An organizational structure is a system that outlines how certain activities are directed in order to achieve the goals of an organization. These activities can include roles, rules, and responsibilities**The project organizational structure** is an essential configuration for determining the hierarchy of people, their function, workflow and reporting system **Types of project organizational structures**

1.Pure Project Organization **2.**Functional organizational structure **3.**Matrix organizational structure **1.Limitations of Pure Project Organizations**1.One challenge that pure project organizations face is planning the smooth transition of resources from one project to another 2.People assigned to the project tend to form strong attachments to it and a disease called "projectitis" is developed. **2.Functional organizational structure**

Advantages: • The functional project has immediate, direct, and complete contact with the most important technologies it may need, and it has in-depth access • Because the project is housed in the department that will benefit from the project, the department's leadership team has more leeway in determining the priority of the project relative to other departmental work and is subjected less to the concerns and priorities of other departments **Challenges:**•Communication gap across functional departments • Communications across functional department boundaries are rarely as simple as most firms think they are. •When technological assistance is needed from another department, it may or may not be forthcoming on a timely basis.•Technological depth is certainly present, but technological breadth is missing. • In most functionally organized projects, the lines of communication to people or units outside the functional department are slow and tortuous.**3.Matrix organizational structure: Advantages:** • If the project is likely to require complex technical problem solving, it will probably have the appropriate technical specialists assigned to it. • Flexibility in the way it can interface with the parent organization. •In general, matrix organized projects have the advantages of both pure and functional projects.

Disadvantages: • The Unity of Command principle in management theory ,i.e : for each subordinate, there shall be one, and only one, superior is violated • In matrix projects, the individual specialist borrowed from a function has two bosses.Thus, project workers are often faced with conflicting orders from the PM and the functional manager. The result is conflicting demands on their time and activities. • In matrix organizations the PM controls administrative decisions and the functional heads control technological decisions. This distinction is simple enough when writing about project management, but for the operating PM the distinction, and partial division of authority and responsibility, is complex indeed. The ability of the PM to negotiate anything from resources to technical assistance to delivery dates is a key contributor to project success. • The organization's full set of projects must be carefully monitored by the program manager, a tough job. Further, the movement of resources from project to project in order to satisfy the individual schedules of the multiple projects may foster political infighting among the several PMs. As usual, there are no winners in these battles. **PROJECT STAKEHOLDERS:** A stakeholder is an individual, group, or organization that may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project. Project stakeholders may be internal or external to the project, they may be actively involved, passively involved, or unaware of the project. Project stakeholders may have a positive or negative impact on the project, or be positively or negatively impacted by the project **Internal stakeholders**:• Sponsor • Resource manager • Project management office (PMO) • Portfolio steering committee• Program manager • Project managers of other projects• Team members **External stakeholders**:• Customers• End users • Suppliers • Shareholders • Regulatory bodies • Competitors

A Work Breakdown Structure includes dividing a large and complex project into simpler, manageable and independent tasks. • A straightforward and conceptually simple way to attack the problem is the 'hierarchical planning process' to build a Work Breakdown Structure (WBS) for the project. • Inadequate up-front planning, especially failing to identify all important tasks, is a primary contributor to the failure of a project to achieve its cost and time objectives • A primary purpose for developing a WBS is to ensure that any task required to produce a deliverable is not overlooked and thereby not accounted for and planned. • A Work Breakdown Structure includes dividing a large and complex project into simpler, manageable and independent tasks.• A straight forward and conceptually simple way to attack the problem is the 'hierarchical planning process'to build a Work Breakdown Structure (WBS) for the project.

Typical causes of conflict within project-based Organizations 1.Conflicts over costs and budgets 2. Ego and personality clashes 3. Differing views, ways of working and internal biases 4. Verbal miscommunication and misunderstandings 5. Lack of trust and respect between team members

PROJECT SCOPE STATEMENT

• The project scope statement is the description of the project major deliverables, assumptions, and constraints. • It describes the project's deliverables in detail. It also provides a common understanding of the project scope among project stakeholders. • It enables the project team to perform more detailed planning, guides the project team's work during execution, and provides the baseline for evaluating whether requests for changes or additional work are contained within or outside the project's boundaries.The detailed project scope statement, either directly or by reference to other documents, includes the following:•Product scope description. Progressively elaborates the characteristics of the product, service, or result described in the project charter and requirements documentation.• Deliverables. Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project. Deliverables also include ancillary results, such as project management reports and documentation. These deliverables may be described at a summary level or in great detail. • Acceptance criteria. A set of conditions that is required to be met before deliverables are accepted. • Project exclusions. Identifies what is excluded from the project. Explicitly stating what is out of scope for the project helps manage stakeholders' expectations and can reduce scope creep.

