Project management is the discipline of planning, organizing, securing, and managing resources to achieve specific goals. A project is a temporary endeavor with a defined beginning and end (usually time-constrained, and often constrained by funding or deliverables), undertaken to meet unique goals and objectives, typically to bring about beneficial change or added value. The temporary nature of projects stands in contrast with business as usual (or operation), which are repetitive, permanent, or semi-permanent functional activities to produce products or services.
Why project management is important??

• Some of the prime advantages of having a good project management team for a company are as follows:-

• Excellent product quality
• Adequate communication
• Reducing risks
• Strategic objectives and goals
• Project management is all about calculating the pitfalls and creating outlets to avoid the consequences.

• All the projects share a common aim – following ideas and activities to shape them into working realities.

• Even if the project is well planned and carried still the possibility of encountering dangers exists.
Most of the times project management objectives are set on the following factors:

- **Desired end results**: Desired end results should match with the purpose of the project. Quality and performance of the application also plays important role in project management. Every one involved in project is responsible to ensure its completion by keeping into account its quality and desired performance.

- **Expenditure**: Other than the objectives expenditure also plays important role in ensuring successful completion of project. Even a small increase in expenditure may hamper the quality of the project.
• **Time of completion:** The objective also involves completion on time. If the time factor lags behind then it means slogging of the project, added expenditure and wastage of the time.

• Therefore project management should be taken seriously because the desired outcome expected from the project will keep the business going. If you are still thinking about managing the big project easily then it is not that easy. First try to analyse the pros and cons when things will go wrong. Then employ the services of best management consulting firm which can handle your project management very efficiently.
Four P’s of project management

• Effective software project management focuses on the four P’s: people, product, process and project

The people

• The “people” is so important that the S/W Engineering Institute has developed a people management capability maturity model (PM-CMM) “to enhance the readiness of s/w grow, motivate, deploy, and retain the talent needed to improve their s/w development capability”
The people management maturity model defines the following key practice areas for s/w people: recruiting, selection, performance management, training, compensation, career development, organization and work design, and team/culture development.
The product

• Before a project can be planned, product objectives and scope should be established, alternative solution should be considered, and technical and management constraints should be identified. Without this information, it is impossible to define reasonable (and accurate) estimate of the cost, an effective assessment of risk, a realistic breakdown of project tasks, or a manageable project schedule that provides a meaningful indication of progress.
The Process

- A s/w process provides the framework from which a comprehensive plan for software development can be established. A small number of framework activities are applicable to all s/w project, regardless of their size or complexity. A number of different tasks, milestone, work product, and quality assurance points—enable the framework activities to be adapted to the characteristics of the project team.
The Project

• “A project is like a road trip. Some projects are simple and routine, like driving to the store in broad daylight. But most project worth doing are more like driving a truck off-road, in the mountains, at night.”

• To avoid project failure, s/w project manager and the s/w engineers who build the product must heed a set of common warning signs, understand the critical success factors that lead to good project management, and develop a commensense approach for planning, monitoring and controlling the project.
What we look when choosing someone to lead a s/w project.

- In an excellent book of technical leadership, Jerry Weinberg[WEI86] suggests a MOI model of leadership:-
- **MOTIVATION**: the ability to encourage (by "push or pull") technical people to produce their best ability.
- **ORGANIZATION**: the ability to hold existing processes (or invert new ones) that will enable the initial concept to be translated into a final product.
• IDEAS or INNOVATION:- the ability to encourage people to create and feel creative even when they must work within bounds established for a particular software product or application.

• PROBLEM SOLVING:- an effective s/w project manager can diagnose the technical and organizational issues that are most relevant, systematically structure, solution or property motivate other partitioners to develop the solution, apply lessons learned from past projects to new situations, and remain flexible enough to change direction if initial attempts at problem solution are fruitless.
Melding decomposition of process

• There is first thing “what is melding” “Melding means combined with something”. Project planning begins project planning begins with the melding of the product and the process. Each function to be engineered by the software team must pass through the set of framework.

