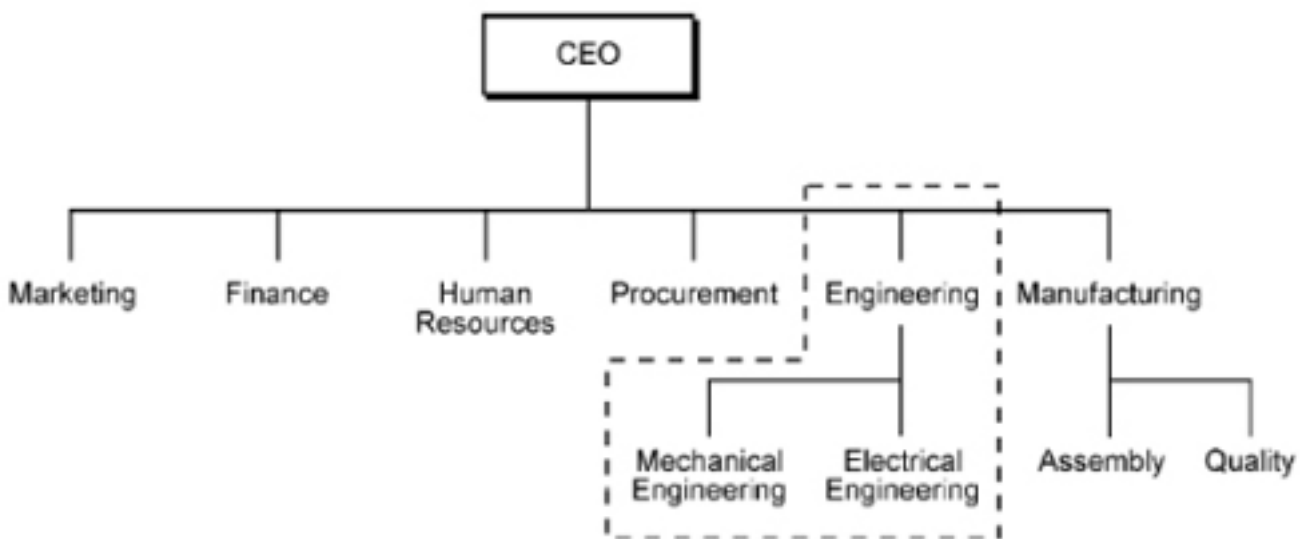
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## Organizational structures

Organizational structures can be broadly classified into;

- 1) Functional organization
- 2) Projectized organization
- 3) Matrix organization

### Functional organization



Functional organization is the most common form of organization. This is probably the oldest style of organization and is therefore known as the traditional approach to organizing businesses. The organization is grouped by area of specialization within different functional areas (sales, manufacturing, purchase, quality control etc). In a functional organization, maximum power rests with the functional manager and the project manager's role in decision making is minimal. Project managers play a coordinator / facilitator role. Control over the team by project manager is minimal. (Glorified secretary)

#### Advantages of a functional organization:

In a projectized organization, the team gets dismantled, once the project is over, hence the ownership of the career path of the project team members are not fully owned by any. This can be the

