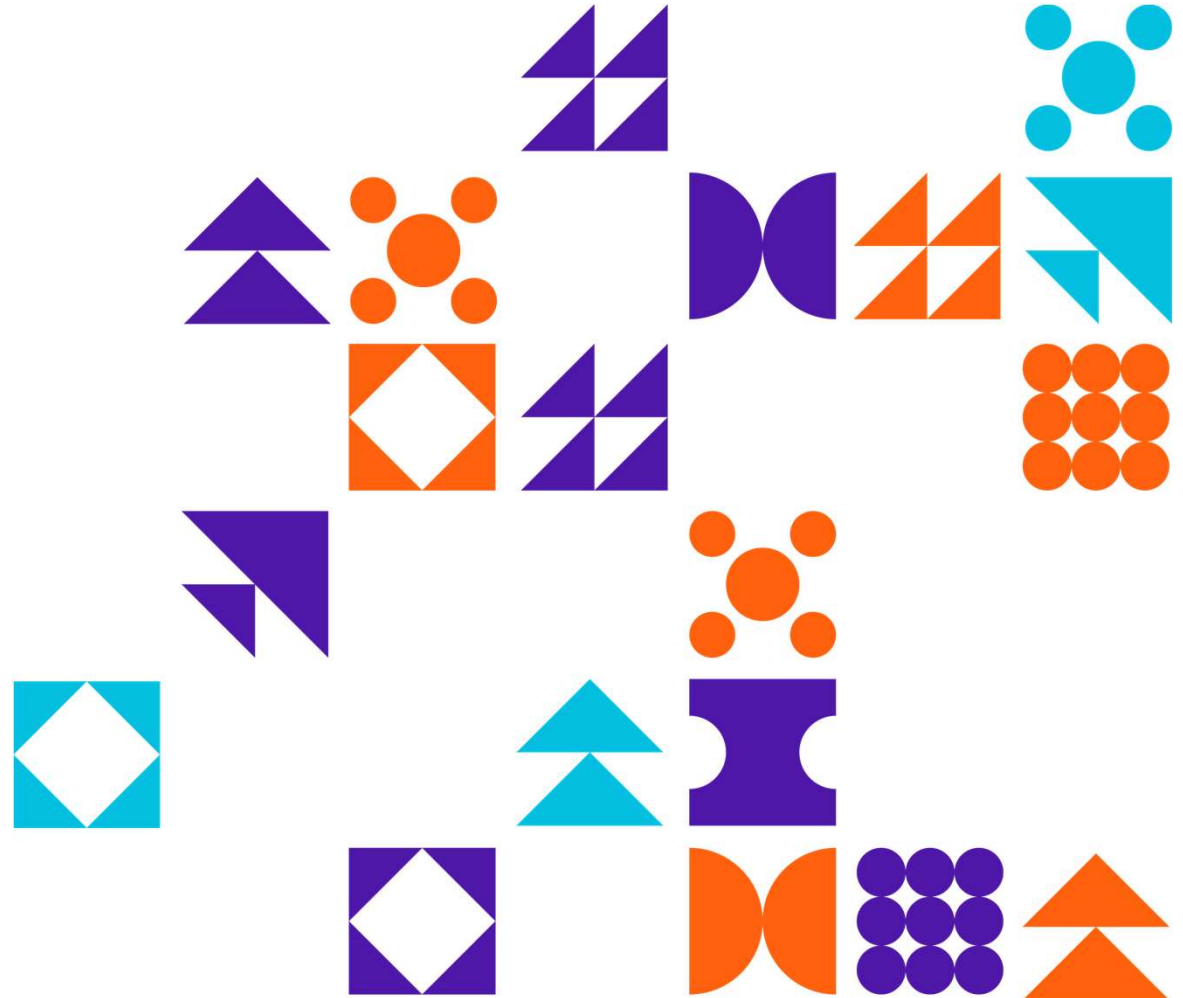


CREATING A HIGH-PERFORMING TEAM

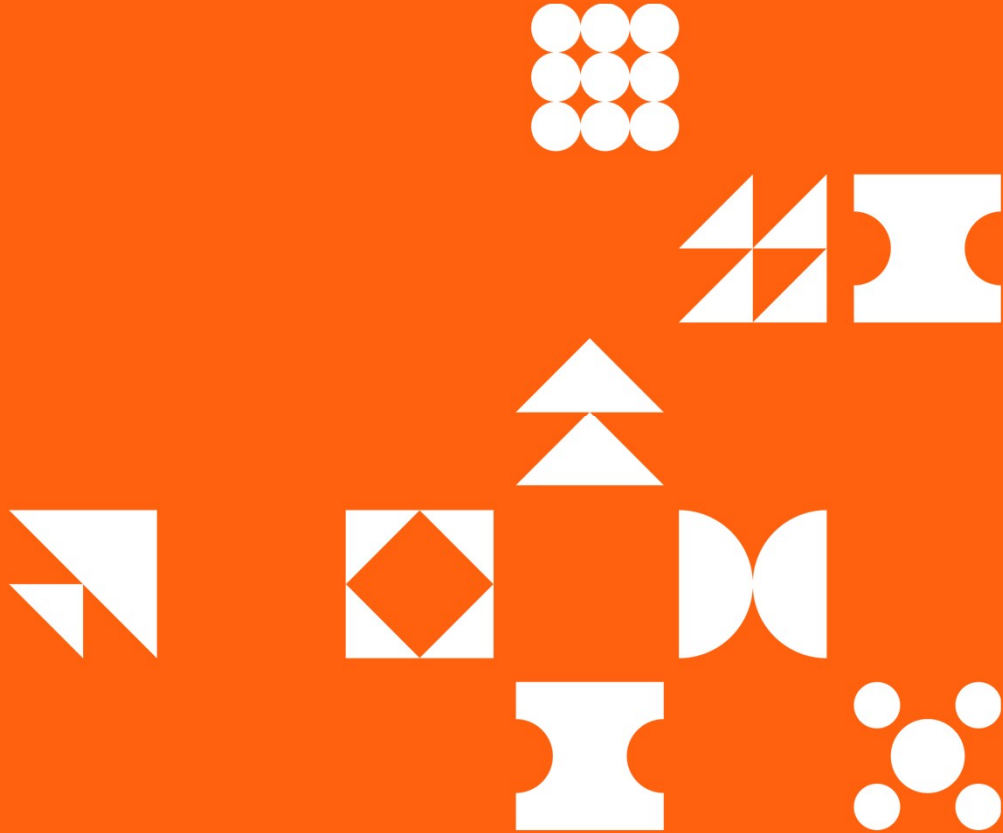
- Build a Team
- Define Team Ground Rules
- Negotiate Project Agreements
- Empower Team Members and Stakeholders
- Train Team Members and Stakeholders
- Engage and Support Virtual Teams
- Build a Shared Understanding about a Project



Lesson Objectives by Topic

- A. Determine project team member requirements, appraise team skills, and maintain team knowledge transfer. (ECO Tasks 1.2, 1.6)
- B. Collectively define project ground rules based on context, such as organizational rules and team dynamics. (ECO Task 1.12)
- C. Determine a negotiation strategy and negotiate project agreements. (ECO Task 1.8)
- D. Organize around team strengths and support team task accountability. (ECO Task 1.4)
- E. Ensure team members and stakeholders are adequately trained. (ECO Task 1.5)
- F. Continually evaluate the effectiveness of virtual team member engagement. (ECO Task 1.11)
- G. Reach consensus and support the outcome of the parties' agreement. (ECO Task 1.10)

TOPIC A: BUILD A TEAM



PMP® Certification

The screenshot shows the PMI.org website for PMP certification. The browser address bar displays `pmi.org/certifications/types/project-management-pmp`. The website header includes the PMI logo, navigation menus for Certifications, Membership, Learning & Events, PMBOK® Guide & Standards, Business Solutions, Store, and About, along with Register and Log In buttons. The main content area features the title "Project Management Professional (PMP)®" and a section titled "What is the PMP?". This section explains that PMP certification is globally recognized and helps bring projects to completion. It also states that there are almost 1,000,000 PMP certification holders worldwide. To the right, there is a call-to-action box "Apply for PMP Certification" with a button "APPLY NOW FOR YOUR PMP". Below this, there are links for "Important PMP Updates", including "July 2020 PMP Exam update", "PMP Exam Content Outline (Current)", and "2020 PMP Exam Content Outline".

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Certifications » Certification Types

Project Management Professional (PMP)®

Project Management Professional (PMP)®

Program Management Professional (PgMP)®


Portfolio Management Professional (PfMP)®

Certified Associate in Project Management (CAPM)®

What is the PMP?

Wherever you are in your career, the globally recognized Project Management Professional (PMP) certification tells employers, peers, and the world **you know what you're doing in project management**.

Even if "project manager" isn't part of your title, the PMP applies to anyone who helps bring a project to completion. Just like a CPA validates expertise for accountants, the PMP recognizes your ability to manage projects—and the hard work you've done so far.

 **1,000,000**

There are almost 1,000,000 PMP certification holders worldwide. They've earned universally recognized knowledge.

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APPLY NOW FOR YOUR PMP

Important PMP Updates

[July 2020 PMP Exam update](#)

[PMP Exam Content Outline \(Current\)](#)

[2020 PMP Exam Content Outline](#)



The PMP® ECO

- **Domain:** The high-level knowledge areas that are essential to the practice of project management.
- **Task:** The underlying responsibilities of the project manager within each domain area.
- **Enabler:** Illustrative examples of the work associated with the task.

