PMP Summary

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Contents

Creating a High-Performing Team

Projects' Characteristics

Project:

Is a temporary endeavor undertaken to create a unique product, service, or result. Projects are undertaken to fulfill objectives by producing deliverables.

A project:

- Creates a unique product, service, or result.
- Is time limited.
- Drives change.
- Enables value creation for a business or organization.

Projects' Characteristics:

- Unique product
- Unique service
- Unique result
- Unique combination of products, services, or results.

Projects' Characteristics:

- Reptation
- Uniqueness

Projects' Characteristics:

- Tangible Elements: Tools, stakeholder equality, utility …etc.
- Intangible Elements: Reputation, trademarks, public benefits …etc.

Organizational Process Assets (OPAs)

Plans, processes, policies, procedures, and knowledge bases that are specific to and used by the performing organization.

Corporate knowledge base is a repository for storing project information.

Enterprise Environmental Factors (EEFs)

Conditions, not under the immediate control of the team, that can influence, constrain, or direct the project, program, or portfolio.

Organizational project management (OPM):
strategy execution framework that coordinates project, program, portfolio, and operations management, and which enables organizations to deliver on strategy.

Portfolio Management:
Collection of projects, programs, subsidiary portfolios, and operations managed in a group to achieve strategic objectives.
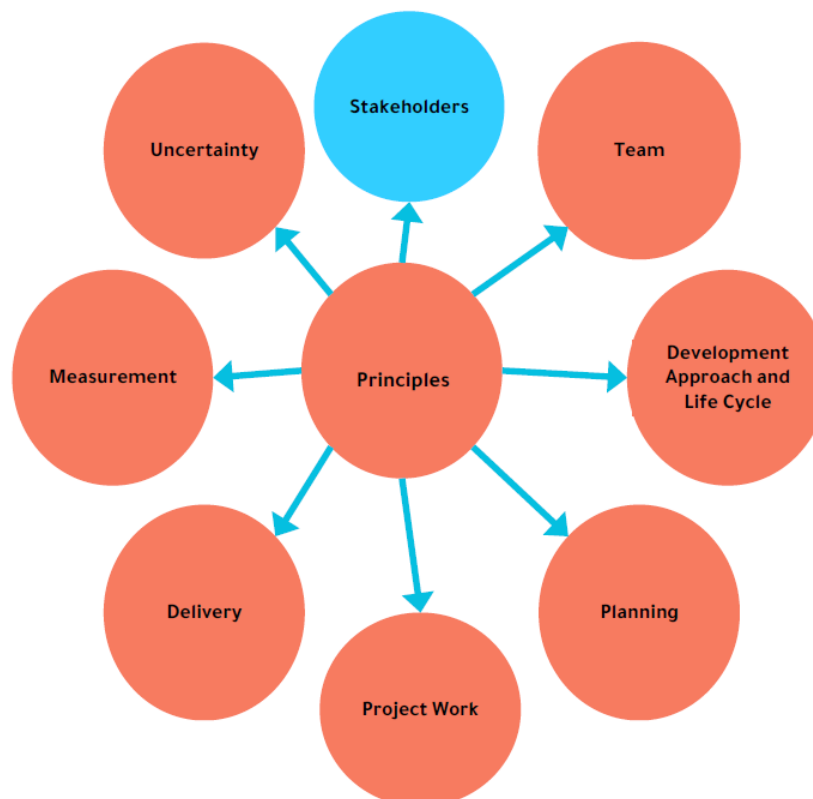
Program Management:
Group of related projects, subsidiary programs and program activities managed in a coordinated manner to obtain benefits not available from managing them individually.

Project Management:
Part of a broader program, portfolio, or both

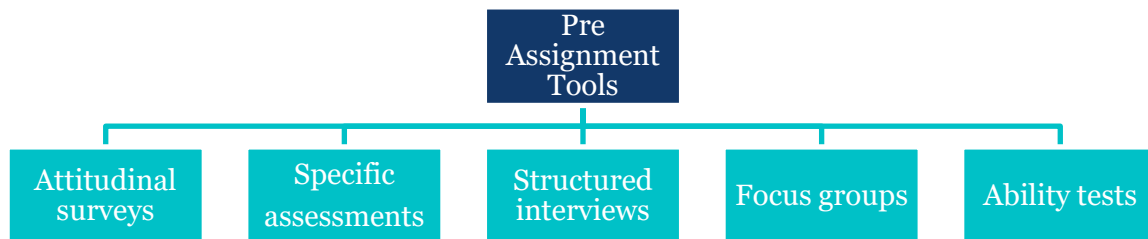Principles:

Build a Team

Project team

A set of individuals who support the project manager in performing the work of the project to achieve its objectives.

Stakeholder

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, programs, or portfolio.

RACI chart

A common type of responsibility assignment matrix (RAM) that uses responsible, accountable, consult, and inform statuses to define the involvement of stakeholders in project activities.

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                        │     Pre     │
                        │ Assignment  │
                        │   Tools     │
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│Attitudinal│ │Specific │ │Structured│ │Focus groups│ │Ability tests│
│ surveys │ │assessments│ │interviews│ │          │ │          │
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Resource Management Plan

- Identification of resources
- Acquisition of resources
- Roles and Responsibilities
    - Roles—The function of the person in the project.
    - Authority—Rights to use resources, make decisions, accept deliverables, etc.
    - Responsibility—Assigned duties to be performed.
    - Competence—Skills and capacities required to complete the desired activities.
- Project Organization Chart
- Project team resource management
- Training strategies and requirements.
- Team development methods to be used.
- Resource controls for the management of physical resources to support the team.
- Recognition Plan

DEFINE TEAM GROUND RULES

Ground rules:

Clear expectations regarding the code of conduct for team members.

Team charter:

A document that enables the team to establish its values, agreements, and practices as it performs its work together.

A Retrospective is a time specifically set aside for the team to reflect on its performance and practices, identify and solve problems, there are literally hundreds of different.

```
                    ┌──────────────────┐
                    │  Code of Ethics  │
                    │ and Professional │
                    │     Conduct      │
                    └──────────────────┘
```

Responsibility	Respect	Fairness	Honesty

Empower team members and stakeholders

Team Strengths:

Identify team strengths and weaknesses to organize around team strengths.

	Helpful to achieve the objective	Harmful to achieve the objective
Internal origin (attributes of the organization)	Strengths **S**	Weaknesses **W**
External origin (attributes of the environment)	Opportunities **O**	Threats **T**
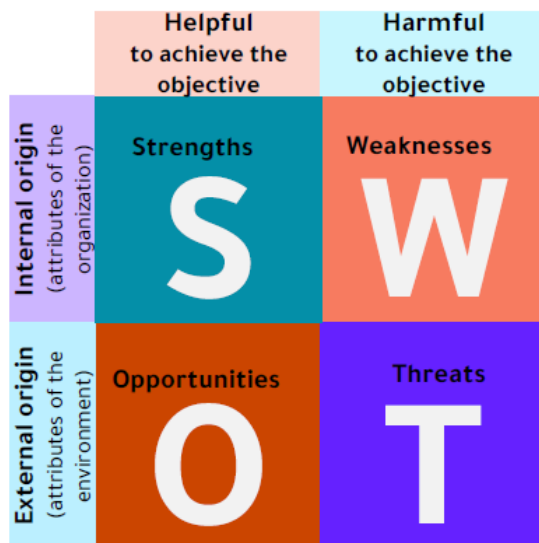
TRAIN TEAM MEMBERS AND STAKEHOLDERS

Training:

 An activity in which team members acquire.
new or enhanced skills, knowledge, or attitudes.

Training Options:

- Virtual Instructor-led training
- Self-paced e learning
- Document reviews

Training, Coaching and Mentoring / descriptions:

- Training: Learn skills for use in the present
- Coaching: Learn how to apply new skills or improve existing ones
- Mentoring: Development of personal and professional growth through long term professional relationships.

ENGAGE AND SUPPORT VIRTUALTEAMS

Virtual Team Member Needs

- Basic needs of a virtual team:
  - A shared goal
  - A clear purpose
  - Clarity on roles and expectations
- Project manager must facilitate and ensure collaboration.

Powers of a PM:

- For virtual teams, the risk of individual team members becoming isolated from other team members is inherent.
- Important to focus on shared commitments vs. individual accomplishments regarding tasks.
- Important to focus on shared commitments vs. individual accomplishments regarding tasks.
- As a project manager of a virtual team, you must reinforce the team goals over individual performance, and enable teams to self-organize and be accountable for deliverables.

Build a Shared Understanding about a Project

A vision:

is a desired end-state—a set of desired objectives and outcomes.

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                    ┌──────────────────┐
                    │ Vision statement │
                    │  might include   │
                    └──────────────────┘
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Intended users or consumers of the solution	Product or solution description	Key desired objectives	Differentiators from competitive approaches	Key features and benefits

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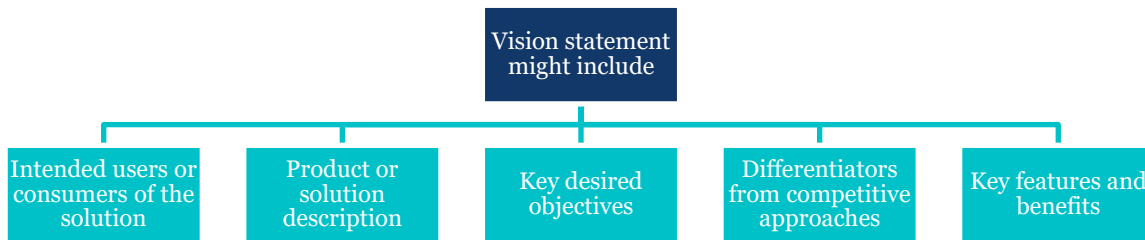
Project charter

A document issued by the project initiator or sponsor that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.

Project Charter component:

- Measurable project objectives and related success criteria.
- High level requirements.
- High level project description, boundaries, and key deliverables.
- Overall project risk.
- Summary milestone schedules.
- Pre-approved financial resources.
- Key stakeholders list.
- Project approval requirements.
- Project exit criteria.
- Assigned project manager and responsibility/authority level.
- Name and authority of the project sponsor.

Scrum

An agile framework for developing and sustaining complex products, with specific roles, events, and artifacts.

Sprint
A timeboxed iteration in Scrum.