• Activities that have been defined for a software organization. Assume that the organization has adopted the following set of framework activities.
Framework Activities

- **Customer communication**—tasks required to establish effective requirements elicitation between developer and customer.
- **Planning**—tasks required to define resources, timelines, and other project related information.
- **Risk analysis**—tasks required to assess both technical and management risks.
- **Engineering**—tasks required to build one or more representations of the application.
• **Construction and release**—tasks required to construct, test, install, and provide user support (e.g., documentation and training).

• **Customer evaluation**—tasks required to obtain customer feedback based on evaluation of the software representations created during the engineering activity and implemented during the construction activity.

• The team members who work on a product function will apply each of the framework activities to it.
• There are common process of framework activities...

1) Communication
2) Planning
3) Modelling
4) Construction
5) Deployment
• Once the process model has been chosen, the common process framework (CPF) is adapted to it. The CPF is invariant and serves as the basis for all software work performed by a software organization.

• But actual work tasks do vary. Process decomposition commences when the project manager asks, “How do we accomplish this CPF activity?” For example, a small relatively simple project might require the following work tasks for the simple project might require the following work tasks for the customer communication activity:
1) Develop list of clarification issues.
2) Meet with customer to address clarification issues.
3) Jointly develop a statement of scope.
4) Review the statement of scope with all concerned.
5) Modify the statement of scope as required.

- Now, we consider a more complex project, which has a broader scope and more significant business impact.
Such a project might require the following work tasks for the customer communication activity:

1. Review the customer request.
2. Plan and schedule a formal, facilitated meeting with the customer.
3. Conduct research to specify the proposed solution and existing approaches.
4. Prepare a “working document” and an agenda for the formal meeting.
5. Conduct the meeting.
6. Jointly develop mini-specs that reflect data, function, and behavioural features of the software.

7. Review each mini-spec for correctness, consistency, and lack of ambiguity.

8. Assemble the mini-specs into a scoping document.

9. Review the scoping document with all concerned.

10. Modify the scoping document as required.
Signs that a s/w project is in jeopardy

• In order to manage a successful software project, we must understand what can go wrong (so that problems can be avoided) and how to do it right. In an excellent paper on software projects, John Reel [REE99] defines ten signs that indicate that an information systems project is in jeopardy:

1) Software people don’t understand their customer’s needs.
2) The product scope is poorly defined.
3) Changes are managed poorly.
4) The chosen technology changes.
5) Business needs change [or are ill-defined].
6) Deadlines are unrealistic.
7) Users are resistant.
8) Sponsorship is lost [or was never properly obtained].
9) The project team lacks people with appropriate skills.
10) Managers [and practitioners] avoid best practices and lessons learned
Reel [REE99] suggests a five-part commonsense approach to software projects:

1. **Start on the right foot.** This is accomplished by working hard (very hard) to understand the problem that is to be solved and then setting realistic objects and expectations for everyone who will be involved in the project. It is reinforced by building the right team (Section 3.2.3) and giving the team the autonomy, authority, and technology needed to do the job.
• **2. Maintain momentum.** Many projects get off to a good start and then slowly disintegrate. To maintain momentum, the project manager must provide incentives to keep turnover of personnel to an absolute minimum, the team should emphasize quality in every task it performs, and senior management should do everything possible to stay out of the team’s way.

• **3. Track progress.** For a software project, progress is tracked as work products (e.g., specifications, source code, sets of test cases) are produced and approved (using formal technical reviews) as part of a quality assurance activity. In addition, software process and project measures (Chapter 4) can be collected and used to assess progress against averages developed for the software development organization.
• **4. Make smart decisions.** In essence, the decisions of the project manager and the software team should be to “keep it simple.” Whenever possible, decide to use commercial off-the-shelf software or existing software components, decide to avoid custom interfaces when standard approaches are available, decide to identify and then avoid obvious risks, and decide to allocate more time than you think is needed to complex or risky tasks (you’ll need every minute).
• **5. Conduct a post-mortem analysis.** Establish a consistent mechanism for extracting lessons learned for each project. Evaluate the planned and actual schedules, collect and analyze software project metrics, get feedback from team members and customers, and record findings in written form.