Domain	Percentage of Items on Test
I. People	42%
II. Process	50%
III. Business Environment	8%
Total	100%

Enablers

- Support diversity and inclusion. (ECO 1.2.2)
- Appraise teams' skills. (ECO 1.6.1)
- Determine team member requirements. (ECO 1.6.2)
- Continuously assess and refresh team skills. (ECO 1.6.3)
- Maintain team knowledge and transfer. (ECO 1.6.4)
- Discuss responsibilities within teams. (ECO 2.16.1)

Deliverables and Tools

Deliverables	Tools
Skills list	RACI matrix
Technology	Pre-assignment tools
Resource schedule	Virtual teams
Rates	
Resource assignment	

Project Teams

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

Project Resource Management includes:

- Estimate, acquire, and manage teams of people.
- Estimate the other resources those team members will need to carry out the work.
- Obtain the people.
- Develop the team, improve their competencies, facilitate interactions, and create an effective teaming environment.
- Track team performance, create and execute improvements based on feedback, resolve issues, and manage team personnel changes



Project Team Member Requirements

Team Member Considerations:

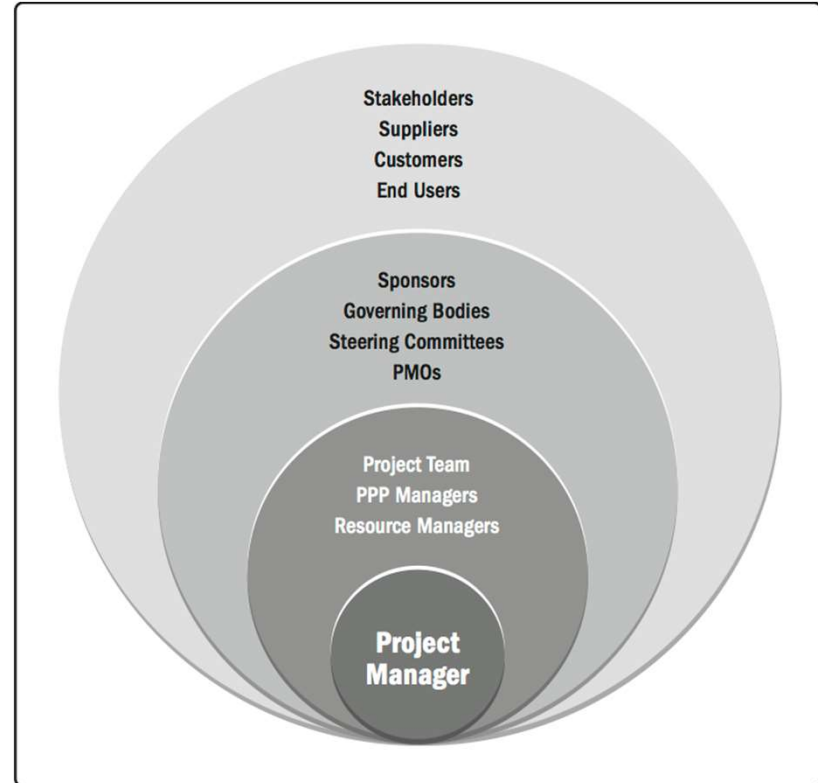
- Need the relevant skill sets to perform the work and produce the desired results.
- Avoid single-points-of-failure caused by a single resource having a required skill.
- Use generalizing specialists who have a core competency and general skills that can be leveraged to support other areas of the project.

Other Considerations:

- Physical resources, such as equipment
- Access rights

Project Stakeholders

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.



A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 551.



Stakeholder Identification

- Identifying stakeholders tends to happen as the project charter is being developed.
- List of identified stakeholders should be reviewed and modified as changes occur throughout the project.
- The project plans that are developed should describe stakeholders and the planned engagement model.
- As the project progresses, documents such as change logs, issue logs, or requirement documents can reveal additional stakeholders.
- The stakeholder list may be affected by organizational environment factors.
- Referring to stakeholder lists from previous projects might be useful.

Skills List

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

The RACI Chart

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.

	Project Manager	Engineering Manager	Quality Assurance Manager	Purchasing Manager	Manufacturing Manager
Create blueprints	A	R	C		C
Manufacture circuit board	I	C	C		A
Test circuit board	I	R	A		R
Order components	C	C	I	A	I
Assemble	I		C		A

R = Responsible A = Accountable C = Consulted I = Informed



Team Skill Appraisal

- Appraisals enable the team to holistically identify its strengths and weaknesses, assess opportunities for improvement, build trust, and establish communication mechanisms.
- Appraisals might identify:
 - Team preferences
 - Aspirations
 - Information processing and organization
 - Decision making processes
 - Interactions with other team members

Pre-Assignment Tools

Attitudinal
surveys

Specific
assessments

Structured
interviews

Ability tests

Focus
groups

Diversity and Inclusion

- Project teams are becoming more global and therefore more diverse:
 - Cultural backgrounds
 - Industry experiences
 - Spoken language
- Create an environment that takes advantage of the diversity and builds climate of mutual trust.
- Team development objectives might include:
 - Improving team knowledge and skills to reduce cost and time and improve quality.
 - Improving trust to raise team morale, reduce conflict, and improve teamwork.
 - Creating a collaborative culture to improve individual and team performance and facilitate cross-training and mentoring.
 - Empowering the team to participate in decision making and own the solutions they create.

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—Defines the project team members and their reporting relationships.
- Project team resource management—Guidance on the lifecycle of the team resources; how they are defined, staffed, managed, and eventually released.
- Training strategies and requirements.
- Team development methods to be used.
- Resource controls for the management of physical resources to support the team.
- Recognition Plan—How team members are rewarded and recognized.

Virtual Teams

Virtual teams* Groups of people with a shared goal who fulfill their roles with little or no time spent meeting face to face.

- Create opportunities for finding team members with greater skills, at lower costs, and avoid relocation expenses.
- Create challenges with managing communications and enabling effective team performance.
- Virtual team building considerations:
 - Bonding and team identity may be hard to develop
 - Various forms of communications technology used for discussion, calendar management, and Kanban boards and other information
 - Difficult to monitor individual performance/progress



Project Responsibilities within the Team

- Defining responsibilities varies based on the team.
- Considerations when assigning resources to responsibilities:
 - Experience
 - Knowledge
 - Skills
 - Attitude
 - International factors
- In an agile approach, self-organizing teams assess the work requirements and determine who will do the work.
- In traditional project management approaches, use a work breakdown structure to assign work to team members.

Rates

- The project manager is responsible for project budget and disbursements.
- Resource requirements should be met using the most cost-effective resource based on:
 - The needs of the project
 - Resource availability
 - Experience
 - Knowledge
 - Skills
 - Attitude
 - International factors

Resource Assignment

Project manager creates a project management plan that includes:

- Team members assigned to the project
- Their roles and responsibilities
- Project team directory
- Project organization charts
- Project schedules

Guidelines to Continuously Assess and Refresh Team Skills to Meet Project Needs

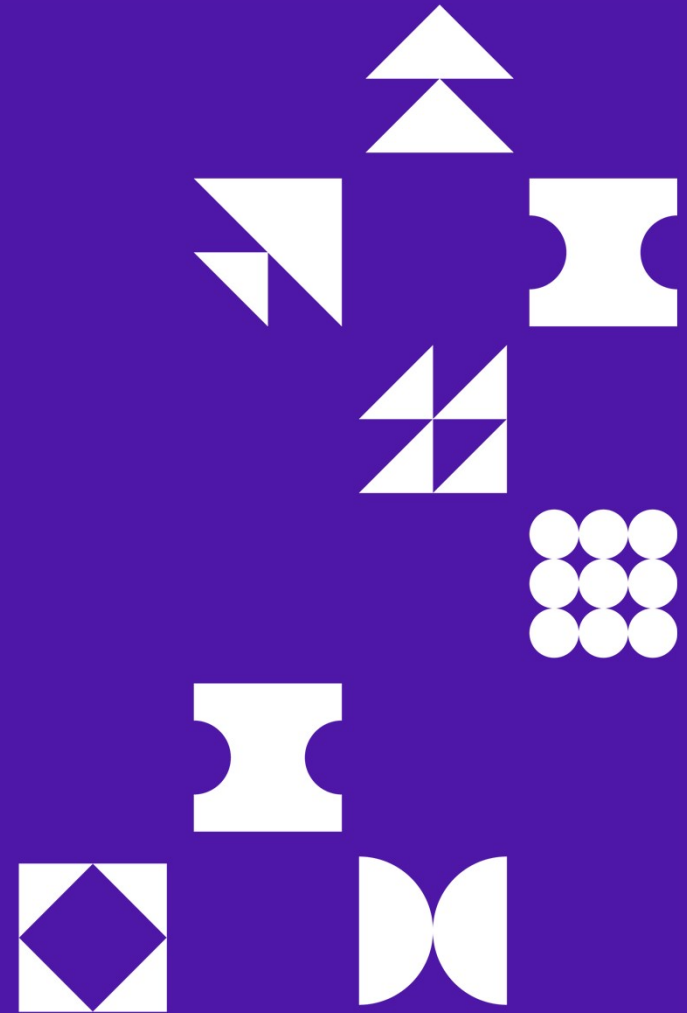
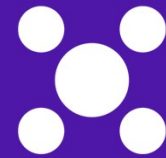
- The project manager must have a certain level of awareness of the knowledge, skills, attributes, and experience required to produce the project's deliverables.
- As the project progresses, the project team and project manager should gain a better understanding of customer needs and team capabilities to identify gaps in the team's skill set.
- The project manager needs to coordinate frequent checks for these gaps and identify appropriate mechanisms to close those gaps.
- Mechanisms might include:
 - The identification of new resources needed.
 - Training requirements to enable the team to develop the missing skill sets.
 - Identification of knowledge gaps that require additional engagement with the customer to assess needs and modify plans and deliverables.

Guidelines to Maintain Team Knowledge Transfer

- A major project challenge is managing knowledge sharing among team members, especially on virtual teams.
- A core objective is to facilitate collaboration and promote visibility among the team.
- When developing a team charter, the team should determine methods for facilitating knowledge sharing, including:
 - Frequency of updates
 - Version control
 - Supporting tools and the agreed approach to their utilization
- In agile practices, information radiators can provide seamless visibility into project status across the stakeholder community.