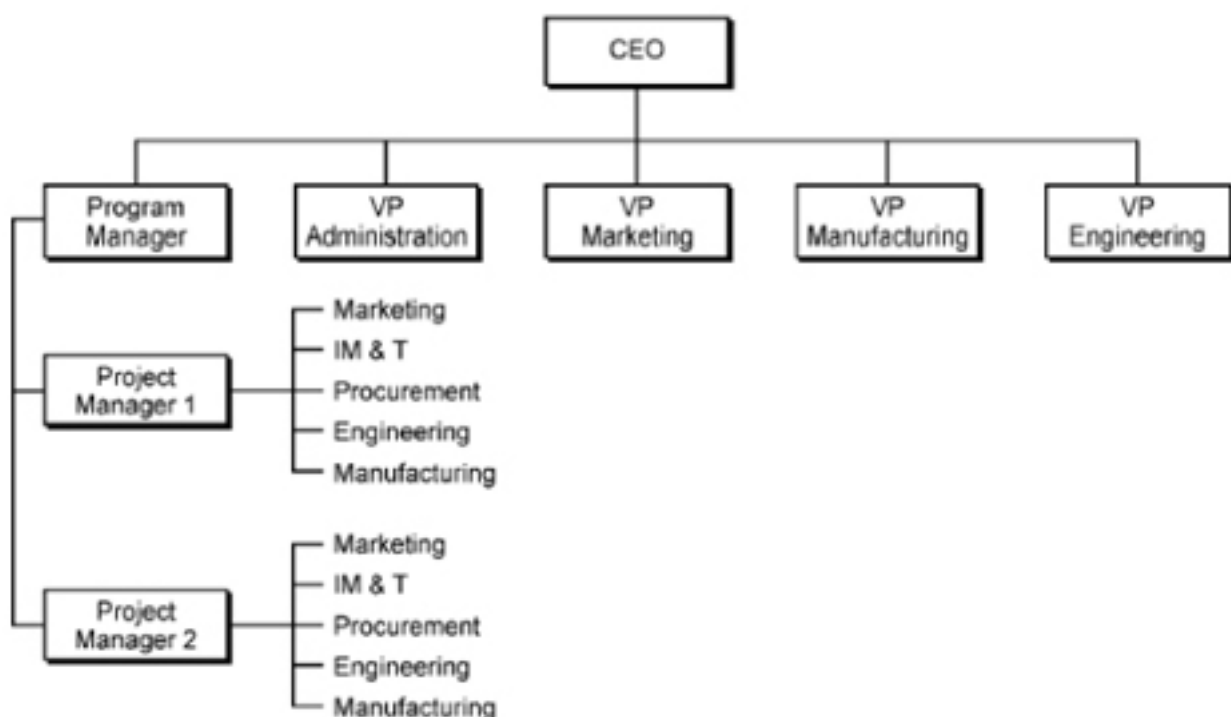
situation in matrix organizations too, since there are two bosses. Whereas in a typical functional organization, the career progression of the team member is fully owned by the functional manager.

- 1) Team members report to only one boss, hence avoidance of conflict of interest.
- 2) Easier management of specialists. Fully under the control of the functional manager.
- 3) Similar resources are centralized, hence better synergy within groups
- 4) There is a clear upward career path for people in a functional organization.
- 5) Workers in functional organizations specialize in the area of expertise and then become very good at their functionality

#### **Disadvantages of functional organization:**

- 1) Preference for functional specialization, at the cost of the project
- 2) Multiple projects compete for limited resources and priority
- 3) Project team members are loyal to the functional manager, than to the project manager
- 4) No career path in project management
- 5) Project manager has no authority

## **Projectized Organization**



In projectized organization, all the work is considered as a project (construction companies, software project organizations). The project manager has total control over the projects. Personnel are assigned to and report to a project manager. The focus of this type organization is the project itself. The idea behind the projectized organization is to develop loyalty to the project, not to the functional manager.

### **Advantages of a projectized organization:**

The project managers have ultimate authority over the project

- 1) The focus of the organization is on the project
- 2) The organization's resources are focused on projects and project work
- 3) Team members are collocated (physically work at the same location)
- 4) Team members will be more committed to the project than to the functional manager
- 5) Availability of career paths within the project management stream
- 6) More effective project related communication

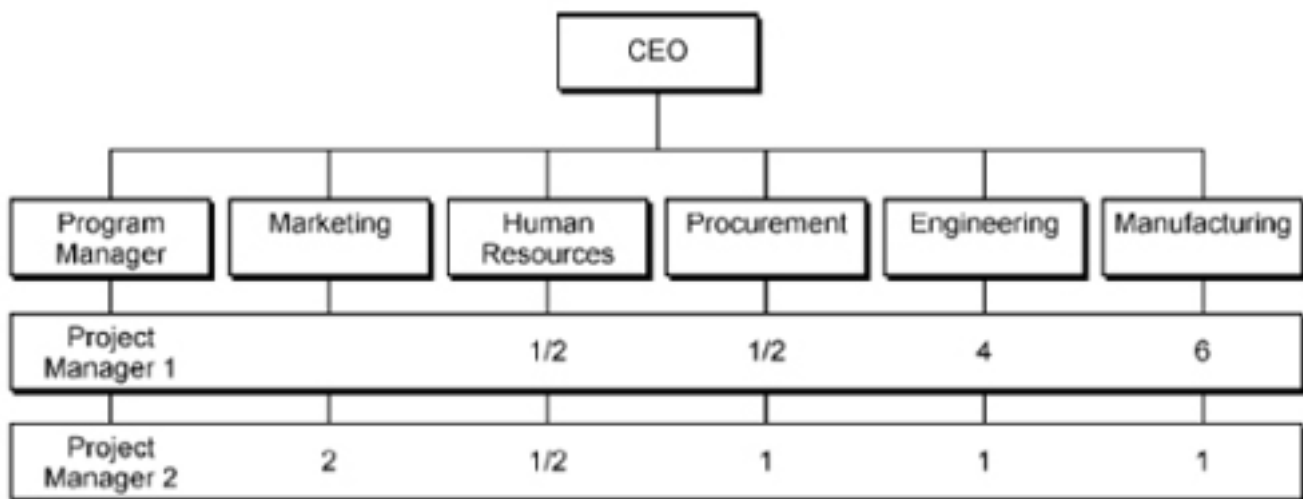
### **Disadvantages of a projectized organization:**