Agile Ceremonies:
- Sprint Planning
- Daily Standup
- Sprint Review
- Sprint Retrospective

Consensus:
A decision-making process used by a group to reach a decision that everyone can support.
- Fist of Five
- Roman voting
- Polling
- Dot voting

Product backlog
An ordered list of user centric requirements that a team maintains for a product.

Prioritization Techniques include:
- Kano Model
- MoSCoW (MSCW) Analysis
- Paired Comparison Analysis
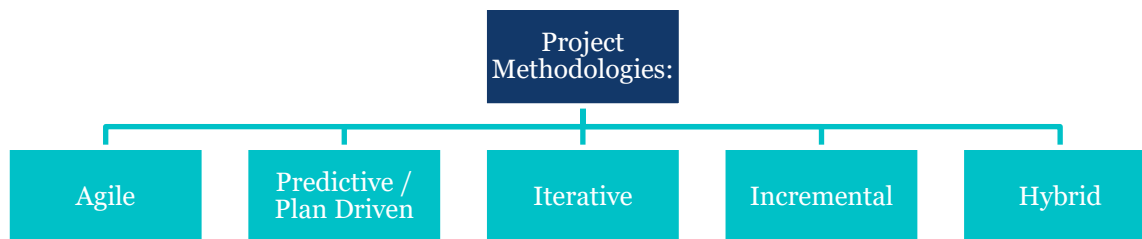- 100 Points Method

Estimation Techniques:
- T-Shirt Sizing
- Story Pointing
- Planning Poker

STARTING THE PROJECT

DETERMINE APPROPRIATE PROJECT METHODOLOGY METHODOLOGY/METHODS AND PRACTICES

Project Methodologies, Methods, and Practices:

- Agile
  Modern approach where team works collaboratively with the customer to determine the project needs.
- Predictive/Plan Driven
  Traditional approach where the project needs, requirements, and constraints are understood, and plans are developed accordingly.
- Hybrid
  A combined approach that uses a strategy from agile or predictive for a specific need.

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                    │     Project     │
                    │ Methodologies:  │
                    └─────────────────┘
    ┌───────────┬───────────┼───────────┬───────────┐
┌────────┐ ┌──────────┐ ┌─────────┐ ┌────────────┐ ┌────────┐
│ Agile  │ │Predictive│ │Iterative│ │Incremental │ │ Hybrid │
│        │ │/ Plan    │ │         │ │            │ │        │
│        │ │Driven    │ │         │ │            │ │        │
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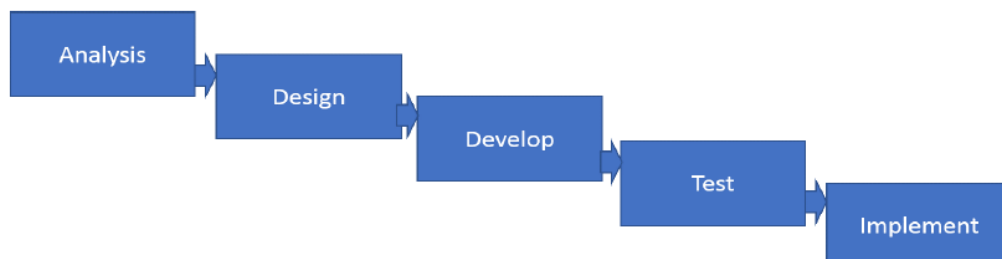
Progressive elaboration

The iterative process of increasing the level of detail in a project management plan as greater amounts of information and more accurate estimates become available.

Predictive Life Cycle

A form of project life cycle in which the project scope, time, and cost are determined in the early phases of the life cycle.

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│ Analysis │
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     └──►┌──────────┐
         │  Design  │
         └──────────┘
              └──►┌──────────┐
                  │ Develop  │
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                       └──►┌──────────┐
                           │   Test   │
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                                    │ Implement  │
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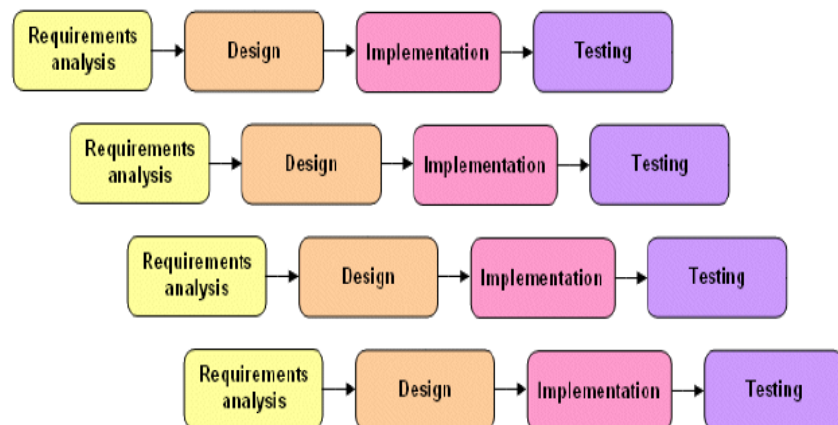
Iterative Life Cycle

A project life cycle where the project scope is generally determined early in the project life cycle, but time and cost estimates are routinely modified as the project team's understanding of the product increases.

Incremental Life Cycle

An adaptive project life cycle in which the deliverable is produced through a series of iterations that successively add functionality within a predetermined time frame. The deliverable contains the necessary and sufficient capability to be considered complete only after the final iteration.
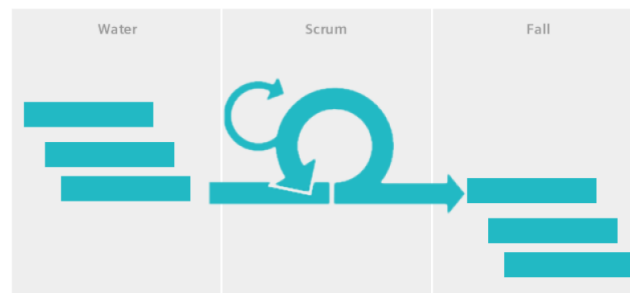
Agile Life Cycles

A project life cycle that is iterative or incremental. Also referred to as change driven or adaptive.
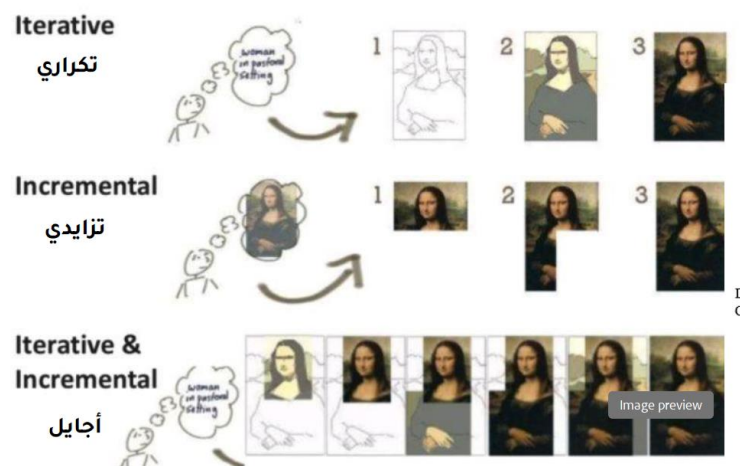

Hybrid Methodologies

Includes adaptive and predictive components.

- Shorter, iterative time frames
- High stakeholder involvement
- More in depth requirements

Different between Agile, Iterative and Incremental Development

PLAN AND MANAGE SCOPE

Project Scope:

 The work performed to deliver a product, service, or result with the specified features and functions. Project scope" may include product scope.

The features and functions that characterize a product, service, or result:

- Predictive The scope baseline for the project is the approved version of the project scope statement, work breakdown structure (WBS), and associated WBS dictionary.
- Agile Backlogs (including product requirements and user stories) reflect current project needs.
- Measure completion of project scope against the project management plan.
- Measure completion of the product scope against product requirements.

Scope management plan

 A component of the project management plan or program management plan that describes how the scope will be defined, developed, monitored, controlled, and validated.

Requirements management plan

A component of the project or program management plan that describes how requirements will be analyzed, documented, and managed.

Project requirements:

The agreed upon conditions or capabilities of a product, service, or outcome that the project is designed to satisfy.

Elicitation Techniques:

- Document analysis
- Questionnaires
- Benchmarking
- Interview

Elicitation Techniques/ Decision Making:
- unanimity
- Majority
- Plurality
- Autocratic

Elicitation Techniques/ Data Representation:
- Mind mapping
- Affinity diagram

Elicitation Techniques:
- Focus groups
- Observation
- Facilitated workshops.
- Prototype

Requirements Documentation:
- Business requirements
- Stakeholder requirements
- Solution requirements
- Project requirements
- Transition requirements
- Requirements assumptions, dependencies, and constraints

Project Scope Statement
 The description of the project scope, major deliverables, assumptions, and constraints.

Goal for:
- Agile is customer value.
- Incremental is speed.
- Iterative: correct solution
- Predictive is cost.

Scope Tools and Techniques
- EXPERT JUDGMENT
- ALTERNATIVES ANALYSIS
- MULTI-CRITERIA DECISION ANALYSIS
- FACILITATION
- PRODUCT ANALYSIS

Product analysis

A tool to define scope that generally means asking questions about a product and forming answers to describe the use, characteristics, and other relevant aspects of what is going to be manufactured.