ACTIVITY: BUILDING A TEAM

TOPIC B: DEFINE TEAM GROUND RULES



Enablers

- Collectively define ground rules.
- Communicate ground rules with team members. (ECO 1.12.1)
- Establish an environment that fosters adherence to ground rules. (ECO 1.12.2)
- Manage and rectify ground rule violations. (ECO 1.12.3)

Deliverables and Tools

Deliverables	Tools
Team charter	Negotiation skills
Team norms	Conflict management
	Brainstorming
	Ethics

Team Charter

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

A good team charter includes:

- The team's shared values.
- Guidelines for team communications and the use of tools.
- How the team makes decisions.
- How the team resolves conflicts when disagreements arise.
- How and when the team meets.
- Other team agreements (such as shared hours, improvement activities).

Ground Rules

Ground rules: Clear expectations regarding the code of conduct for team members.

- Ground rules include all actions considered acceptable and unacceptable in the project management context.
- Benefits:
 - Sets performance and communication expectations
 - Decreases risk of confusion
 - Improves performance

Negotiation Skills

- Negotiation includes team discussions aimed at reaching agreement.
- Teams might negotiate:
 - Roles and responsibilities
 - Priorities
 - Assignments
 - Deliverables
- All team members should develop good skills for negotiating among themselves and with other stakeholders.

Communication Between Internal and External Team Members

Regular communication with stakeholders outside of the team will enable:

- Collaboration between team and external teams or stakeholders
- Effective expectations-management among stakeholders
- Team charter should include communication protocols:
 - For internal team members (i.e., team meetings, shared calendars, etc.)
 - For external stakeholders to generate feedback, manage dependencies, and ensure alignment

Team Norms

- Establish expected behaviors of the team at the beginning of the project.
- Enable teams to handle challenges as the project progresses.
- Team norms should include:
 - Meetings
 - Communications approaches
 - Managing conflict
 - Shared values
 - Decision-making

Conflict Management

- Application of one or more strategies to deal with disagreements
- Effective conflict management leads to improved understanding, performance, and productivity
- Ineffective conflict management leads to:
 - Destructive behavior
 - Animosity
 - Poor performance
 - Reduced productivity
- Use various conflict resolution methods

Brainstorming

- A facilitator works with the team to identify a series of potential solutions to a given problem.
- Then performs various types of analysis to assist the team in selecting the most appropriate alternatives.

Code of Ethics and Professional Conduct

Responsibility

Respect

Fairness

Honesty

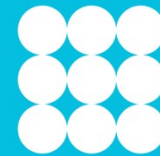
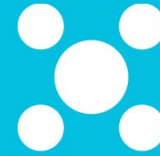
<https://www.pmi.org/-/media/pmi/documents/public/pdf/ethics/pmi-code-of-ethics.pdf>

Guidelines to Manage and Rectify Ground Rule Violations

- In the team charter, the ground rules are established.
- Violations of the ground rules require the team and project manager to assess opportunities for remediation.
- For serious violations, removing or replacing the offending team member may be required.
- Team needs to focus on its core values that include accountability, shared expectations, and transparency where appropriate.

ACTIVITY: DEFINING TEAM GROUND RULES

TOPIC C: NEGOTIATE PROJECT AGREEMENTS



Enablers

- Analyze the bounds of the negotiations for agreement. (ECO 1.8.1)
- Assess priorities and determine ultimate objective(s). (ECO 1.8.2)
- Verify objective(s) of the agreement is met. (ECO 1.8.3)
- Determine a negotiation strategy. (ECO 1.8.5)
- Participate in agreement negotiations. (ECO 1.8.4)

Deliverables and Tools

Deliverables	Tools
Service Level Agreement	Negotiation skills
Performance report	Expert judgment
Resource calendars	Lessons learned
Go-Live Blackouts	

Negotiations

- Negotiations are discussions aimed at reaching an agreement.
- Documents might include:
 - A statement of work or major deliverables
 - A schedule with milestones and dates
 - Performance reporting expectations
 - Pricing and payment terms
 - Inspection, quality requirements, and acceptance criteria
 - Warranty and future support
 - Incentives or Penalties
 - Insurance and Performance Bonds
 - Subcontractor approvals
 - Terms and Conditions
 - Change Request handling
 - Termination clauses and Dispute Resolution

Service Level Agreements

Service Level Agreement (SLA): A contract between a service provider (internal or external) and the end user that describes the level of service expected from the service provider.

Sample Service Level Agreement

Service Scope and Description Statement

The agreement covers the provision and support of a Service, which provides end user computer support. The DESKTOP COMPUTING SERVICE consists of the hardware, software, and supporting infrastructure for user personal computers running the Windows operating system.

Service Availability

Desktop Service is required along with Network/Intranet for access to other services. Required availability for these services is 99.5 percent uptime not counting planned maintenance times. The 99.5 percent availability metric will be measured by a rolling 6-month period.

Reliability

The service is guaranteed not to break more than three times per year. A break is defined as the loss of access to a vital business function.

Service Performance

Designed for high performance, the desktop should not keep the user waiting for response to an input for more than two minutes out of any five-minute window. Any failures must be reported to the Service Desk for incident resolution.

Change Management Procedures

Any proposed change by the Customer must be submitted through the Service Desk for review. A notice of acceptance/denial and reason for such must be within five business days of the next CAB meeting for Normal changes or three days for Standard changes. Emergency changes will be dealt with immediately by the Service Desk Manager.

Service Reviews

Reviews of the service will be conducted by the Service Level Management in conjunction with the Customer at least annually, as well as after a major outage or change.

Prioritization Techniques to Determine Objectives

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



Performance Report

- Project performance metrics might include:
 - Percentage of work completed
 - Quality and technical performance metrics
 - Start and finish of scheduled activities
 - Change requests
 - Defects
 - Actual costs and durations
- Work performance data is integrated and contextualized to:
 - Generate decisions
 - Raise issues, actions, and awareness
- Agile projects include:
 - Completed and accepted stories
 - Product backlog progress
 - Comparison of stories delivered and iteration plans

Expert Judgment

Expert judgment* Judgment provided based upon expertise in an application area, knowledge area, discipline, industry, etc., as appropriate for the activity being performed. Such expertise may be provided by any group or person with specialized education, knowledge, skill, experience, or training.

- For example, people from other areas of the organization, consultants, stakeholders, and professional and technical associations.



Negotiation Strategy

- Negotiations for the exact parameters of a contract are generally driven by the procurement manager.
- The project manager and project teams may be engaged as part of the negotiations.
- In a traditional project approach, an important objective is a clear designation of the project's intended deliverables and how they will be measured and compensated.
- In an Agile approach, the exact deliverables will be variable as the customer modifies, adds, and reprioritizes items in their product backlog, and so clearly delineated ways to ensure agreed performance levels must be defined.

Resource Calendars

Resource calendar: Identifies working days, shifts, and when specific resources are made available to the project.

- Used to determine which resources (people, equipment, material, etc.) are available during a planned activity period and should be considered when estimating project activities.
- Used to identify key resource attributes, such as skills and experience levels, to ensure that the appropriate resources needed will be available during different aspects of the project.

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.

- An effective project team should regularly review its performance and identify lessons learned and identify specific improvements that will improve the team's overall efficiency and effectiveness.
- Agile teams schedule a ceremony called a retrospective at the end of each iteration to identify potential issues, identify potential solutions, and improve the processes the team uses to improve its overall performance.



Go Live Black-Out Times

- **Black-Out** times occur when the deliverables are handed over for implementation.
 - Suspends changes.
 - Reduces risks as a solution is released to customers.
- **Go Live** occurs at the end of the project timeline, and black-out times may be negotiated in advance based on the overall project schedule and timeline.
- In an Agile approach, there may be numerous releases of aspects of the solution over the project's timeline, and black-out times (if needed) will be negotiated as the project approaches a release threshold.

Guidelines to Participate in Negotiations

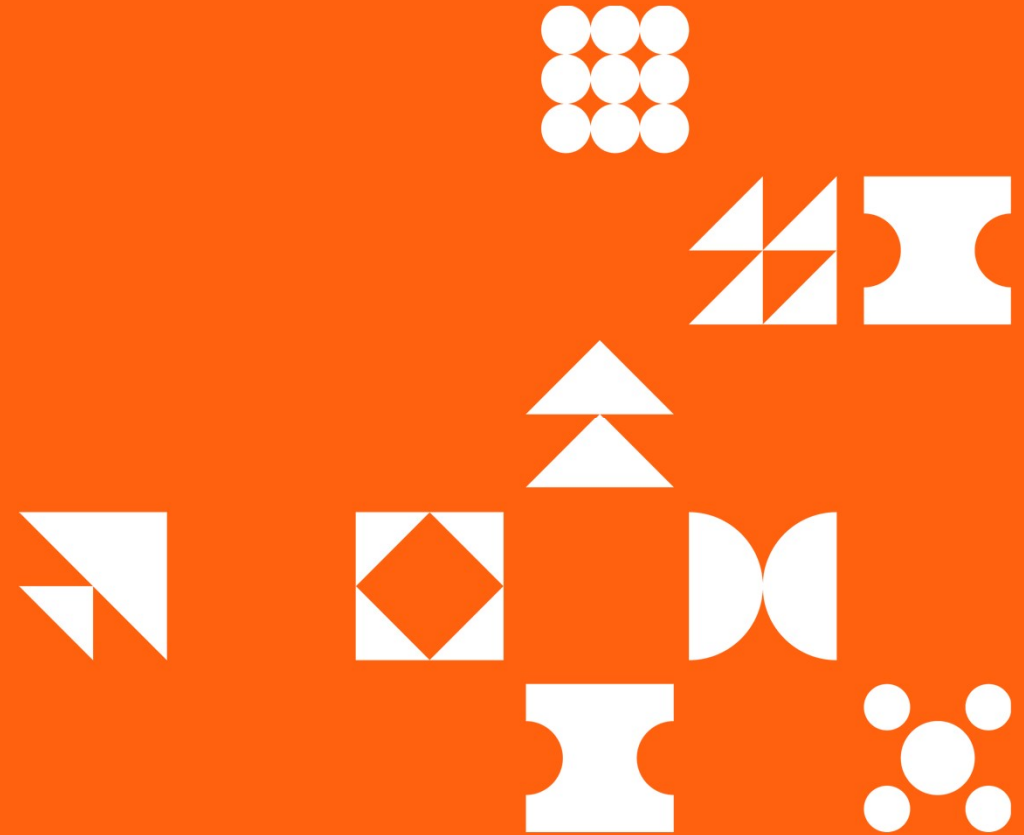
- Project managers and project team members will often be engaged throughout the negotiations process.
- Project team can suggest or identify:
 - Deliverables and milestones
 - Risks and issues
 - Expert judgment about problem definition and solution approaches
 - Practices for how the project will be operated (traditional waterfall, Agile, etc.)
 - Resource requirements

Project Agreement Objectives

- An important part of the project agreement is clarity on how the respective parties will report on and verify that the objectives of the project are met.
- In a traditional project, each deliverable is identified and objective acceptance criteria for each are identified.
- In an agile project, since the actual deliverables will vary as the product backlog is added to, reprioritized, and so forth, each story needs to have clearly defined acceptance criteria approved by the customer. The project may also specify a Definition of Done for the project, releases, iterations, and user stories.