Project Charter - Definition

A project charter is a formal short document that states a project exists and provides project managers with written authority to begin work. A project charter document describes a project to create a shared understanding of its goals, objectives and resource requirements before the project is scoped out in detail. PMBOK® Defines Project Charter as a document issued by the project initiator or sponsor that formally authorizes the existence of a project, and provides a project manager with the authority to apply organizational resources to the project. **A project charter is important in the Project Management,** because-• It ensures that the project manager understands the sponsor's needs and requirements. • It provides vital information needed to get the projects started. • It acts as a reference document to make sure everyone (i.e. Project Manager, Stakeholder, Higher Management etc.) are on the same page.

Project goal: • Project participants. •Stakeholders.•Requirements.• Constraints • Implementation milestones. • Communication• Deliverables. • Create an implementation plan.

Benefits of a project charter:

• It gives an authority to the project manager to complete the project • Explains the business importance and existence of project.• Demonstrates Management

support for the project • Defines outcome for the project. • Aligns project with the organization objectives. • Provides a team with a clear concise reporting system.Protects team members from scope creep.• Helps in avoiding disagreements between stakeholders

Key Elements of Project Plan • Identification of stakeholder's needs • Smart project objectives • Clear deliverables and deadlines • A detailed project schedules • Clearly defined roles• Project costs• A communication plan • The right systems and processe **Influence of Project Manager** • Authority• Expert Knowledge • Professional Advancement • Coercive behaviour • Work Challenge• Friendship

The most common sources of conflicts in project management :●Staffing resources ●Equipment and facilities ● Capital expenditures ● Costs ● Technical opinions and trade-off ●Priorities ●Administrative procedures ●Scheduling ●Responsibilities● Personality clashe

Methods of Budgeting

Top-Down Budgeting • The top-down approach to budgeting is based on the collective judgments and experiences of top and middle managers concerning similar past projects • Managers estimate the overall project cost by estimating the costs of the major tasks• The above estimates are then given to the next lower level of managers to split up among the tasks under their control, and so on, until all the work is budgeted **Advantages**• Such type of budget focuses on the overall growth of the organization. • It makes departments aware of what the top management expects from them. • It is a quick way of preparing a budget and helps to overcome interdepartmental issues.• Saves time for lower management as well. Rather than preparing the budget from scratch, each department gets a set goal. This saves both time and resources. **disadvantage** Since managers are not part of the budget-making process, they may not feel much motivation to ensure their success.• Since senior managers are not much aware of the day-to-day operations of the departments, they may set unrealistic targets. This results in lower-level managers finding it difficult to meet the set numbers.• Such a type of budgeting may often lead to over or under-allocation of resources **Bottom-Up Budgeting**

• WBS identifies the elemental tasks, whose resource requirements are estimated by those responsible for executing them• The resources, such as labor and materials, are then converted to costs and aggregated to different levels of the project.• The PM then adds indirect costs such as general and administrative, a reserve for contingencies and a profit figure to arrive at a final project budget **Advantages**• It is usually very accurate. Individuals in each department are best placed to understand their costs, resources, expenses and requirements.• It can also provide a boost to morale because when employees are given accountability to set their own budgets, they are often more motivated to work hard to meet company goals. A sense of ownership may be achieved, along with increased job satisfaction .**Disadvantages**• A tendency for department heads to over-budget, to ensure they have enough money for the year .**Cost Estimating** • Most businesses and professions employ experienced estimators who can forecast resource usage • In many fields, the methods of cost estimation are well documented based on the experience of estimators gathered over many years. • For example, the cost of a building, or house, is usually estimated by the square feet of floor area multiplied by an appropriate rupee value per square foot and then adjusted for any unusual factors. **Direct Costs in a Project** • Labor costs of wages of employees on project management team • Contracted fees of labor involved in project • Any raw resources consumed during project activities• Travel expenses• Supplies and materials needed in project• Rent on equipment **Indirect Costs in a Project** • Financing consulting advice• Rent of office space including a company's headquarters• Research and development• Operation expenses like utilities for power• Salaries and benefits of administrative staff• Financial fees accumulated for budget