Work Breakdown Structure WBS:

A hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables.
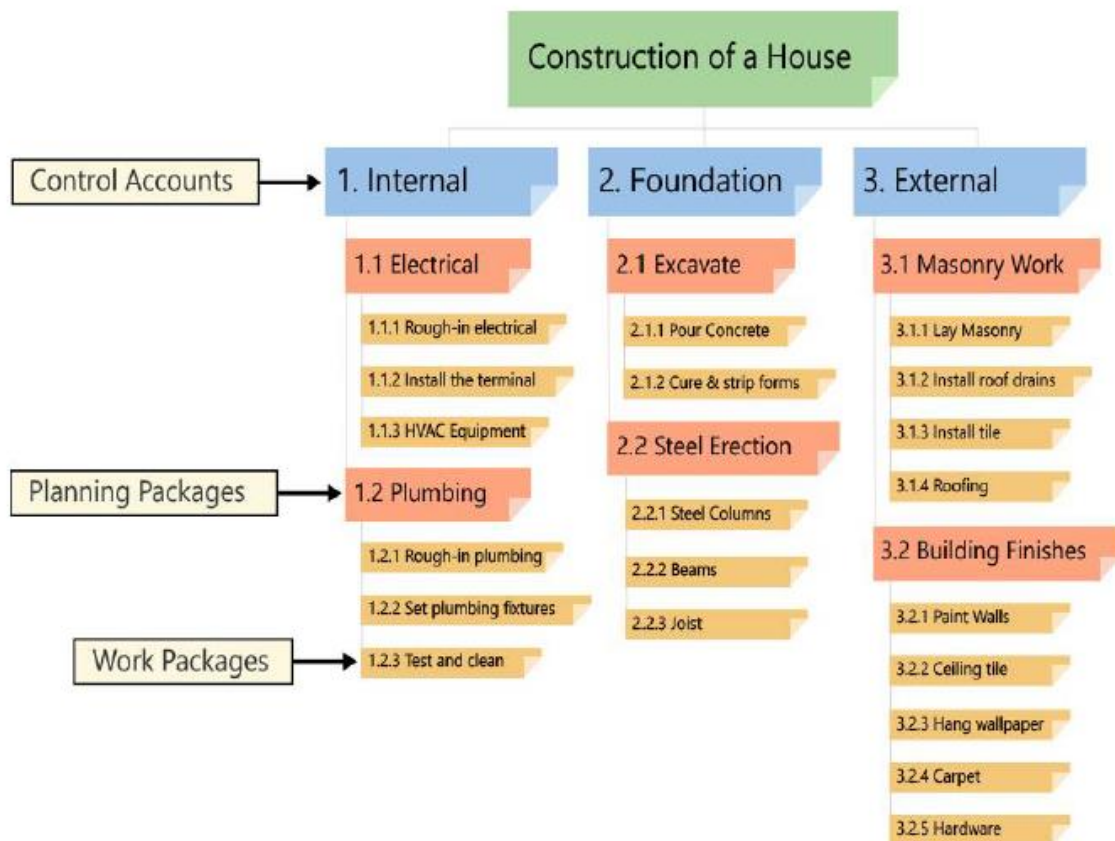
WBS dictionary

A document that provides detailed deliverable, activity, and scheduling information about each component in the work breakdown structure.

The WBS dictionary might include any of the following:
- Resources required to complete the work.
- Cost estimations
- Quality requirements
- Acceptance criteria
- Technical references
- Agreement information

Code of account identifier
- Description of work
- Assumptions and constraints
- Responsible organization
- Schedule milestones
- Associated schedule activities

Scope baseline

is the approved version of a scope statement, WBS, and its associated WBS dictionary, that can be changed using formal change control procedures and is used as a basis for comparison to actual results.

Scope baseline components can include:
- Project scope statement
- WBS
- Work package
- Planning package
- WBS dictionary

PLAN AND MANAGE BUDGET AND RESOURCES

Cost Estimates

Developing an approximation of the cost for each activity in a project.

Cost should include:

- Direct labor
- Materials
- Equipment
- Facilities
- Services
- Information technology
- Contingency reserves
- Indirect costs

Advantages and Disadvantages of Estimating Techniques

Technique	Advantage	Disadvantage
Analogous estimating	Can ensure no work is inadvertently omitted from work estimates.	Can sometimes be difficult for lower-level managers. to apportion cost estimates.
Bottom-up estimating	Is very accurate and gives lower-level managers more responsibility.	May be very time consuming and can be used only after the WBS has been well defined.
Parametric estimating	Is not time consuming.	May be inaccurate, depending on the integrity of the historical information used.
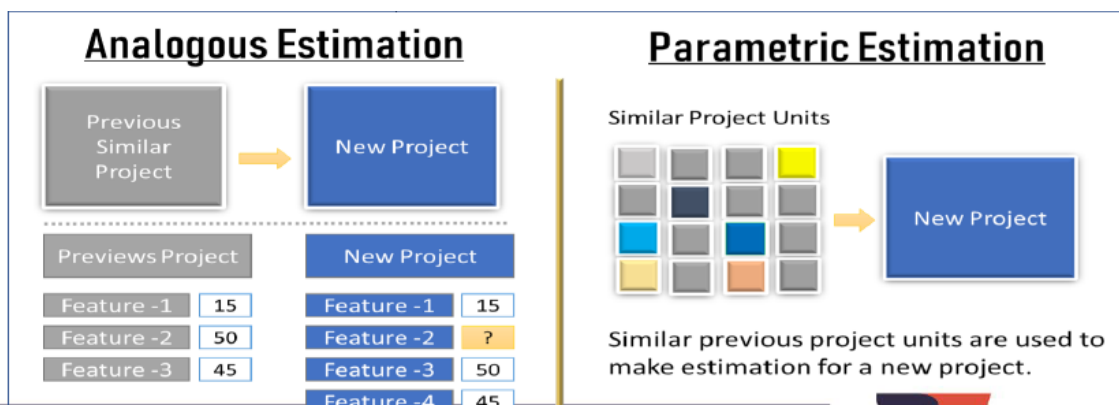
Cost baseline

The approved version of the time phased project budget, excluding any management reserves, which can be changed only through formal change control procedures and is used as a basis for comparison to actual results.

Funding limit reconciliation

The process of comparing the planned expenditure of project funds against any limits on the commitment of funds for the project to identify any variances (gaps) between the funding limits and the planned expenditures.

BURN RATE

The rate at which the project consumes financial resources, representing negative cash flow. Burn rates are often used by agile projects to budget costs for planned iterations / sprints / increments.

PLAN AND MANAGE SCHEDULE

Project schedule

An output of a schedule model that presents linked activities with planned dates, durations, milestones, and resources.

Schedule management plan

A component of the project or program management plan that establishes the criteria and the activities for developing, monitoring, and controlling the schedule.

Components of the Schedule Management Plan:
- Project schedule model used
- Accuracy of activity duration estimates
- Units of measure to be used
- Organizational procedure links used with the WBS
- Control thresholds to be used for monitoring schedule performance
- Rules of performance measurements to be used
- Reporting formats to be used
- Process descriptions to explain how schedule management processes are to be documented throughout the project.

Two main iterative approaches:
- Iterative scheduling with backlog
- On-demand scheduling

Activity

A distinct, scheduled portion of work performed during the course of a project.

In general, the terms activities, work packages, and tasks
might be used interchangeably.
In this project management environment, each has a distinct meaning:
- A work package is the lowest level of the WBS.
- An activity is a smaller component of a decomposed work package.
- A task is used when referring to project management software.

Milestone

A significant point or event in a project, program, or portfolio.
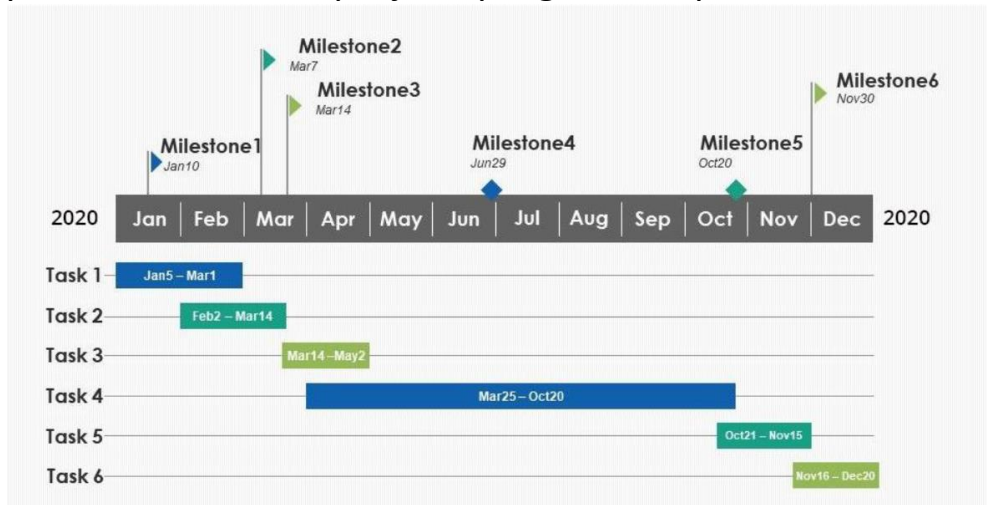
An activity dependency
is a logical relationship that exists between two project activities.
Relationship
Indicates whether the start of an activity is contingent on an event or input from outside the activity.
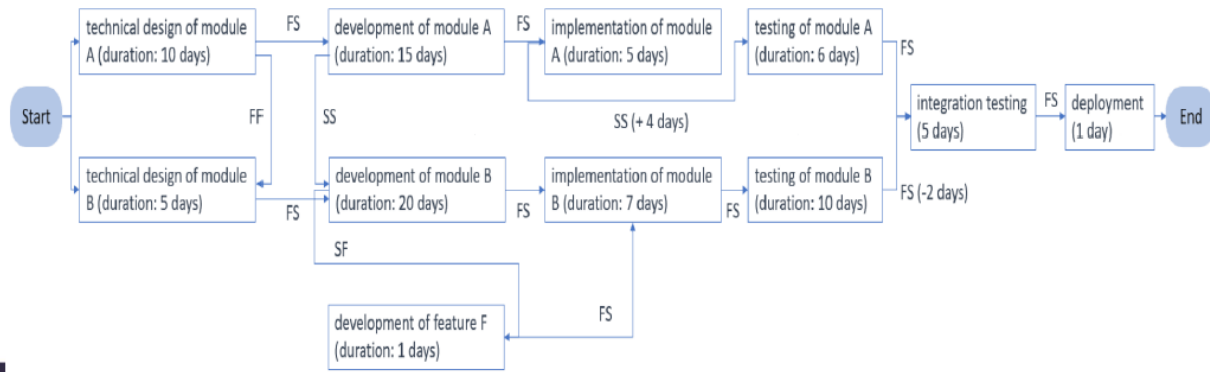
Activity dependencies determine the Precedence relationships

Types of Activity Dependencies:
- Mandatory
- Discretionary
- External
- Internal

Precedence relationship
A logical dependency used in the precedence diagramming methods.

technical design of module A (duration: 10 days) — FS — development of module A (duration: 15 days) — FS — implementation of module A (duration: 5 days) — testing of module A (duration: 6 days) — FS

Start

FF SS SS (+ 4 days)

integration testing (5 days) — FS — deployment (1 day) — End

technical design of module B (duration: 5 days) — FS — development of module B (duration: 20 days) — FS — implementation of module B (duration: 7 days) — FS — testing of module B (duration: 10 days) — FS (-2 days)

SF

development of feature F (duration: 1 days) — FS

Activity duration estimate

The quantitative assessment of the likely number of time periods that are required to complete an activity.