ACTIVITY: NEGOTIATING PROJECT AGREEMENTS

TOPIC D: EMPOWER TEAM MEMBERS AND STAKEHOLDERS



Enablers

- Organize around team strengths. (ECO 1.4.1)
- Support team task accountability. (ECO 1.4.2)
- Evaluate demonstration of task accountability. (ECO 1.4.3)
- Determine and bestow level(s) of decision-making authority. (ECO 1.4.4)

Deliverables and Tools

Deliverables	Tools
Decisions	Team decision-making tools
Estimates	Fist of Five
	Roman voting
	Polling
	Planning poker
	Dot voting
	Retrospective

Team Strengths

- When forming teams, critical to understand the skills and competencies need by members to perform their work and produce deliverables.
- As teams progress, leverage the team members' skills to improve team performance.
- Identify team strengths and weaknesses to organize around team strengths.



Team Decision-Making Tools

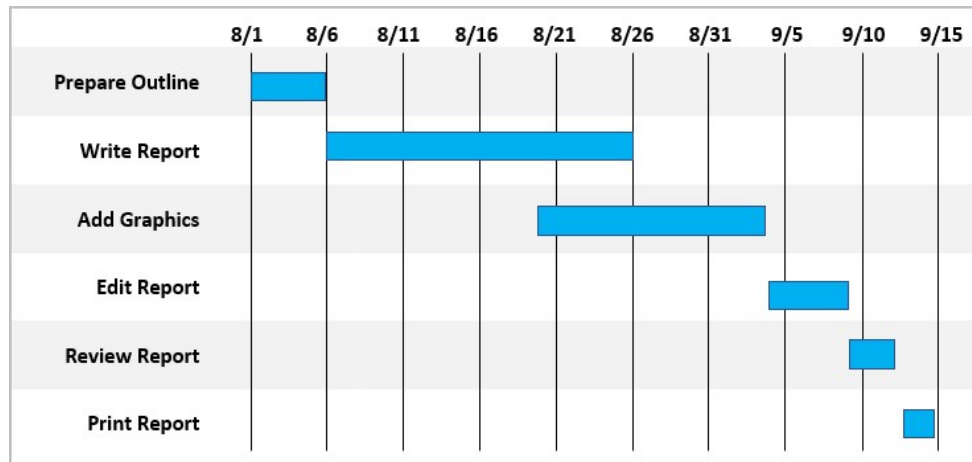
- Identifying how the team will make decisions together, and how they will resolve conflicts when disagreements arise.
- As the initial Team Charter is produced, the team needs to address decision-making and conflict resolution.
- For example, it may be highly desirable to seek consensus, but the team may want to identify how they will respond when consensus can't be reached.
- One option might be to decide in advance to take the highest estimate if there are persistent disagreements.

Estimates

- The people doing the work should perform the estimating tasks because they have the best knowledge of:
 - The risks
 - Level of effort
 - Potential pitfalls
- Traditional project managers use hours of effort.
 - Three-point estimating is one example.
- Agile projects avoid using absolute time estimates.
 - Story Point technique provides a unit-less measure estimation.

Team Task Accountability

- Encourage team members to self-organize in determining:
 - The work that needs to be done
 - How to perform the work
 - Who should perform it
- In Agile approaches, the team commits to performing work in an iteration.
- Use Gantt charts and Kanban boards to promote visibility and collaboration.



Guidelines to Evaluate Demonstration of Task Accountability

- Determine how task accountability will be tracked and managed.
- In a Work Breakdown Structure (WBS), tasks to produce the deliverables are identified, preferably by the team members who will be performing the work.
- When a WBS dictionary (or work package) is produced, each of the relevant tasks and assignees is identified, tracked, and managed.
- In an Agile approach, task identification and tracking is generally handled by the team themselves as part of iteration planning.

Retrospective

Set the Stage

- Check-in activities to engage the team

Gather and Share Data

- Team Performance metrics, Earned Value Analysis, etc.

Generate Insights

- What's working? Where are challenges? Problem Analysis

Make Decisions

- Agree on 1-2 improvements/changes to try in the subsequent iteration

Close

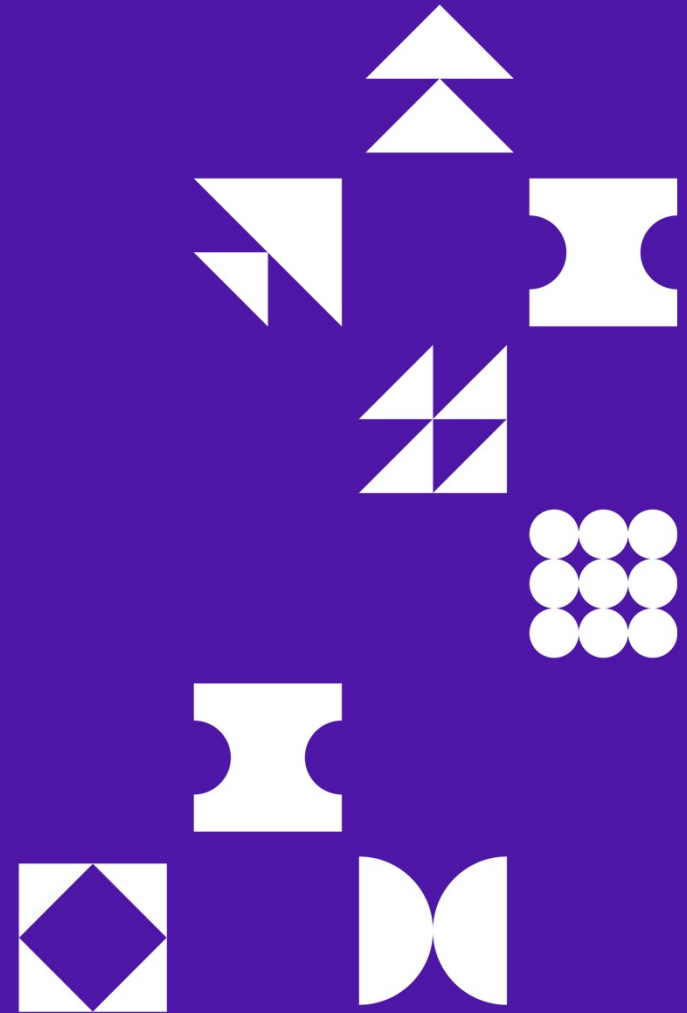
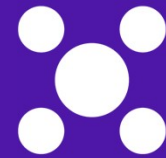
- New Information, Appreciation, and Thank You's

Guidelines to Determine and Bestow Levels of Decision-Making Authority

- Tasks should be identified, planned, and managed as much as possible by the team members themselves.
- Estimates should be done by the teams performing the work.
- Empower the teams to drive their own improvement.

ACTIVITY: EMPOWERING TEAM MEMBERS AND STAKEHOLDERS

TOPIC E: TRAIN TEAM MEMBERS AND STAKEHOLDERS



Enablers

- Determine required competencies and elements of training. (ECO 1.5.1)
- Determine training options based on training needs. (ECO 1.5.2)
- Allocate resources for training. (ECO 1.5.3)
- Ensure training occurs.
- Measure training outcomes. (ECO 1.5.4)

Deliverables and Tools

Deliverables	Tools
Training and mentoring plan	Training gap analysis
Training cost estimates	Training
Training calendar	Pairing and mentoring
Training assessment	
Certifications	

Required Competencies

- Identifying the required competencies is the first aspect of developing and executing a training plan.
- Competencies can include knowledge, skills, and other attributes.
- Different stakeholders will have different training needs.
- Team members themselves may require specific training on the customer's business, culture, desired outcomes, and the project's context.

Elements of Training

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

- Provided to teams, small groups, individuals
- Covers management, technical, or administrative topics
- Delivery models might include:
 - Instructor-led classroom
 - Virtual classroom
 - Self-paced e-learning
 - Document reviews
 - Interactive simulations
 - On-the-job training

Guidelines to Determine Required Competencies

- What knowledge will be required for this stakeholder to perform as expected with the new solution?
- What skills or hands-on experience are needed to learn and be able to demonstrate readiness to carry out work using the solution?
- What level of buy-in to the solution has been given by the stakeholder, and what aspects of the training need to be employed to help develop support for the solution?
- What modalities of training should be offered, and what are the relative costs of different approaches?

Training and Mentoring Plan

- Training should be done as close to the point of solution use as possible.
- Scheduling is critical to avoid delaying the overall solution deployment.
- Perform a **gap analysis** to identify missing knowledge, skills, or required attributes.
- A training plan for team members can include improvement in competencies or possibly certification to benefit the project.

Training Options

Options	Description
Virtual Instructor-led training	<ul style="list-style-type: none">• Live online instructor-led training through a virtual meeting or virtual training environment.• Simulated hands-on labs are often available using this option too.
Self-paced e-learning	<ul style="list-style-type: none">• E-learning content made available to students online and generally consumed using a browser. This can include rich-media video, simulated lab exercises, etc.• A benefit of the self-paced approach is scalability of the solution to a large number of potential students.
Document reviews	<ul style="list-style-type: none">• For simple knowledge transfer, sharing relevant documents may be sufficient.