preparation and accounting• Advertising project needs and recruiting staff **ANALOGOUS ESTIMATING** • Analogous cost estimating uses values, or attributes, of a previous project that are like the current project • Values and attributes of the projects may include but are not limited to: scope, cost, budget, duration, and measures of scale (e.g., size, weight).• Comparison of these project values, or attributes, becomes the basis for estimating the same parameter or measurement for the current project **PARAMETRIC ESTIMATING** ▪Parametric estimating uses a statistical relationship between relevant historical data and other variables (e.g., square footage in construction) to calculate a cost estimate for project work. ▪This technique can produce higher levels of accuracy depending on the sophistication and underlying data built into the model ▪Parametric cost estimates can be applied to a total project or to segments of a project **According to PMI's Practice Standard, there are 2** types of results• Deterministic and• Probabilistic estimates. The deterministic result type of the parametric estimation is a single number for the amount of cost or time neede calculated based on parametric scaling. It is sometimes manually adjusted to account for differences between the current and historic projects (e.g. different levels of experience of the teams) or to add a contingency reserve.. Probabilistic Estimates This result type is not producing a single estimate but a range of estimates based on the probability of different cost and duration amounts. This is often presented in the form of a probability density curve as shown in the below chart. **THREE-POINT ESTIMATING** ▪The accuracy of single-point cost estimates may be improved by considering estimation uncertainty and risk and using three estimates to define an approximate range for an activity's cost ▪Most likely (Cm). The cost of the activity, based on realistic effort assessment for the required work and any predicted expenses ▪Optimistic (Co). The cost based on analysis of the best-case scenario for the activity ▪Pessimistic (Cp). The cost based on analysis of the worst-case scenario for the activity Triangular distribution. CE = (Co + Cm + Cp) / 3 Beta distribution. CE = (Co + 4 Cm + Cp) / 6 **BOTTOM-UP ESTIMATING** ▪Bottom-up estimating is a method of estimating a component of work ▪The detailed cost is then summarized or "rolled up" to higher levels for subsequent reporting and tracking purpose. **The plan-monitor-control cycle:** The monitoring and controlling cycle of the project management involves observing the process after project implementation, identifying problems and risks, and deploying a mitigation strategy to control the new process. The Monitoring and Controlling phase checks all the tasks and metrics necessary to ensure that the approved and authorized project is within scope, on time, and on budget so that the project proceeds with minimal risk. This process involves comparing actual performance with planned performance and taking corrective action to yield the desired outcome when significant differences exist. Monitoring and Controlling process is continuously performed throughout the life of the project When setting up a project's monitoring and control phase, first we need to establish the project baselines. This includes the scope, schedule and budget. This information is used to benchmark the project's progress throughout the lifecycle. **Monitoring Process**: Monitoring Process is about assessing what work has been completed for a programme or project including costs, risks and issues. The SRO and board will routinely monitor if the business case continues to be viable and in alignment with strategic objectives. This usually takes the form of the production of documentation and reports at key stages. Monitoring is used to oversee progress of products, outputs, and outcomes. Control Process: Control Process relates to stages in projects and are established to control the delivery of the project's outputs. Controls in project management are as follows: Event driven: It means that the control occurs because a specific event has taken place. Examples: completion of a project initiation document and creation of

an exception plan Time driven: Time driven means that controls are regular progress feedbacks. Example: Checkpoint and highlight reporting

Earned Value in Project Management

•Earned value (EV) is a way to measure and monitor the level of work completed on a project against the plan. •It is a quick way to tell if you're behind schedule or over budget on your project •One can calculate the EV of a project by multiplying the percentage complete by the total project budget • **Schedule Variance (SV):** Schedule variance is the difference between your planned progress and your actual progress to date. • SV = EV (earned value) - PV (planned value). • IF SV is negative, it indicates the project is behind schedule **Cost Variance (CV):** Cost variance is the difference between how much you planned on spending thus far and your actual costs to date. • CV = EV (earned value) - AC (actual cost). • IF CV is negative, it indicates the project could go over budget or run out of money. **schedule Performance Index (SPI):** • The SPI calculation is, SPI = EV/PV. • When SPI is above 1.00, the project ahead of schedule. If it's below 1.00, project is behind. Cost Performance Index (CPI) • The CPI calculation is, CPI = EV/AC. • When SPI is above 1.00, the project is under budget. If it's below 1.00, project is overspending **Scope Creep:-** • Scope creep is what happens when changes are made to the project scope without any control procedure like change requests. • Those changes also affect the project schedule, budget, costs, resource allocation and might compromise the completion of milestones and goals • Scope creep is one of the most common project management risks. scope creep occurs when new project requirements are added by project clients or other stakeholders after the project execution has started. • these changes are not properly reviewed 1. Every project plan must include a change control system by which requests for changes in the project's plan, processes, budget, schedule, or deliverables are evaluated. 2. Every project change must be introduced by a change order that includes a description of the agreed-upon change together with any resulting changes in the plan, processes, budget, schedule, or deliverables. 3. Changes must be approved in writing by the client's agent as well as by a representative of senior management of the firm conducting the project. 4. The project manager must be consulted on all proposed changes prior to the preparation and approval of the change order. (The PM's approval is not required.) 5. Once the change order has been approved, the project plan be amended to reflect the change and the change order becomes a part of that plan • the project team is expected to complete more tasks, deliverables and milestones with the same resources and in the same time as the original scope **Evaluating and Terminating Project:-** A project evaluation appraises the progress and performance relative to the project's initial or revised plan • The evaluation also appraises the project against the goals and objectives set for it during the selection process • Project evaluation is done at a number of crucial points during the project life cycle • Primary purpose of a project evaluation during project is to give feedback to senior management for decision and control purposes. •The use of post project evaluation is to help the organization improve its project management skills on future projects **Evaluation Criteria:-** Concept of 'Ancillary'• goals Profitability •Acquiring new competencies for the organization, or getting a foothold in a new market segment. •Any special reasons for selection should also play a role. •Was this project someone's sacred cow? •Was the project a competitive necessity? **Dimensions of Project Success** •Project's efficiency in meeting the budget and schedule. •Customer impact/satisfaction. •Business/direct success [for external projects, factors such as the level of commercial success and market share and for internal projects, the achievement of the project's goals such as improved yields or reduced throughput time]