Elapsed time

The actual calendar time required for an activity from start to finish.

Effort

The number of labor units required to complete a scheduled activity or WBS component, often expressed in hours, days, or weeks. Contrast with duration.

Three Point Estimation

- Triangular Distribution (average) = $E = (O + M + P) / 3$
- BETA Distribution (PERT average) = $E = (O + 4 M + P) / 6$

Schedule Presentation Formats:

- Gantt Chart
- Milestone Chart
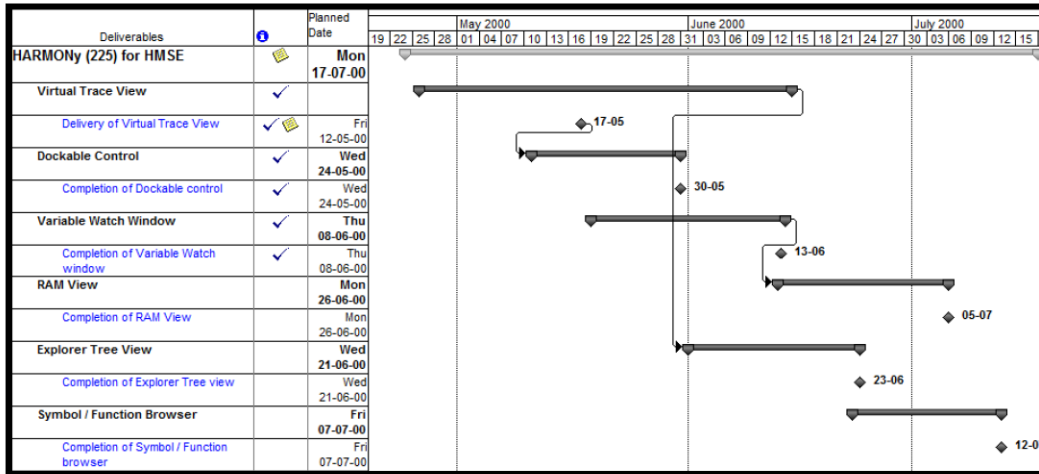- Project Schedule Network Diagram with Dates

Gantt chart

A bar chart of schedule information where activities are listed on the vertical axis, dates are shown on the horizontal axis, and the activity durations are shown as horizontal bars placed according to start and finish dates.
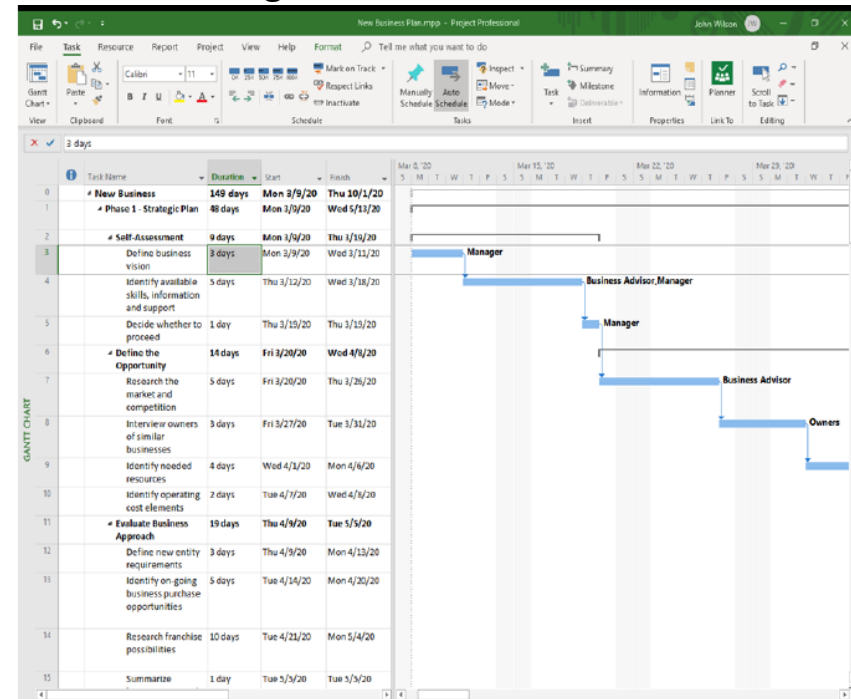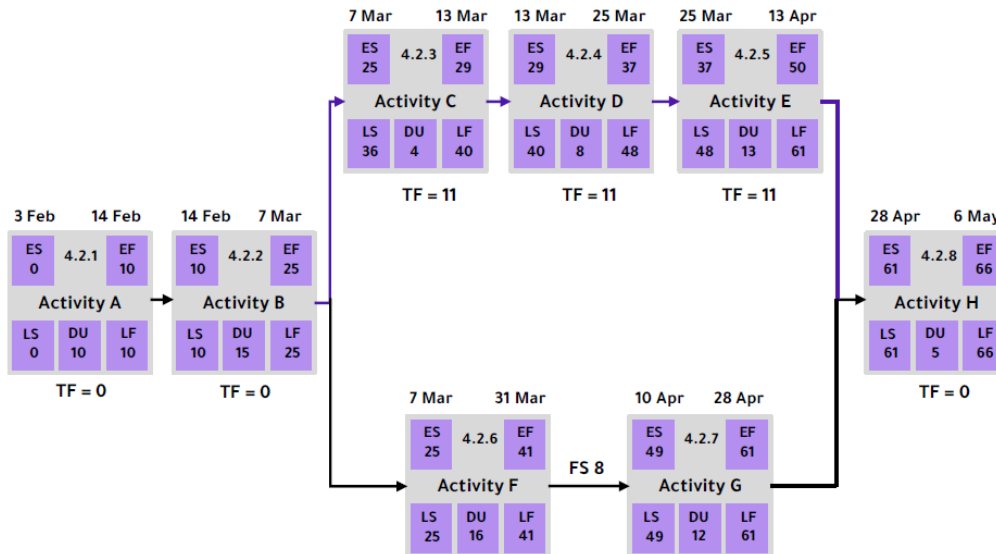
Milestone Chart

- Provides a summary level view of a project's milestones.
- Uses icons or symbols.
- Useful for upper management, who are not interested in fine details.

Project Schedule Network Diagram with Dates

- Assigns start and finish dates to activities.
- Communicates the project status in terms of activity precedence relationships.

Critical path

The sequence of activities that represents the longest path through a project, which determines the shortest possible duration.

Total float

The amount of time that a schedule activity can be delayed or extended from its early start date without delaying the project finish date or violating a schedule constraint.

Smoothing and Levelling

Smoothing

- Adjusts the activities of a schedule model to keep resource
- requirements within predefined resource limits and within free and total floats.
- <u>Does not change the critical path is not changed nor delay the completion date.</u>

Levelling:

- Adjusts start and finish dates based on resource constraints
- Goal is to balance demand for resources with available supply.
- Use when shared or critically required resources have limited availability or are over allocated
- <u>Can change the critical path.</u>

Schedule compression techniques

- Crashing
- Fast tracking
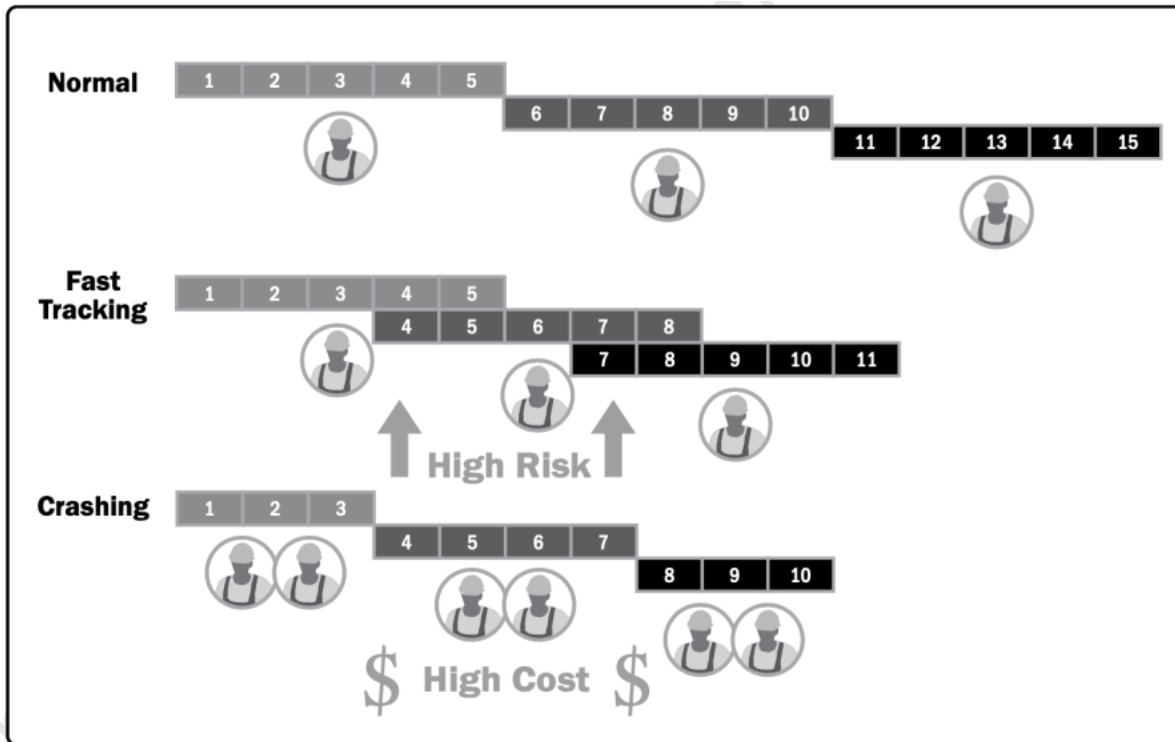
Special Intervals

HARDENING ITERATION / ITERATION HS specialized increment/ iteration/sprint dedicated to stabilizing the code base so that it is robust enough for release. No new functionality is added. Primarily used for refactoring and/or technical debt.

Negotiate how and when required scheduled "down" time intervals will take place.