Training Cost Estimates

- As part of the schedule and budget, consider the costs associated to training the project team and customer stakeholders.
- Cost might include:
 - Content creation and editing costs
 - Content hosting and delivery costs
 - Instructional costs
 - Courseware printing and distribution
 - Venue costs
 - Logistics costs

Training Calendar

- Project manager needs to publish and support a specific calendar of training dates and locations.
- Schedule also needs to be published to the customer stakeholders.
- Create a mechanism for registration and sending confirmation messages.
- Provide class rosters and a way to capture signatures of attendees.
- Manage the training schedule and timing to avoid delaying the project's delivery timeline.

Pairing and Mentoring

- **Pairing** customer stakeholders together enables them to reinforce the learning in each other.
- **Mentoring** enables an experienced team member to coach a less experienced team member.
- Pairing and mentoring foster team building and a collaborative environment.
- Training focuses on building individual skills to be used in the present; mentoring helps develop well-rounded individuals for the future through long-term professional relationships between novice and experienced employees.
- Relationships can be informal, ad-hoc ones created by the individuals themselves, or might be formally established by the organization, who intentionally pair the participants.

Baseline and Post-Training Assessments

- **Baselining** provides a technique for measuring the efficacy of training.
- Attendees complete a pre-assessment before training.
- After training, a **post-assessment** is used to demonstrate the newly acquired levels of competence.

Guidelines to Ensure Training Occurs

- Create awareness among the stakeholders about available training.
- Create invitations to attend the training.
- Engage with customer management for buy-in and commitment to have their employees attend the training programs.
- Registration needs to include a confirmation notification and a reminder before the training.
- Create rosters for each delivery of the training.
- Capture signatures to confirm attendance and participation in pre- or post-assessments.

Certifications

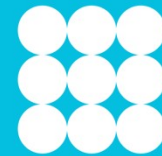
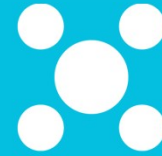
- Industry certifications demonstrate that knowledge and skills have been gained during training.
- The location and administration of certification exams can vary:
 - Delivered directly after the training class.
 - Administered at a testing center with a proctor.
 - Delivered online using a webcam proctor.
- Industry credentials are more portable and can be more desirable by those who hold the certification and future employers.

Measure Training Outcomes

- Training is ultimately measured by the ability to perform the work needed.
- Post-assessments and certifications prove knowledge.
- The true test of training is demonstrated by applying the knowledge and skills at the workplace.

ACTIVITY: TRAINING TEAM MEMBERS AND STAKEHOLDERS

TOPIC F: ENGAGE AND SUPPORT VIRTUAL TEAMS



Enablers

- Examine virtual team member needs. (ECO 1.11.1)
- Investigate alternatives for virtual team member engagement. (ECO 1.11.2)
- Implement options for virtual team member engagement. (ECO 1.11.3)
- Continually evaluate effectiveness of virtual team member engagement. (ECO 1.11.4)

Deliverables and Tools

Deliverables	Tools
Collaboration technology	Communication
Engagement assessments	Communication plan
Calendar tools	Variance analysis
	PM Powers

Collaboration Technology

- Enables teams to plan, collaborate, and communicate
- Not a substitute for team planning activities, such as establishing a team charter that details how a team will work together.
- Transparency considerations will factor into which collaboration technology is chosen.
- Collaboration tools might include:
 - Shared task boards to promote visibility
 - Messaging and chat boards to enable communication
 - Knowledge repositories to store shared documents
 - Video-conferencing tools to create opportunity for face-to-face communication

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

Alternatives for Virtual Team Member Engagement

- Managing engagement requires persistence and a focus on:
 - Team dynamics
 - Transparency
 - Accountability
 - Attention to effective communication
- Use videoconferencing tools to facilitate active participation and the ability to assess body language and tone.
- Enable visibility of the work and work status being done by the virtual team members by using tools such as Kanban-style boards.

Communication

- Effective communication is the key to successful teams.
- The team charter should include communication expectations and details.
- A good retrospective often provides ways that a team can improve its communication, collaboration, and use of visibility tools.

Engagement Assessments

- Identify team members who can successfully form a coherent working team.
- While subject matter expertise is needed, other capabilities such as effective teamwork, collaboration, and communication are important.
- As new members join, the team will cycle through the team development stages of re-forming, storming to produce norms, and continually improving.

Communication Plan

- The project manager should facilitate the creation of an initial team communication plan.
- Components include:
 - When does the team meet?
 - What tools are used to track work status?
 - How often is work status updated?
 - What are the shared team hours?
 - What are the preferred communication approaches?
- Encourage the team to adopt its own practices and drive iterative improvements to their communication approaches.
- Effective collaboration and broad, accurate visibility across stakeholders is the objective.

Conflict Management

- Conflicts and disagreements on any team are inevitable.
- Effective team charters can help the project manager anticipate problematic situations.
- By anticipating situations of possible disagreement, you can decide on a potential solution and how to handle the situation before it even arises.

Guidelines to Implement Options for Virtual Team Member Engagement

- Focus on collaboration and team norms **before** focusing too much on tools.
- Recognize that team formation in a virtual environment is difficult, so it's critical to reinforce the teams' mutual commitments, achievements, and opportunities.
- Virtual teams require a significant amount of feedback and reinforcement of the team goals and objectives.
- Provide opportunities for members of a virtual team to meet in person to build relationships that will nurture their shared commitment to the project's goals.

Calendar Tools

- Shared calendars help virtual teams plan meetings, coordinate feedback, and improve visibility to goals and activity status.
- Timeboxed meetings:
 - Improve focus
 - Encourage team to set clear agendas and objectives
 - Helps keep the work on track
- The team must decide how best to manage its calendar with an eye toward the goal of visibility among the team and relevant stakeholders.

Variance Analysis

- As the team works, the project manager may produce variance analysis, such as:
 - Accuracy of team estimates
 - Delivery in a sprint or by an established milestone
 - Team performance against targets
- Results of a variance analysis may be shared as part of a retrospective to serve as:
 - A basis for problem solving
 - Identification of lessons learned
 - Proposed improvement experiments for subsequent iterations

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.
- By instilling a sense of shared commitments into the team starting with the team charter, then team members will adopt certain behaviors to reinforce collaboration and promote visibility.
- 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.

Guidelines to Continually Evaluate the Effectiveness of Virtual Team Member Engagement

- Track the progress of your teams as they carry out the work and produce deliverables.
- Ensure meetings like daily standups are not just status updates, but value commitments from the team to itself.
- Use videoconferencing tools.
- Timebox your meetings.

ACTIVITY: ENGAGING AND SUPPORTING VIRTUAL TEAMS

Enablers

- Survey all parties to reach consensus. (ECO 1.10.2)
- Support outcome of parties' agreement. (ECO 1.10.3)

Deliverables and Tools

Deliverables	Tools
Vision	Charter
XP Metaphor	Project Plan
Product box exercise	Kick-off meeting
	Brainstorming
	T-Shaped Skills

Vision

- A vision is a desired end-state—a set of desired objectives and outcomes.
- At the start of a project, a clear vision of the desired end objectives is critical.
- The definition of the deliverables influences the project approach—traditional waterfall or agile approach.
- Vision statement might include:
 - Product or solution description
 - Intended users or consumers of the solution
 - Key desired objectives
 - Differentiators from competitive approaches
 - Key features and benefits

Project Charter

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.

- Purpose
- 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



Project Overview Statement

- Communicates enterprise-wide the intent and the vision of the project.
- Brevity and clarity are key.
- Captures the project's objective, problem or opportunity, and criteria for success.
- With authorization via the project charter or approved project overview statement, the project manager begins the activities of project planning.

Agile Ceremonies

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

Sprint* A timeboxed iteration in Scrum.

Ceremony	Description
Sprint Planning*	A collaborative event in Scrum in which the Scrum team plans the work for the current sprint.
Daily Standup	A short 10-15 minute meeting held daily for the team to reaffirm commitment to its objectives for the iteration, surface potential blockers, and coordinate the day's work amongst the team. Often conducted in a circle. (Also called a <i>daily scrum</i> .)
Sprint Review	A review at the end of each iteration with the Product Owner and other customer stakeholders to review the progress of the product and receive feedback for that iteration.
Sprint Retrospective	A meeting of the team members facilitated by the Scrum Master for the team to identify its own improvements. Reviews the team's processes and practices and identifies ways for the team to improve its performance, collaboration, etc.



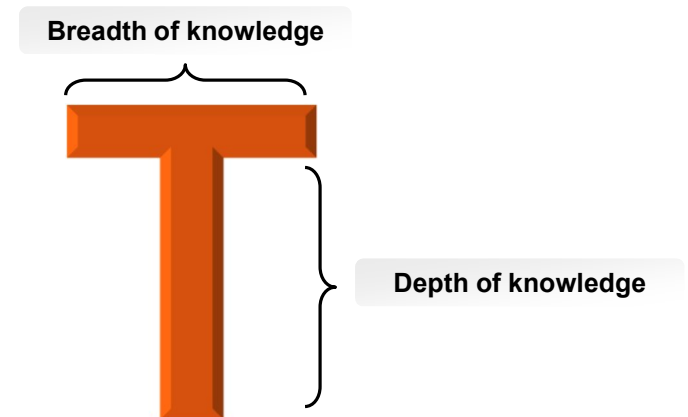
These definitions are taken from the Glossary of Project Management Institute, *Agile Practice Guide*, Project Management Institute Inc., 2017.