- 1) When the project gets over, the team gets dismantled, hence lack of security leading short term commitments
- 2) Duplication of facilities and job functions E.g. administrative officer for each project, HR coordinator for each project, seating arrangements for each project, team outings for each projects etc.
- 3) Less efficient use of resources. Project teams tend to hang on to resources both material and human, even after the need for them. (Some project manager's take pride in their team size or develop fear when the team size shrinks.

## **Matrix organization**

Matrix organization is a hybrid of both functional and projectized organization, trying to leverage the strength of both. Matrix organizations came into existence to capitalize on the strengths of both functional and projectized organizations, by combining them into one. The team members report to two bosses, the project manager and the functional manager.

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In a strong matrix, the power rests with the project manager. In a weak matrix, the power rests with the functional manager. In a balanced matrix, the power is shared between the project manager and the functional manager.

### Advantages of matrix organization:

- 1) More support from functional organizations
- 2) Maximum utilization of scarce resources, since they are easily accessible to the projects.
- 3) Better horizontal and vertical communication (better than functional)
- 4) Team members have a place to go, at the completion of the project

### Disadvantages of matrix organization:

More than one boss for project teams, leaving the team members between devil and deep sea, due to conflicts between the project manager and the functional manager

More complex to monitor and control, if it spans different locations

Is there any relationship between organizational structure and project manager's role / authority?

Yes. Depicted in the following table

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|                                    | Functional Organisation      | Weak Matrix                  | Balanced Matrix         | Strong Matrix                   | Projectized                     |
|------------------------------------|------------------------------|------------------------------|-------------------------|---------------------------------|---------------------------------|
| Project Managers Authority         | Little or none               | Limited                      | Low to moderate         | Moderate to high                | High to almost total            |
| Project manager's role             | Part time                    | Part time                    | Full time               | Full time                       | Full time                       |
| Common titles for project managers | Project coordinator / leader | Project coordinator / leader | Project manager/officer | Project manager/Program manager | Project manager/Program manager |

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## About Author

**Abrachan Pudusserry** is a highly acclaimed Speaker, Advisor and Author of project management / management and software engineering. During his 20 years of professional experience he served organizations such as Novell, HCL, FEC and Prologic. He has mentored around 1000 + project managers from leading organizations. He is the author of (www.pmdistilled.com) project management workshops architected by him is being delivered successfully (103 workshops completed as on April 22, 2008) in multiple countries. Organizations such as AMDPCS, LG, SG, Zerone Consulting, Blue Star, Sasken, Alcatel, Broadcom, BirlaSoft, KPMG are among the organizations benefited from his customized Agile project management using SCRUM and PMdistilled in-house workshops. Apart from these workshops, he delivers customized programs and consulting services catering to the specific needs of the organizations and works along with project teams in implementing project management and quality management best practices covering Predictive Project management (PMBOK, PRINCE2), Adaptive project management (Agile methodologies with emphasis on SCRUM), Software estimation, ISO and CMM. He is a CSM (Certified Scrum Master), PRINCE2 practitioner, PMP certified, certified quality analyst. He holds Master's degree in quality management, Bachelors degree in Electrical Engineering, and currently pursuing Master's degree in Applied Psychology.

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