Black-out times - deliverables are handed over for implementation:

• Suspends changes

• Reduces risks as the solution is released to customers

"Go Live" - at the end of the project timeline.

Negotiate black-out times as project approaches release.

Iteration H or **hardening sprint** – conducted prior to final release.

Plan and Manage Quality of Products/Deliverables Plan and Manage Quality of Products/Deliverables

Quality

The degree to which a set of inherent characteristics fulfill requirements.

Standard

A document established by an authority, custom, or general consent as a model or example.

Regulations

Requirements imposed by a governmental body. These requirements can establish product, process, or service characteristics, including applicable administrative provisions that have government-mandated compliance.

Cost of Quality

All costs incurred over the life of the product by investment in preventing nonconformance to requirements, appraisal of the product or service for conformance to requirements, and failure to meet requirements.

Quality metrics

A description of a project or product attribute and how to measure it.

Tolerance

The quantified description of acceptable variation for a quality requirement.

Quality Tools Control

Data Gathering	Data Analysis	Data Representation
▪ Checklists/Check Sheets ▪ Statistical Sampling ▪ Questionnaires and Surveys	▪ Performance Reviews ▪ Root Cause Analysis	▪ Cause-and-Effect Diagram ▪ Control Charts ▪ Histograms ▪ Scatter Diagrams

INTEGRATE PROJECT PLANNING ACTIVITIES

Project Management plan component:

- Baselines
- Subsidiary plans
- Life cycle
- Project processes
- Work explanation
- Agile project plan

Project Management Plan Tools and Techniques:

- Expert judgment
- Data gathering
- Interpersonal and team skills
- Meetings

Plan for Complexity and Change:

- Organization's system
- Human behavior
- Uncertainty or ambiguity

Project Management Information System (PMIS):

An information system consisting of the tools and techniques used to gather, integrate, and disseminate the outputs of project management processes.

Factoring in Dynamic Change:

Disciplined Agile (DA)

A hybrid tool kit that harnesses hundreds of agile practices to devise the best "way of working" (WoW) for your team or organization.

Scrum of Scrums

A technique to operate Scrum at scale for multiple teams working on the same product, coordinating discussions of progress on their interdependencies, and focusing on how to integrate the delivery of software, especially in areas of overlap.

Scaled Agile Framework (SAFe®)

A knowledge base of integrated patterns for enterprise-scale lean-agile development.

PLAN AND MANAGE PROCUREMENT

Procurement Strategy:

Procurement

Procurement is the acquisition of goods and services from an external organization, vendor, or supplier to enable the deliverables of the project.

Make-or-buy analysis:

The process of gathering and organizing data about product requirements and analyzing them against available alternatives including the purchase or internal manufacture of the product.

Make-or-buy decisions:

Decisions made regarding the external purchase or internal manufacture of a product.

Procurement Documents / Bid and Proposal Activities:

STATEMENT OF WORK (SOW):

A narrative description of products, services, or results to be delivered.

REQUEST FOR PROPOSAL (RFP):

A type of procurement document used to request proposals from prospective sellers of products or services. In some application areas, it may have a narrower or more specific meaning.

Statement of Work (SOW):

Details of work required.

Request for quotation (RFQ):

Bid/tender or quotation, including only cost.

Invitation for Bid (IFB):

Buyer requests expressions of interest in work

Request for information (RFI):

Buyer requests more information from seller

Request for proposal (RFP):

Buyer-issued statement of work required.

Expression of Interest (EOI):

Seller-issued expression of interest in work

Procurement Management Plan
A component of the project or program management plan that describes how a project team will acquire goods and services from outside of the performing organization.

Source selection criteria
A set of attributes desired by the buyer which a seller is required to meet or exceed to be selected for a contract.

Components of Contracts
- Responsibilities of both Parties
- Identification of authority, where appropriate
- Delivery date or other schedule information
- Description of the work being procured for the project, its deliverables, and scope.
- Applicable guarantees and warranties
  Provisions for termination
- Price and payment terms
  Management of technical and business aspects

Traditional Contract Types:
- Fixed price
  - Firm fixed price (FFP)
  - Fixed price incentive fee (FPIF)
  - Fixed price with economic price adjustments (FPEPA)
- Cost-reimbursable
  - Cost plus fixed fee (CPFF)
  - Cost plus incentive fee (CPIF)
  - Cost plus award fee (CPAF)
- Time and Material (T&M)

Agile Contract Types:

- Emphasize value delivered
- Fixed-price increments
- Not-to-exceed time and materials
- Graduated time and materials
- Early cancellation option
- Dynamic scope option
- Team augmentation

Solution Delivery Phase:

- Planning and analysis
- Detailed design
- Implementation or installation
- Testing
- Training
- Handover
- Support and maintenance

Control Procurements process

The process of managing procurement relationships, monitoring contract performance, making changes and corrections as appropriate, and closing out contracts.

Contract change control system

The system used to collect, track, adjudicate, and communicate changes to a contract.

Administrative changes

Contract modification

Supplemental agreement

Constructive changes

Termination of contract

Legal Concepts when Managing Disputes:

Legal Issue:

- Warranty
- Waiver
- Breach of contract
- Cease and desist (C&D) letter.

ESTABLISH PROJECTGOVERNANCE STRUCTURE

Project Governance

The framework, functions, and processes that guide project management activities to create a unique product, service, or result to meet organizational, strategic, and operational goals.

Components of the framework can include:

- Project success and deliverable acceptance criteria
- Process to identify, escalate, and resolve issues
- Relationship between project team, organizational groups, and external stakeholders
- Project organization chart with project roles
- Communication processes and procedures
- Processes for project decision-making
- Guidelines for aligning project governance and organizational strategy
- Project life cycle approach
- Process for stage gate or phase reviews
- Process for review and approval of changes above the project manager's authority
- Process to align internal stakeholders with project process requirements

Project phase

A collection of logically related project activities that culminates in the completion of one or more deliverables.

Escalation Path

Phase gate

A review at the end of a phase in which a decision is made to continue to the next phase, to continue with modification, or to end a project or program.

DOING THE WORK

ASSESS AND MANAGE RISKS

Risk

An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.

Primary components include:
- A measure of probability that the risk event will occur.
- The impact of the risk occurring on a project.

Positive risks:

Risks that produce a positive project outcome.

Also referred to as opportunities.

Negative risks:

Risks that have a negative impact on the project.

Also referred to as threats.

Risk Management Plan:

- Risk strategy
- Methodology
- Roles and responsibilities
- Funding
- Timing
- contingency reserves
- Risk categories
- Stakeholder risk appetite
- Probability and impact
- Probability and impact matrix

Risk Breakdown Structure (RBS)

Documents what sources a project risk

Risk Identification Tools
- Checklist analysis
- Root cause Analysis
- Assumption and constraint analysis
- SWOT
- Document
- Analysis
- Prompt lists
- Meetings
- Expert judgment

Risk Tolerance, Appetite, and Threshold

Risk tolerance:

The maximum amount of risk, and the potential impact of that risk occurring, that a project manager or key stakeholder is willing to accept.

Risk appetite

The degree of uncertainty an organization or individual is willing to accept in anticipation of a reward.

Qualitative risk analysis:

Technique used to determine the probability of occurrence and the impact of each identified risk.

- Agile projects include risks in <u>user stories</u> and as part of backlog work items.
- Teams <u>discuss risks at planning meetings</u>, during the normal course of work.
- Teams place risks in a <u>risk register</u>, use information radiators to ensure visibility and a backlog refinement process that includes constant risk assessment.
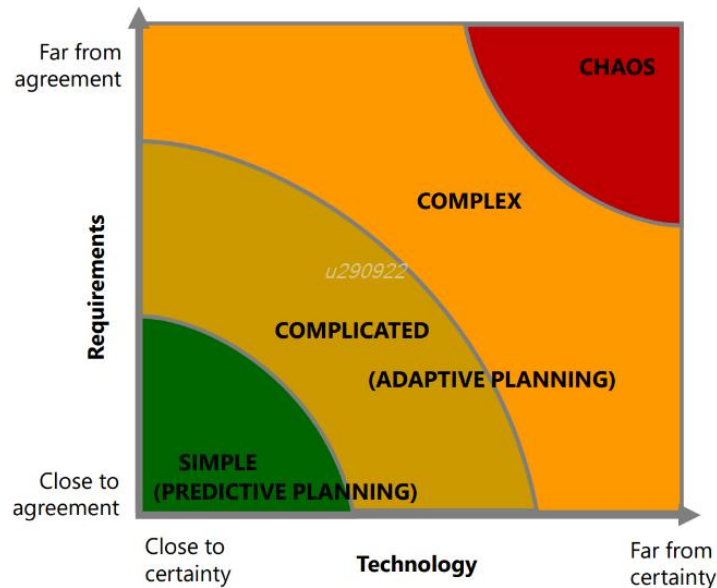
Probability and Impact Matrix:

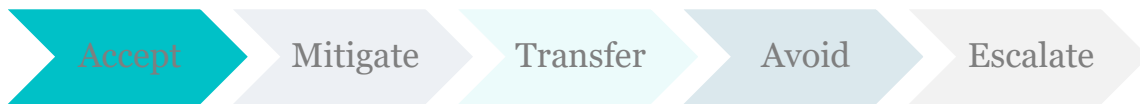Use <u>numeric</u> values and/or <u>colors.</u>

If using numbers, multiply them to give a probability impact score – this makes evaluating relative priority easier!

This is **NOT** a <u>quantitative evaluation.</u>

Quantitative Risk Analysis Methods

- Simulations
- Sensitivity analysis
- Decision tree analysis
- Influence diagrams
- Expected monetary value (EMV)

Negative Risk Strategies

| Accept | Mitigate | Transfer | Avoid | Escalate |

Positive Risk Strategies

| Accept | Share | Enhance | Exploit | Escalate |

Contingency plan

A risk response strategy developed in advance, before things go wrong; it is meant to be used if and when identified risks become reality.

EXECUTE PROJECT TO DELIVER BUSINESS VALUE

**Examination of Business Value**

Business value

The net quantifiable benefit derived from a business endeavor. The benefit may be tangible, intangible, or both.

Product Roadmap

Serves as a high-level visual summary of the product or products of the project.