Kickoff Meeting

- Purpose:
 - Establish project context
 - Assist in team formation
 - Ensure proper alignment to the overall project vision
- Activities during kickoff may include:
 - Defining a vision statement
 - Defining a team charter
 - Assisting the customer / Product Owner with the following:
 - User story writing
 - Estimation of effort
 - Prioritization planning
 - Initial product backlog
 - Initial startup activities is often Sprint 0

T-Shaped Skills

- Agile teams invest in becoming more cross-functional.
- By leveraging all team members to help accomplish the team goals:
 - Improves team's efficiency
 - More likely to achieve objective

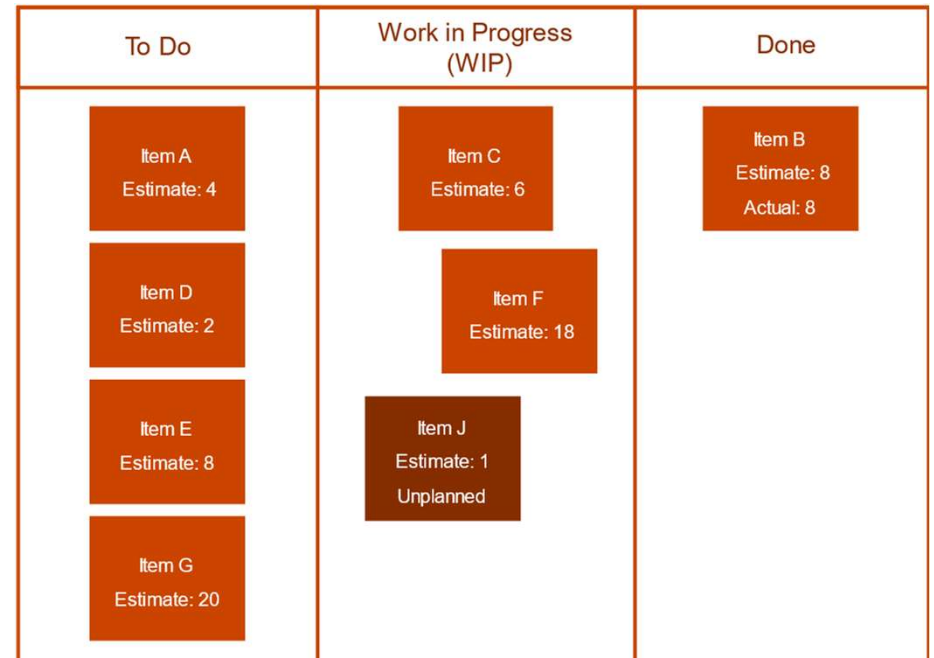


Iteration Planning

- Iteration planning is a collaborative agile ceremony, sometimes called Sprint planning, for the team and the customer representative (or Product Owner) to do the following:
 - Review the highest prioritized user stories, or key outcomes.
 - Ask questions.
 - Come to agreement on which stories the team forecasts it will complete in the iteration.
- After agreement, the team determines which activities are required to deliver the iteration objectives.

Task Boards

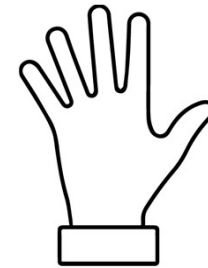
- Visualizes the work and enables the team and stakeholders to track progress as work is performed.
- Promotes visibility and maximizes efficiency.
- Examples: Kanban boards, to-do lists, procedure checklists, and Scrum boards.



Consensus

Consensus: A decision-making process used by a group to reach a decision that everyone can support.

- **Fist of Five:** Individuals vote by holding up five fingers for total agreement, a fist for total disagreement, or multiple fingers for somewhere in between.
- **Roman voting:** Individuals vote with either a thumbs up (agreement) or thumbs down (disagreement).
- **Polling:** Team members share their point of view and, if the team is unanimous, then they move on. If objections are raised, the facilitator works to solve the problem.
- **Dot voting:** Individuals use sticky dots to prioritize items in a list.



Five fingers = Agree



Fist = Disagree

Estimation Techniques

Technique	Description
T-Shirt Sizing	Using the common, ubiquitous knowledge of t-shirts and their sizes, individuals assign values to user stories.
Story Pointing	Using a relative measure for the level of difficulty or complexity of a feature, individuals assign story points, which are numbers in the Fibonacci sequence.
Planning Poker	Used to estimate effort or relative size of development effort. Using a deck of cards with modified Fibonacci numbers, individuals vote on user stories. This technique is also called Scrum poker.

XP Metaphor

- Metaphor is an Extreme Programming (XP) technique that describes a common vision of how a program works.
- Metaphors should be simple and non-technical.
- Enables understand of the overarching approach that is being taken to provide a capability or solve a problem.

Product Box Exercise

- Technique used to explain an overarching solution.
- Stakeholders try to describe aspects of a solution in the same way a marketer might describe product features and benefits on a box.
- Helps with understanding:
 - Different types of users of a solution
 - Their priorities and likes/dislikes
 - Key aspects of a solution that drive the most critical value aspects

Brainstorming

Brainstorming: A simple technique used to generate a list of ideas.

- Led by a facilitator and the group tends to be a group of stakeholders, team members, or subject matter experts.
- After quickly generating a list of alternatives, group analyzes the alternatives and chooses one.

Guidelines to Reach Consensus and Support the Outcome of the Parties' Agreement

- Having a team charter is enormously helpful here as it may specify how we as a team choose to handle certain scenarios and disagreements when they arise.
 - For example, if team members disagree about the number of story points to estimate for a user story, the team charter may designate that the team use the higher estimate, or that majority vote rules.
- In general, it is preferable to seek consensus among the team where possible, and to recognize that sometimes it will not be possible.
- For those times when consensus is not possible, it is helpful to have an agreed upon approach in advance.



ACTIVITY: BUILDING A SHARED UNDERSTANDING ABOUT A PROJECT

Learning Goals

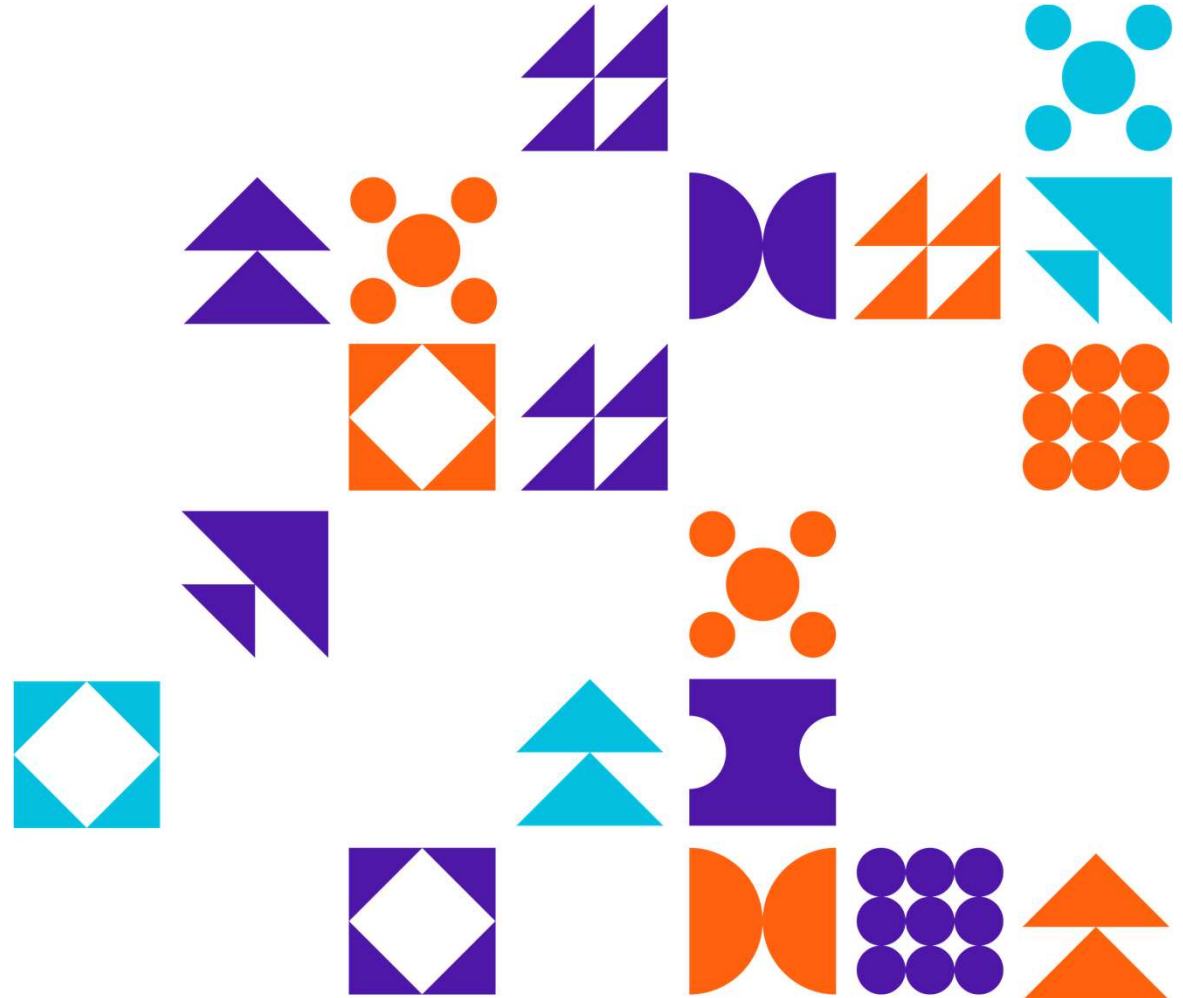
- Determine project team member requirements, appraise team skills, and maintain team knowledge transfer.
- Collectively define project ground rules based on context, such as organizational rules and team dynamics.
- Determine a negotiation strategy and negotiate project agreements.
- Organize around team strengths and support team task accountability.
- Ensure team members and stakeholders are adequately trained.
- Continually evaluate the effectiveness of virtual team member engagement.
- Reach consensus and support the outcome of the parties' agreement.

Reflective Questions

1. Why do you think it's important to identify and document the project stakeholders?
2. Share a situation when you were required to communicate a difficult message about the project to its sponsor or a top-level executive. What approach and communication method did you take?