Project Auditing A very special type of evaluation is the formal audit. The project is

audited ion following dimension •Management •Methodology and Procedures •Records Properties • Inventories •Budgets •Expenditures •Future potential •Project's contribution to the organization's ancillary goals and objectives •Project's contributions to the objectives of project team members **The Audit Process** The timing of the audit depends on the purpose of the audit. •it is often helpful to have an audit early in the project's life. •Such audits are usually focused on technical issues •Later audits tend to focus more on budget and schedule because most of the technical issues are resolved by this time**Three Levels of audit** ->General Audit -> Detailed Audit ->Technical Audit **Typical steps in a project audit** 1. Familiarize the audit team with the requirements of the project, including its basis for selection and any special charges by upper management. 2. Audit the project on-site. 3. Write up the audit report in the required format (discussed in the next subsection). 4. Distribute the report. **PMBOK Knowledge Areas** •Managing Integration •Managing Scope •Managing Time/Schedule •Managing Costs •Managing Quality •Managing Human Resources • Managing Communication •Managing Risks •Managing Procurement •Managing Stakeholders **Scrum Development Overview** Known as an Agile method • Used when requirements are difficult to define or subject to rapid change •Iterative approach •Uses sprints or 2 to 4 week cycles **Roles** Product owner -Scrum Master -Development Team -May include specialist roles such as developer, subject matter expert **Priorities: stories are either on the: -**Front burner (currently working on)**-** Back burner (next up)**-**Fridge (for later)**-** Priorities are revisited before each new sprint -Requires committed, mature developers -Major work must still be done up front -Needs commitment and involvement of Product Owner-Best for products that require frequent updates - Not so good for large, totally new products that will not allow frequent updates after release **The Project Management Office (PMO)** Medium and large organizations **Typical objectives -**Align projects with organizational objectives **-**Set standards for projects **-**Provide resources to project managers **-**Provide training and mentorship **-**Provide facilitation **-**Stay abreast of best practices in Project Management **-** Repository for project reports and lessons learned **Stakeholder Management** Stakeholders are people or organizations who either will be impacted by the project or who can impact the project. - Always include: project sponsor, project team - May include: customers, suppliers, vendors, the public, land owners, voters, other departments within the organization, government, etc.- Major tool is the stakeholder register - Lists stakeholder, role, all communications -Updated regularly throughout the project -New stakeholders can appear at any time

Project Scope Scope generally defines what the project is all about -Forms the basis of agreement between the project SPONSOR and the project team -Changes in the scope may be proposed at any time during a project, but should follow a clearly defined approval process

Scope Statement Description of the scope Acceptance criteria -Deliverables -Exclusions-Constraints -Assumptions

Schedule and Time Management Based on the units of work defined by the WBS -Resources required are identified -Time durations are estimated -Dependencies are identified (such as, what task must be completed before another task can begin) -And a schedule can be created - Several methods are available—details in a later chapter -Software is frequently used to assist with managing the time schedule

Project Costs Develop a budget -Several methods can be used to estimate -Plan for the cash flow -Track the expenditures -Explain deviations and make adjustments where required **Project Quality:** Quality plan defines -The quality standards -The methods that will be used to achieve the standards -The methods that will be used to measure the standards