Minimum Viable Product MVP

The smallest collection of features that can be included in a product for customers to consider it functional. In Lean methodologies, it can be referred to as "bare bones" or "no frills".
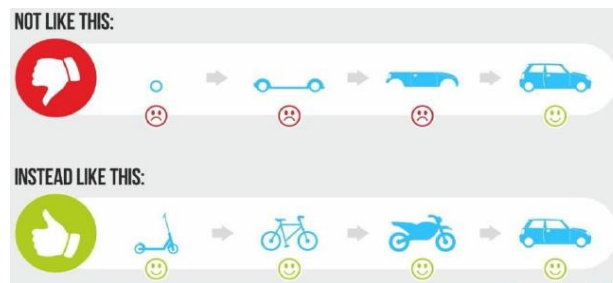
Minimum Business Increment MBI

The smallest amount of value that can be added to a product or service that benefits the business.

MANAGE COMMUNICATIONS

- Internal or external stakeholders
- Formal or informal message content and format
- Hierarchical focus senior management or peers
- Official or unofficial annual reports or reports to other governing bodies compared to project team communication.
- Written or oral tone, inflection, and nonverbal gestures are influential.

Components of the Communications Management Plan:

- Stakeholder communications requirements
- Information to be communicated, including language to be used.
- Reason for the distribution of the information
- Time frame and frequency of information distribution
- Person responsible for the communication
- Person responsible for the release of confidential information
- People who will receive the information.
- Methods or technologies to convey information.
- Time and budget allocated for communication.
- Escalation process for issues that need visibility.
- Method for updating the communications management plan.
- Glossary of common terminology.
- Flowcharts of information flow.
- Any communication constraints due to regulation or policies.

Communication requirements analysis

The analytical technique to determine the information needs of the project stakeholders through interviews, workshops, study of lessons learned from previous projects, etc.

Communication Types
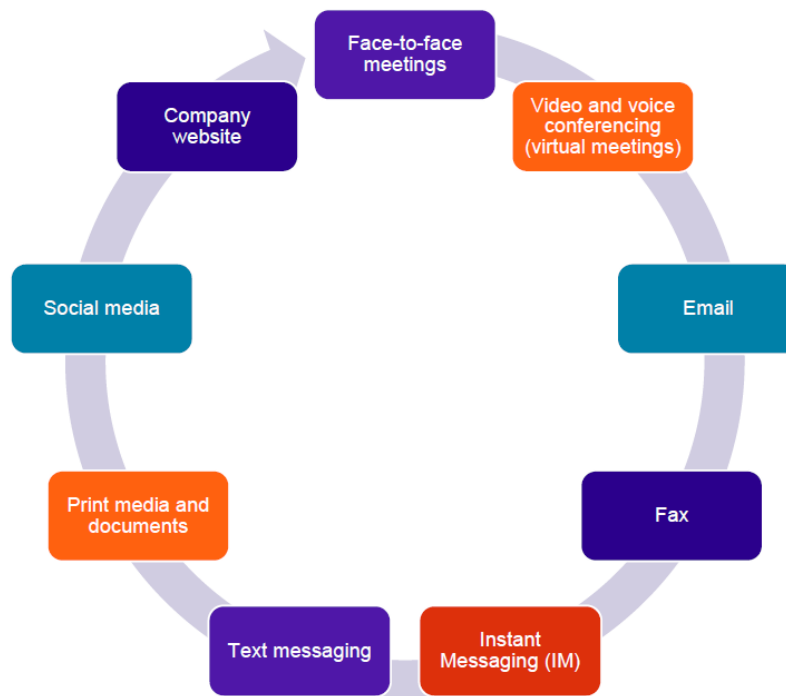
Communication models

A description, analogy, or schematic is used to represent how the communication process will be performed for the project.

Communication methods

A systematic procedure, technique, or process used to transfer information among project stakeholders.

- Interactive
- Push
- Pull

ENGAGE STAKEHOLDERS

Stakeholder Categories:

- Sponsors
- Customers and users
- Sellers
- Business partners
- Organizational groups
- Functional managers
- Other stakeholders

Stakeholder Engagement Assessment Matrix

is a matrix that compares current and desired stakeholder engagement levels.

Stakeholder اصحاب المصلحة	Unaware غير مدرك	Resistant مقاوم	Neutral محايد	Supportive داعم	Leading قيادي
Stakeholder 1 صاحب المصلحة1	C			D	
Stakeholder 2 صاحب المصلحة2			C	D	
Stakeholder 3 صاحب المصلحة3				C	D

C = Current engagement level   D = Desired engagement level

CREATE PROJECT ARTIFACTS

Project artifact

Any document related to the management of a project. The project team will create and maintain many artifacts during the life of the project, to allow reconstruction of the history of the project and to benefit other projects.

Configuration management

A tool used to manage changes to a product or service being produced as well as changes to any project documents.

Configuration management system

A collection of procedures used to track project artifacts and monitor and control changes to these artifacts.

Version control

A system that records changes to a file in a way that allows you to retrieve previous changes made to it.

MANAGE PROJECT CHANGES

Change Management Plan

A component of the project management plan that establishes the change control board, documents the extent of its authority, and describes how the change control system will be implemented.

It should answer the following questions:

- Who can propose a change?
- What exactly constitutes a change?
- How to evaluate the impact of the change on the project's objectives?
- What steps are necessary to evaluate the change request before approving or rejecting it?
- When a change request is approved, what project documents must be amended to record the actions necessary to effect the change?
- How will these actions be monitored to confirm that they have been completed satisfactorily?

Causes of Project Changes

- Inaccurate initial estimates
- Specification changes
- New regulations
- Missed requirements.

Change control system

A set of procedures that describes how modifications to the project deliverables and documentation are managed and controlled.

Change control systems can include:

- Forms
- Tracking methods
- Processes
- Approval levels required for authorizing or rejecting requested changes

Change Control Board (CCB)

A formally chartered group responsible for reviewing, evaluating, approving, delaying, or rejecting changes to the project, and for recording and communicating such decisions.

Change Control Strategy:

- Change identification
- Change documentation
- Analyzing the impact of the change
- Course of action
- Updating related plans

Approved change requests

Requests that have been received and approved in accordance with the integrated change control plan and are ready to be scheduled for implementation.

Approved changes can include:

- Corrective action
- Preventive action
- Defect repair
- Update

MANAGE PROJECT ISSUES

Issue

A current condition or situation that may have an impact on the project objectives. In other words, it is an action item that the project team must address.

Common areas include:

- Scope change control
- Schedule control
- Cost control
- Project variance analysis
- Quality
- Risk
- Procurement
- Communications

Risks and Issues

	RISK	ISSUE
Focused on	future	present
Can be	positive or negative	Will always be negative
Documented in	Risk Register	Issue Log
Response is called	risk response	workaround

Issue log

A document where information about issues is recorded and monitored. It is used to track problems, inconsistencies, or conflicts that occur during the life of the project and require investigation in
order to work toward a resolution.

ENSURE KNOWLEDGE TRANSFER FOR PROJECT CONTINUITY

Types of Knowledge

- Explicit knowledge

Knowledge that can be codified using symbols such as words, numbers, and pictures.

- Tacit knowledge

Personal knowledge that can be difficult to articulate and share such as beliefs, experience, and insights.

Considerations of Lessons Learned

- Scheduling lessons learned.
- Conflict management lessons learned.
- Vendor lessons learned.
- Customer lessons learned.
- Strategic lessons learned.
- Tactical lessons learned.
- Other aspects of lessons learned.

Lessons learned register

A project document used to record knowledge gained during a project so that it can be used in the current project and entered into the lessons learned repository.

Lessons learned repository

A store of historical information about lessons learned in projects.

Project Responsibilities Within the Team

- Leadership
- Facilitation
- Political awareness
- Networking

Learning Goals

- Assess and manage risks.
- Execute the project with the urgency required to deliver business value.
- Manage communications.
- Engage stakeholders.
- Create project artifacts.
- Manage project changes.
- Attack issues with the optimal action to achieve project success.
- Confirm approach for knowledge transfers.

KEEPING THE TEAM ON TRACK

LEAD A TEAM

Vision and Mission

The project manager is the visionary leader for the project:

- Educating the team and other stakeholders about the value achieved or targeted.
- Promoting teamwork and collaboration
- Assisting with project management tools and techniques
- Removing roadblocks
- Articulating the project's mission

Leadership skills:

- Conflict management
- Cultural awareness
- Decision making
- Facilitation
- Meeting management
- Negotiation
- Networking
- Observation/conversation
- Servant Leadership
- Team building

Leadership traits

- Strong personal ethics, integrity, and trustworthiness
- (Interpersonal skills, communicator, collaborator, motivator)
- Conceptual and analytical skills.

Leadership	Management
Guiding the team by using discussion and an exchange of Ideas	Directing actions using a prescribed set of behaviors

Leadership Styles:
- Direct
- Consultative
- Servant Leadership
- Consensus/Collaborative
- Situational

Tailoring Considerations:
- Experience with project type
- Team member maturity
- Organizational governance structures
- Distributed project teams

Servant leadership:

A type of leadership commonly used in **Agile** which encourages the self-definition, self-discovery, and self-awareness of team members by listening, coaching, and providing an environment which allows them to grow.
- Facilitate rather than manage.
- Provide coaching and training.
- Remove work Impediments.
- Focus on accomplishments.

GROWTH MINDSET

As conceived by Stanford psychologist Carol Dweck and colleagues, a growth mindset is a belief that a person's capacities and talents can be improved over time.

<u>Salience model:</u>

A classification model that groups stakeholders based on their level of authority, their immediate needs, and how appropriate their involvement is in the project.
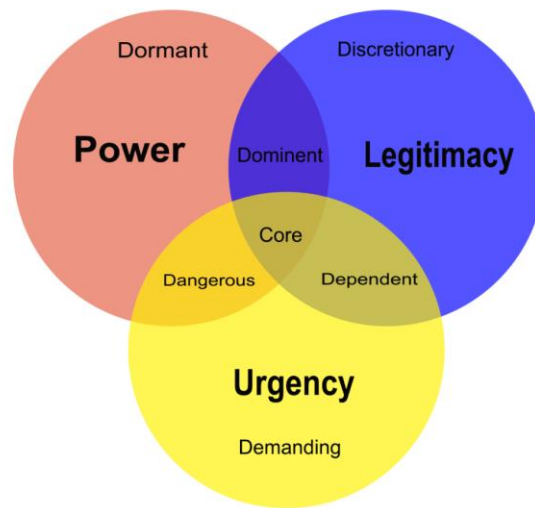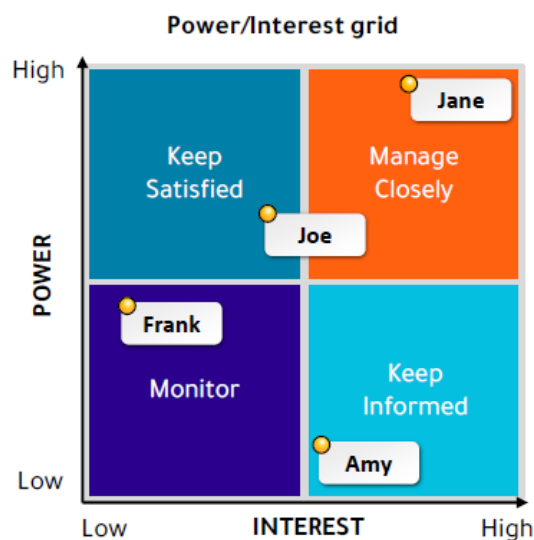

<u>Power Grids:</u>
<u>Power/interest grid:</u>

Groups stakeholders based on their levels of authority and interest in the project.