STARTING THE PROJECT

- Determine Appropriate Project Methodology/Methods and Practices
- Plan and Manage Scope
- Plan and Manage Budget and Resources
- Plan and Manage Schedule
- Plan and Manage Quality of Products/Deliverables
- Integrate Project Planning Activities
- Plan and Manage Procurement
- Establish Project Governance Structure
- Plan and Manage Project/Phase Closure



Lesson Objectives by Topic

- A. Assess project needs, complexity, and magnitude to determine the appropriate project methodology/methods and practices. (ECO Task 2.13)
- B. Plan and manage the scope. (ECO Task 2.8)
- C. Plan and manage the budget and resources. (ECO Task 2.5)
- D. Plan, prepare, modify, and manage the project schedule based on methodology. (ECO Task 2.6)
- E. Plan and manage the quality of products and deliverables. (ECO Task 2.7)
- F. Integrate project planning activities. (ECO Tasks 1.12, 2.9, 3.1)
- G. Plan and manage procurement strategy. (ECO Task 2.11)
- H. Establish the project governance structure. (ECO Task 2.14)
- I. Plan and manage project/phase closure. (ECO Task 2.17)

Enablers

- Assess project needs, complexity, and magnitude. (ECO 2.13.1)
- Recommend project execution strategy (e.g., contracting, finance). (ECO 2.13.2)
- Recommend a project methodology/approach (i.e., predictive, agile, hybrid). (ECO 2.13.3)
- Use iterative, incremental practices throughout the project life cycle. (ECO 2.13.4)

Deliverables and Tools

Deliverables	Tools
Create survey	Expert judgement
Project business case / needs document	Meetings
Project Overview Statement	Focus groups
Project Implementation Plan	Workshops
Agile practice guidelines	Create SMART objectives
	Knowledge of classic PM and agile practice
	Project Integration

Project Methodologies, Methods, and Practices

Agile

- Modern approach where team works collaboratively with the customer to determine the project needs.
- The coordination of the customer and the team drives the project forward.

Predictive/Plan Driven

- Traditional approach where the project needs, requirements, and constraints are understood, and plans are developed accordingly.
- The plans drive the project forward.

Hybrid

- A combined approach that uses a strategy from agile or predictive for a specific need.
- Project might switch approaches based on need, changing work requirements, or circumstances.

Business Case and Business Needs Documents

- Business case:
 - Documented economic feasibility study
 - Used to establish the benefits of project components
 - Provides a basis for authorization of further project activities
- Business needs documents:
 - Provides the high-level deliverables
 - Written prior to the formal business case
 - Describes what needs to be created and what needs to be performed

Project Implementation Plan

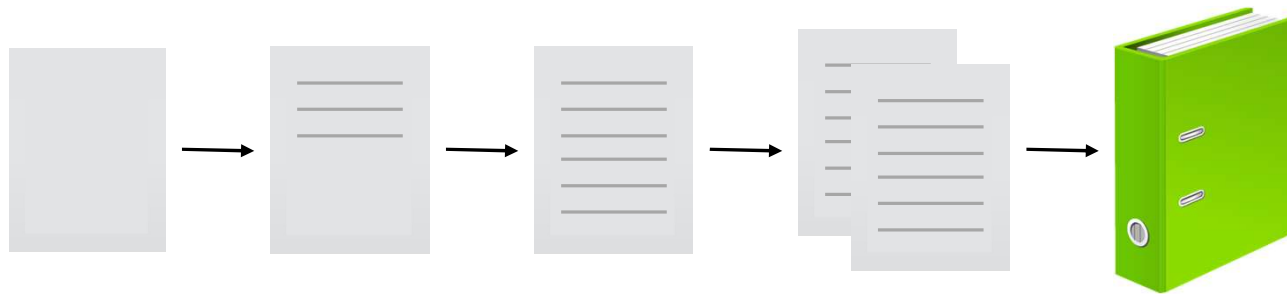
- Deliverables may be delivered all at once at the end of the project.
- Project outputs are delivered throughout the project.
- When delivering outputs, consider asking if the outputs will be:
 - Implemented in a new business environment?
 - Implemented in an existing business environment?
 - Transitioned into a live environment?
 - Decommissioning or removing old systems, processes, or materials?
 - Ensuring training and knowledge transfer is complete or satisfactory?
- All stakeholders, schedules, risks, budgets, and quality standards should be considered in the Project Implementation Plan.

Assessment of Project Needs, Complexity, and Magnitude

Methodology	Best Suited When	Examples
Agile	<ul style="list-style-type: none"> • Changes are relatively easy, and waste is not costly. • Complex environment where end product is not fully known and user feedback is very valuable. 	Software projects or projects based on intellectual property and research.
Predictive / Plan Driven	<ul style="list-style-type: none"> • Changes are expensive due to scrap and waste. • Predictability and coordinated timing is important. 	Construction projects or projects that have many physical assets or have similar projects that been completed in the past.
Iterative	<ul style="list-style-type: none"> • Dynamic requirements and activities are repeated until they are deemed correct. 	Projects where learning and correction is expected to eventually get to the ideal solution.
Incremental	<ul style="list-style-type: none"> • Dynamic requirements, as well as frequent small deliveries. • Speed to deliver small increments is a major goal. 	Projects where customers or business is wanting or expecting to see outputs or partial outputs early and often.
Hybrid	<ul style="list-style-type: none"> • There are some costs to changes. • Stakeholders are interested in another method, but not comfortable to fully adopt one method. 	Projects with a mix of resources and experience levels or projects seeking or willing to learn new methods or techniques.

Progressive Elaboration

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.



Types of Life Cycles

- Predictive
- Adaptive
 - Iterative
 - Incremental
 - Agile
- Hybrid

Predictive Life Cycles

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.

Types	Characteristics
Predictive	<ul style="list-style-type: none">• Fixed requirements• Activities performed once per project• Single delivery• Goal: Manage cost



Iterative Life Cycles

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.

Types		Characteristics
Adaptive	Iterative	<ul style="list-style-type: none">• Dynamic requirements• Activities repeated until correct• Single delivery• Goal: Correct solution



Incremental Life Cycles

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.

Types		Characteristics
Adaptive	Iterative	<ul style="list-style-type: none">• Dynamic requirements• Activities repeated until correct• Single delivery• Goal: Correct solution
	Incremental	<ul style="list-style-type: none">• Dynamic requirements• Activities performed once per increment• Frequent small deliveries• Goal: Speed



Agile Life Cycles

Agile Life Cycles* A project life cycle that is iterative or incremental. Also referred to as change-driven or adaptive.

Types		Characteristics
Adaptive	Iterative	<ul style="list-style-type: none">• Dynamic requirements• Activities repeated until correct• Single delivery• Goal: Correct solution
	Incremental	<ul style="list-style-type: none">• Dynamic requirements• Activities performed once per increment• Frequent small deliveries• Goal: Speed
	Agile	<ul style="list-style-type: none">• Dynamic requirements• Combines iterative repetition of activities with incremental deliveries• Goal: Customer value

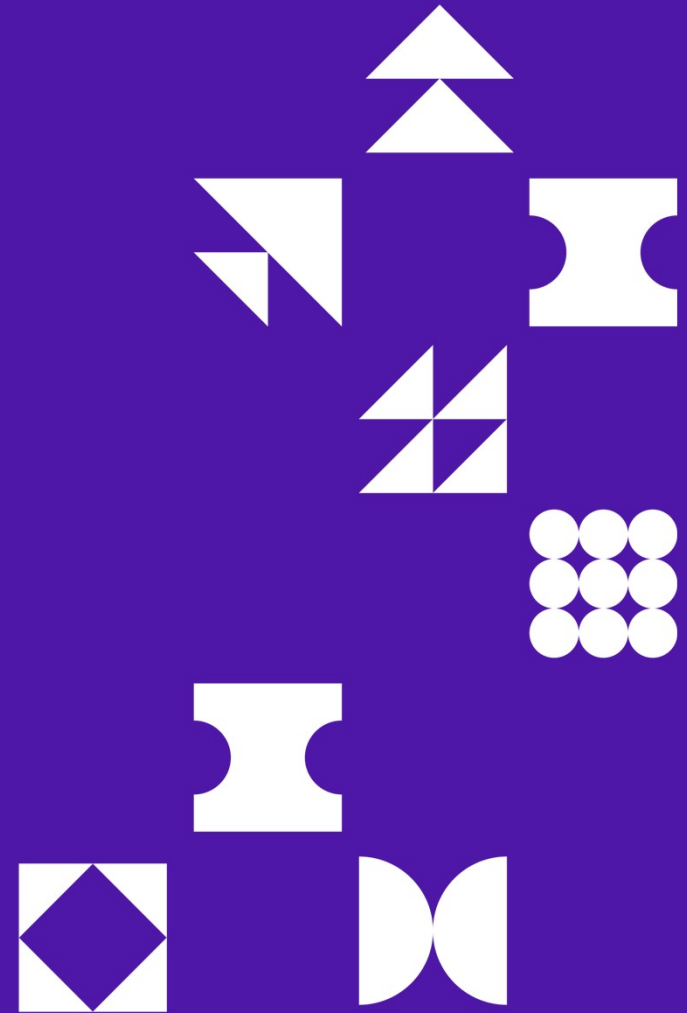
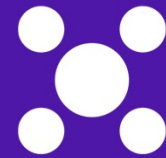


Hybrid Methodologies

Types		Characteristics
Predictive		<ul style="list-style-type: none"> • Fixed requirements • Activities performed once per project • Single delivery • Goal: Manage cost
Adaptive	Iterative	<ul style="list-style-type: none"> • Dynamic requirements • Activities repeated until correct • Single delivery • Goal: Correct solution
	Incremental	<ul style="list-style-type: none"> • Dynamic requirements • Activities performed once per increment • Frequent small deliveries • Goal: Speed
	Agile	<ul style="list-style-type: none"> • Dynamic requirements • Combines iterative repetition of activities with incremental deliveries • Goal: Customer value
Hybrid		<ul style="list-style-type: none"> • Includes adaptive and predictive components • Shorter, iterative time frames • High stakeholder involvement • More in-depth requirements

ACTIVITY:
DETERMINING THE
APPROPRIATE
PROJECT
METHODOLOGY

TOPIC B: PLAN AND MANAGE SCOPE



Enablers

- Determine and prioritize requirements. (ECO 2.8.1)
- Break down scope and define acceptance criteria (definition of done). (ECO 2.8.2)
- Build work packages/do some work.
- Monitor, reprioritize and validate scope. (ECO 2.8.3)

Deliverables and Tools

Deliverables	Tools
Requirements Register	Agile estimating
Work performance reports	Product backlog
Traceability matrix	Document change requests
	Update Requirements document
	Update product backlog
	Update project management plan

Scope Management Plan

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.