<u>Power/influence grid:</u>

A classification model that groups stakeholders based on their levels of authority and involvement in the project.

Reward and Recognition Plans:

Recognition	Rewards
Intangible, experiential event	Tangible, consumable items
Given as a result of recipient's behaviour rather than outcome	Given as a result of reaching a specific outcome or achievement
Not restricted to a set time	Definite start and finish, or fixed time
Usually unexpected by recipient	Usually expected when goal is met
Purpose is to increase recipient's feeling of appreciation; can be given without a reward	Purpose is to motivate towards a specific outcome; never given without recognition too

SUPPORT TEAM PERFORMANCE

Keeping the Team on track:

- Support
- Address and Remove
- Manage
- Collaborate
- Mentor
- Apply

The Project Manager's Role

Centralized Model:

- Ensures alignment of due dates — project deliverables, project life cycle and benefits realization plan
- Provides a project management plan.
- Ensures creation and use of appropriate knowledge to/from the project.
- Manages project performance and changes to project activities.
- Makes integrated decisions about key changes that impact the project.
- Measures and monitors progress and takes appropriate action.
- Collects, analyses, and communicates project information to relevant stakeholders.
- Ensures completion of all project work and formally closes each phase, contract, and the project.
- Manages phase transitions when necessary.

Key Performance Indicator (KPI):

A set metric used to evaluate a team's performance against the project vision and objectives. KPIs can use the SMART acronym.

- Specific
- Measurable
- Achievable
- Relevant
- Time-bound

Performance Assessment Tasks:

Purpose of assessment:

- Improve interaction between team members.
- Solve issues.
- Deal with conflicts
- Improve skills and competencies of team members.
- Increase team cohesiveness.
- Comparing performance to goals
- Reclarifying roles and Responsibilities
- Delivering positive as well as negative feedback
- Discovering unknown or unresolved issues
- Establishing future goals
- Creating and monitoring individual training plan

Monitor Scope

- Measure completion of project scope against the scope baseline.
- Check user stories and DoD against customer feedback and product requirements.

Monitor Schedule

- Estimate Velocity
- Aim for Constant Rate (with optional discussion)

Measure Throughput, Lead and Cycle Time:

- WIP - Measure of work in progress but not completed.
- Lead time - Length of time work item goes through entire process.
- Cycle time - Length of time work item is being worked on
- Throughput - Number of items entering or exiting the system.

Physical Resource:

- Equipment
- Materials
- Facilities
- Infrastructure

Project manager uses Control Quality process to:

- Verify that deliverables meet functional and non-functional requirements.
    - Identify and suggest improvements.
    - Verify alignment with compliance requirements.
    - Give feedback on any identified variances.
    - Identify potential approaches to cure defects or other noncompliance.
- And <u>continuously</u> monitors <u>quality reports</u> and <u>recommendations</u>!

Team, customer, and product owner are responsible for setting and meeting quality goals and metrics.

Verify Deliverables

Project team verifies deliverables based on quality standards and requirements:

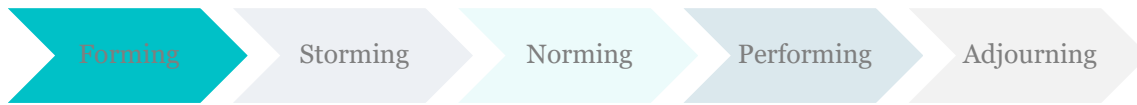- Quality metrics
- Tolerance

Monitor Risks

- Enable decision-making based on current information about overall risk exposure and individual risks.
- Continuously monitor status, probability, and impact.
- Identify new risks.
- Reassess current risks.
- Close outdated risks.
- Perform on a regular basis.
- Continuously improve risk effectiveness

Review your Reserves:

RESERVE ANALYSIS

A method used to evaluate the amount of risk on the project and the amount of schedule and budget reserve to determine whether the reserve is sufficient for the remaining risk.

Team Development Stages:

| Forming | Storming | Norming | Performing | Adjourning |

Performance Tracking Tools:
- Scrum/Agile/Kanban boards
- Throughput Metrics
- Cycle Time
- Quality Metrics
- Earned Value
- Bar Charts (Gantt)
- Velocity

Earned Value Management (EVM)

A methodology that combines scope, schedule, and resource measurements to assess project performance and progress.

Control Costs
- $CV = EV - AC$
- $SV = EV - PV$
- $CPI = EV / AC$
- $SPI = EV / PV$
- $EAC = BAC/CPI$
- $ETC = EAC - AC$

Performance Reports type:

- Information Radiators
- Burndown Chart
- Burnup Chart
- Earned Value Management
- Reports
- Variance Analysis Reports
- Work performance
- Reports
- Quality Reports
- Dashboards
- Task Boards

Value stream mapping

A lean enterprise technique used to document, analyze, and improve the flow of information or materials required to produce a product or service for a customer.

ADDRESS AND REMOVE IMPEDIMENTS, OBSTACLES, AND BLOCKERS

Impediments, Obstacles, and Blockers

Impediments

Reference situations, conditions, and actions that slow down or hinder progress. (For example, the team not coming to a decision on a file saving location.)

Obstacles

Reference barriers that should be able to be moved, avoided, or overcome with some effort or strategy. (For example, the construction crew is unable to arrive at the worksite before permits are signed.)

Blockers

Reference events or conditions that cause stoppages in the work or any further advancement. (For example, the company has halted the use of any products in a certain firm until a new contract is signed.)

Daily Standup

A brief, daily collaboration meeting in which the team reviews progress from the previous day, declares intentions for the current day, and highlights any obstacles encountered or anticipated. Also known as a Daily Scrum.

MANAGE CONFLICT

Causes of Conflict

- Competition
- Differences in objectives, values, and perceptions
- Disagreements about role requirements, work activities, and individual approaches
- Communication breakdowns

Conflict Management Approaches:

- Withdraw/Avoid
- Smooth/Accommodate
- Compromise/Reconcile
- Force/Direct
- Collaborate/Problem Solve

COLLABORATE WITH STAKEHOLDERS

Project Stakeholders:

- Sponsors
- Manager
- Employees
- Government
- Community
- End users
- Suppliers
- Customers

Stakeholder engagement plan

A component of the project management plan that identifies the strategies and actions required to promote productive involvement of stakeholders in project or program decision making and execution.

MENTOR RELEVANT STAKEHOLDERS

Coaching and Mentoring

- Coaching and mentoring others helps them become more proficient team members.
- Raising the abilities of the team increases their output and their value.
- Increasing the knowledge base and the skill sets of all project stakeholders promotes more successful and effectively managed projects.
- With limited time and resources, you must make sacrifices on how to mentor others.
- Start mentoring the relevant stakeholders in a project and expand from there throughout the organization.

Transformation Skills:

1. The organization, business, and the world are constantly changing and evolving.
2. Supporting the transformation requires patience and compassionate mentoring.
3. Most noticeable in teams transforming from one project management approach to another.
4. In today's digital world, the skill set being used today may be obsolete or limited tomorrow.

APPLY EMOTIONAL INTELLIGENCE TO PROMOTE TEAM PERFORMANCE

Emotional Intelligence

EI helps you understand your emotions and those of others to help minimize conflict.

- Personal Skills
- Interpersonal Skills

Self-Elements Awareness:

- Emotional awareness
- Accurate self-assessment
- Self-confidence

Self- Regulation Elements:

- Self-control
- Trustworthiness
- Conscientiousness
- Adaptability
- Innovation

Motivation Elements

- Achievement drive
- Commitment
- Initiative
- Optimism

Empathy Elements:

- Understanding others
- Service orientation
- Developing others
- Leveraging diversity
- Political awareness

Social Skills Elements:

- Communication
- Building bonds
- Collaboration and cooperation
- Change catalyst
- Leadership
- Team capabilities
- Conflict management
- Influence
- Leadership
- Team capabilities

Organizational theory:

 The study of how people, teams, and organizations behave.
Purpose of organizational theory
• Maximize efficiency and productivity
• Solve problems
• Motivate people
• Meet stakeholder requirements

Common organizational theorists:

- Maslow's Hierarchy of Needs
- McGregor's Theory X and Theory Y
- McClelland's Achievement Theory
- Herzberg's Motivation Theory
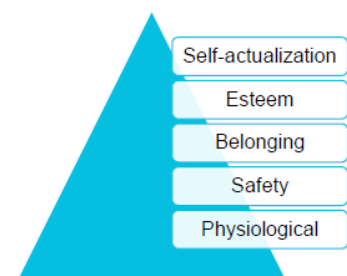
Maslow's Hierarchy of Needs

Keeping the business in mind
Manage compliance requirements

The requirements for compliance must be identified, tracked, and managed throughout the project.

Configuration Management System
- Used to **track and record the project's deliverable components**, including a description and the defined key attributes.
- Allows for **tracking, versioning, and control**.
- **Compliance information**, including proof of validation that each deliverable **meets identified compliance** requirements.
- **Handed over** with the deliverables so customer can continue to track in their configuration management system.

Execution Reports:
Project manager regularly creates execution reports.
These include information about:
- Project activities
- Deliverable status
- Overall progress

Variance Analysis:
Project managers create regular reports on project variances and any actions taken to control the project to keep it on track.

Variance analysis should detail:
- **The variance identified.**
- **Plans for bringing** the project or deliverable back into compliance.
- Any **proposed changes** required to meet compliance requirements.

Compliance
Five Best Practices
- Documentation
- Risk planning
- Compliance council
- Compliance audit
- Compliance stewardship

Nonfunctional Requirements
- Availability
- Capacity
- Continuity
- Security

Sign offs and Approvals
Identify the necessary stakeholders authorized to sign off and approve on deliverables.

Tolerances
Tolerance levels enable the project manager to effectively manage certain issues without needing to escalate every issue.

Areas of tolerance might include:
- Budget
- Time
- Quality
- Nonfunctional requirements

Escalation Procedures
When a noncompliance issue is identified, determine if it's within the tolerance level for the project manager to handle.
- If yes, the project manager and team work together to propose a resolution.
- If beyond the tolerance level, then escalate the issue for adjudication.

<u>Quality Assurance Outputs</u>
- Review the deliverable.
- Verify that it meets both functional and nonfunctional requirements.
- Possibly, identify and propose potential improvements.

<u>Quality Management Plan</u>
Describes the resources and activities needed for the project.
team to achieve the necessary quality objectives.

<u>Quality requirements might include:</u>
- Quality standards to be used.
- Quality objectives of the project
- Quality roles and responsibilities
- Project deliverables and processes subject to Quality review.
- Quality Control and Quality Management activities planned for the project.
- Quality tools that will be used.
- Major procedures relevant for dealing with nonconformance, corrective action procedures, and continuous improvement procedures.

<u>Audits:</u>
Conducted by a team external to the project, such as an internal audit team or PMO.

<u>QA Tools</u>
- Data gathering
- Data analysis
- Decision making techniques.
- Data representations
- Audit reports
- Design for X
- Problem solving techniques.
- Quality management methods

Evaluate and deliver project benefits and value

PMI Talent Triangle

The PMI Talent Triangle® reflects the skills needed by today's project professionals and changemakers as they navigate the evolving world of project management.

- **Ways of Working**

Mastering diverse and creative ways (predictive, adaptive, design thinking) to get any job done.

- **Power Skills**

The critical interpersonal skills required to apply influence, inspire change, and build relationships.

- **Business Acumen**

Effective decision-making and understanding of how projects align with the big picture of broader organizational strategy and global trends

Strategic Alignment and Business Management Skills

STRATEGIC PLAN

A high-level business document that explains an organization s vision and mission plus the approach that will be adopted to achieve this mission and vision, including the specific goals and objectives to be achieved during the period covered by the document.

Strategic Management Elements and Frameworks

- PESTLE: Political, economic, socio cultural, technical, legal, environmental
- TECOP: Technical, environmental, commercial, operational, political
- VUCA: Volatility, uncertainty, complexity, ambiguity
- SWOT (strengths, weaknesses, opportunities, and threats) analysis
- Assumption analysis
- Historical information analysis
- Risk alignment with organizational strategy
- Comparative advantage analysis
- Feasibility studies

OKRs (Objectives and Key Results)

is a goal setting framework used by individuals, teams, and organizations to define measurable goals and track their outcomes. It helps clarify investment ideas and the metrics used to measure success.
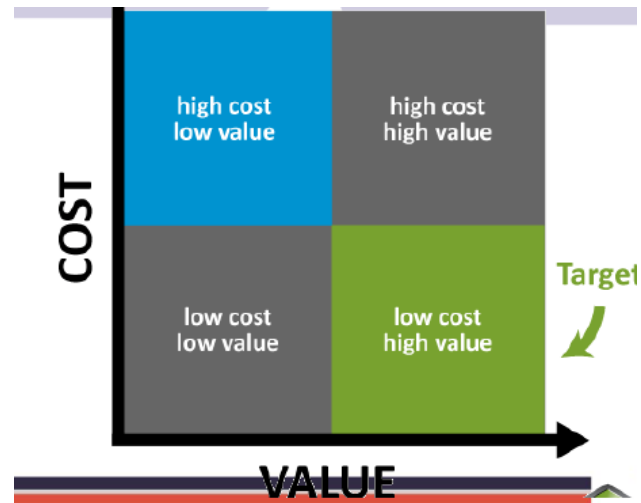
Business Value

An informal term that goes beyond economic value.

Components include:

- Shareholder value
- Customer value
- Employee knowledge
- Channel partner value

Value Analysis

Value analysis is the process of examining each of the components of business value and understanding the cost of each one.

Benefits management plan:

A document that describes how and when the benefits of a project will be derived and measured.

DevOps

A collection of practices for creating a smooth flow of delivery by improving collaboration between development and operations staff.

DevOps Component:

- Target benefits
- Strategic
- Alignment
- Timeframe
- Benefits owner
- Metrics
- Risks

Benefit Cost Analysis:

A systematic approach to estimating the strengths and weaknesses of alternatives is used to determine options which provide the best approach to achieving benefits while preserving savings.

Return on Investment (ROI)

A financial metric of profitability that measures the gain or loss from an investment relative to the amount of money invested.

Present Value:

The current value of a future sum of money or stream of cash flows given a specific rate of return.

$$PV = \frac{FV}{(1+r)^n}$$

Net Present Value:

The present value of all cash outflows minus the present value of all cash inflows.

Net Present Value Formula

$$NPV = \Sigma \frac{CF_n}{(1+i)^n} - \text{Initial Investment}$$

Internal Rate of Return

The interest rate that makes the net present value of all cash flow equal to zero.

Net Promoter Score (NPS):

Measures a customer's willingness to recommend a provider's products or services to another on a scale of 100 to 100.

NPS = % of Promoters −% of Detractors

Decision Tree Analysis

A diagramming and calculation technique for evaluating the implications of a chain of multiple options in the presence of uncertainty.

Evaluate and address internal and external business environment changes

Internal Business Environment
Organizational changes can dramatically impact the scope of a project.

Internal business changes might cause:
- Need for new deliverables.
- Reprioritization of existing deliverables.
- Elimination of deliverables no longer required.

External Business Environment
PESTLE is an acronym to identify the external business environment factors that can affect the value and desired outcomes of a project.
- Political
- Economic
- Social
- Technical
- Legal
- Environmental

Support organizational Change

Organizational Culture and Style:

- Code of conduct
- Shared vision, beliefs & expectations
- Operating Environments
- Risk tolerance
- Regulations, policies & procedures
- Motivation and reward systems
- View of leadership, hierarchy & authority

CHANGE MANAGEMENT

A comprehensive, cyclic, and structured approach for transitioning individuals, groups, and organizations from a current state to a future state in which they realize desired benefits. It is different from project change control, which is a process whereby modifications to documents, deliverables, or baselines associated with the project are identified and documented, and then are approved or rejected.

Organizational change requires individual change

The ADKAR ® model names five milestones an individual must achieve to change successfully:

- A: Awareness of the need for change
- D: Desire to support the change
- K: Knowledge of how to change
- A: Ability to demonstrate new skills and behaviors
- R: Reinforcement to make the change stick
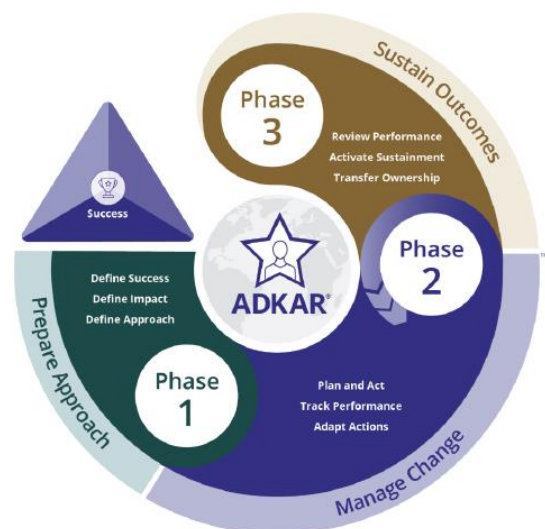
Organizational Structures

Type of Organizational:
- Functional
- Projectized
- Matrix
- Composite

Project Management Office (PMO)

A management structure that standardizes the project related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.

PMO type
- Supportive PMOs
- Controlling PMOs
- Directive PMOs

PLAN AND MANAGE PROJECT/ PHASE CLOSURE

Close Project or Phase

Several important activities occur during closeout:
- The planned work is completed.
- Project or phase information is archived.
- Project team resources are released to pursue other endeavors.
- In addition, all invoices are paid, contracts are closed out, and project lessons learned are discussed and documented.

Close Project or Phase Criteria
- Any one of the following events can result in closure.
- The project or phase successfully met its completion objectives.
- The requirements changed during execution to the point where the project is no longer feasible.
- Adequate funding is no longer available to complete.
- the requirements.
- Significant risks are encountered that make the successful completion of the project impossible.
- The organization no longer needs the project deliverables.

ACCEPTANCE CRITERIA

A set of conditions that is required to be met before deliverables are accepted.

DEFINITION OF DONE (DoD)

A team's checklist of all the criteria required to be met so that a deliverable can be considered ready for customer use.

FINAL REPORT:

A summary of the project's information on performance, scope, schedule, quality, cost, and risks.

- Acceptance of deliverables or products by customer.
- Transition of deliverables or product to customer.
- Notify enterprise and organizational functions; update OPAs.
- Prepare final report.
- Conclude external obligations, including legal, regulatory, contractual e.g., transfer of liability, closure of all accounts in the financial system.
- Archive project information.
- Release resources (human, financial and physical assets).

Finalizing Contracts

Archiving contracts means collecting, indexing and filing:

- Contract schedule
- Scope
- Quality
- Cost performance
- Contract change documentation
- Payment records and financial documents
- Inspection results
- "As built" or as" developed" documents, manuals, troubleshooting and
- technical documentation

Knowledge Management

Lessons learned repository:

A store of historical information about lessons learned in projects.

Close-Out Meetings

Sessions are held at the end of a project or phase.

Involve:

- Discussing the work
- Reviewing lessons Learned

Employ continuous process improvement

Continuous improvement

An ongoing effort to improve products, services, or processes.

Continuous Improvement Approaches

Kaizen

- Many small changes or improvements.
- Small changes are less likely to require major expenditures of capital.
- Ideas come from workers Not expensive research, consultants, or equipment.
- All employees should continually improve their own performance.
- All are encouraged to take ownership of their work to improve motivation.

Continuous Improvement Tools

- Lessons Learned Register
- Retrospectives
- Experiments