SCOPE MANAGEMENT PLAN	
Project Title:	122 East Main Street
Date:	
Scope Statement Development	
<i>The Scope Statement for this project will be prepared by the project manager, with assistance from other Building with Heart staff who have worked on previous home-building projects.</i>	
WBS Structure	
<i>The Work Breakdown Structure will consist of four levels, with the project at the top level. Phases will be used for major (Level 1) deliverables (e.g., foundation, framing, interior walls, plumbing, etc.). Each phase will be decomposed into appropriately-sized sub-deliverables (e.g., first-floor framing, second-floor framing). Finally, each sub-deliverable will be decomposed into work packages. Schedule and cost estimates will be prepared for each work package, and will be rolled up to the project level.</i>	
WBS Dictionary	
<i>Each element in the WBS will include sufficient information to enable the management of that element. The WBS Dictionary will include, but not be limited to the following: start and finish dates; resource names; durations; constraints; assumptions; and predecessor and successor elements.</i>	
Scope Baseline Maintenance and Scope Changes	
<i>The scope baseline will consist of the Scope Statement, WBS, and WBS dictionary. The initial scope baseline will be approved by the project sponsor. All changes to the scope baseline will follow the procedures outlined in the Integrated Change Control Process, and all changes will be documented and approved accordingly.</i>	
Deliverable Acceptance	
<i>Each Level 1 (Phase) deliverable will be approved by the project sponsor or his/her designee. The final deliverable, the finished home, will be approved by the Greene City Buildings Department inspector and will conform to all applicable building codes and regulations.</i>	
Scope and Requirements Integration	
<i>Before any design or other work has been started, a Requirements Document will be prepared</i>	



These definitions are taken from the Glossary of Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* – Sixth Edition, Project Management Institute Inc., 2017.

Scope Management Tools and Techniques

Expert judgment

- Internal and external experts

Alternatives analysis

- Data analysis method

Meetings

- Team members involved in creating the scope management plan

Project Requirements

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

- High-level requirements might be documented in the project charter.
- Project manager must verify all requirements are determined and documented.
- Provide the foundation for building the WBS.

Document Analysis

Document analysis: A technique used to gain project requirements from current documentation evaluation.

Derive new project requirements from existing documents such as:

- Business plans
- Service agreements
- Marketing materials
- Current process diagrams
- Application software documentation

Focus Groups

Focus groups* An elicitation technique that brings together prequalified stakeholders and subject matter experts to learn about their expectations and attitudes about a proposed product, service, or result.

- Designed to be less structured and more information-sharing sessions.
- Are trained moderator-guided interactive discussions.
- Include stakeholders and SMEs.
- Are a form of qualitative research.



Questionnaires and Surveys

Questionnaires* Written sets of questions designed to quickly accumulate information from a large number of respondents.

Team Evaluation Survey

Please take the time to evaluate your team. Share your feedback by filling in the information below.

1. About how long have you been a member of this team?

- 1 month or less 1-6 months 7-12 months 1 year or more

2. Choose the best answer for each of the following

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Team members understand team goals	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
Sufficient resources are provided to accomplish team tasks	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
Conflicts are resolved in a constructive manner	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
Every member contributes a sufficient amount of work	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
Every member contributes a sufficient amount of time	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5



Benchmarking

Benchmarking* The comparison of actual or planned products, processes, and practices to those of comparable organizations to identify best practices, generate ideas for improvement, and provide a basis for measuring performance.

- Addresses the evaluation of a group's business or project practices in comparison to those of other groups.
- Used to identify best practices in order to meet or exceed them.



Interviews

Interview* A formal or informal approach to elicit information from stakeholders by talking with them directly.

- Helps to identify the stakeholder's individual requirements, goals, or expectations relating to the project.
- Aids in identifying and defining the features and functions of the desired project deliverables.



Decision Making

Unanimity


Majority

Plurality

Autocratic

Data Representation

Techniques	Definition
Mind mapping*	A technique used to consolidate ideas created through individual brainstorming sessions into a single map to reflect commonality and differences in understanding and to generate new ideas.
Affinity diagram*	A technique that allows large numbers of ideas to be classified into groups for review and analysis.

 These definitions are taken from the Glossary of Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* – Sixth Edition, Project Management Institute Inc., 2017.

Observations

Observation: A technique used to gain knowledge of a specific job role, task, or function in order to understand and determine project requirements.



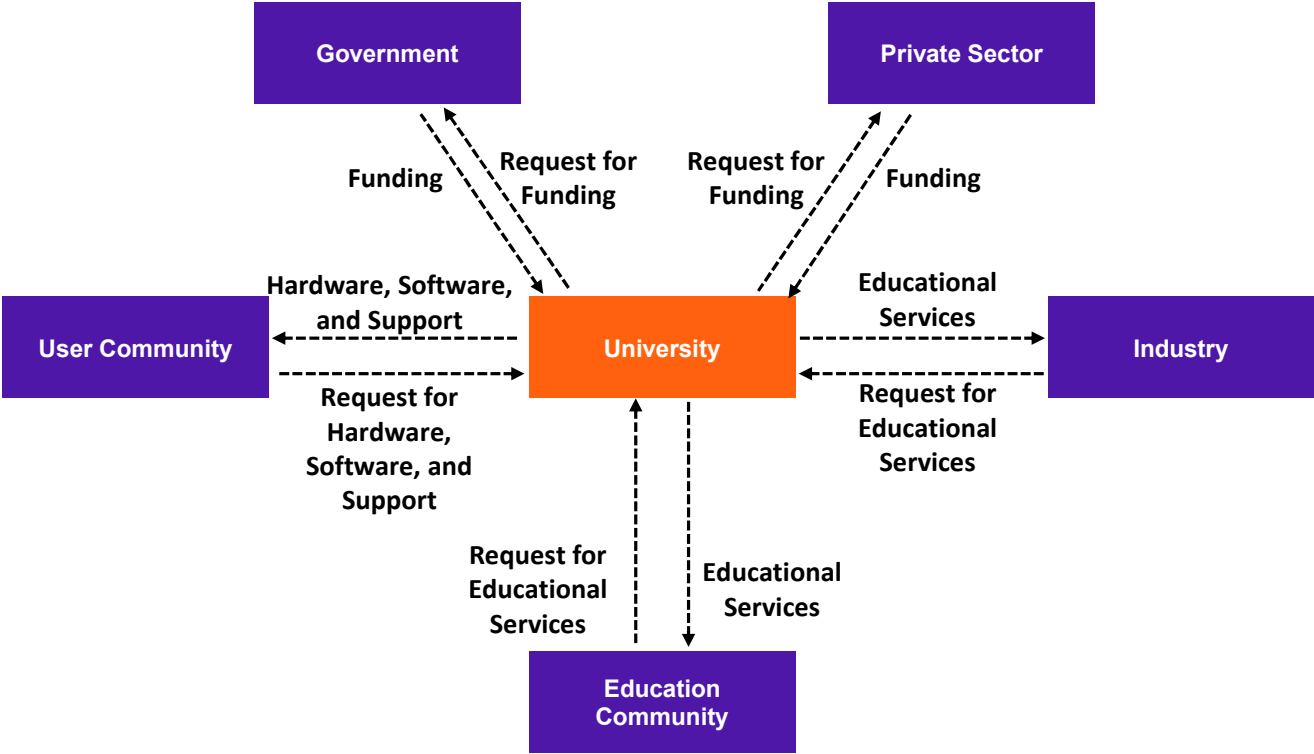
Facilitated Workshops

Facilitated workshops: Organized working sessions held by project managers to determine what a project's requirements are and to get all stakeholders together to agree on the project's outcomes.



Context Diagrams

Business Context Diagram Sample



Prototypes

Prototype* A method of obtaining early feedback on requirements by providing a working model of the expected product before actually building it.



Storyboarding

Storyboarding* A prototyping method that can use visuals or images to illustrate a process or represent a project outcome.



Requirements Documentation

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

Requirements Management Plan

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

- Components include:
 - How requirements activities will be planned, tracked, and reported
 - Configuration management activities such as how version control of project documents and changes to the product will be initiated, how impacts will be analyzed, how they will be traced, tracked, and reported, and what authorization level is required to approve these changes
 - Requirements prioritization process, which defines how project requirements will be analyzed and prioritized
 - Product metrics that will be used and the rationale for using them
 - Traceability structure stating which requirement attributes will be captured on the traceability matrix



Requirements Traceability Matrix

REQUIREMENTS TRACEABILITY MATRIX						
Project Name:	234 West Adams					
Project Manager:	John Wilson					
Project Description:	New house build for Andrews family					
ID	Requirements Description	Business Needs, Opportunities, Goals, Objectives	Project Objectives	WBS Deliverables	Inspection	Additional Comments
001	1-car garage	Standard single family house spec	Quality	Garage	Yes	
002	3 bedrooms	Standard single family house spec	Quality	Living space	Yes	
003	1.5 bathrooms	Standard single family house spec	Quality	Living space	Yes	
004	Landscaping	Standard single family house spec	Quality	Landscaping		
005	Driveway	Standard single family house spec	Quality	Driveway		
006	Pass all inspections the first time	Quality	Quality	Inspection		
007	Donated materials	Financial	Cost	Materials		
008	Volunteer labor	Financial-reduce cost to build	Cost	Labor		
009	Fundraising from participating organizations	Financial	Cost	Financial		
010	Mortgage of \$75,000 at 3% interest	Financial	Cost	Financial		
011	PMP-certified project manager on each project	Project success	Quality	Quality		
012	Licensed plumber and electrician on each project	Pass inspection	Quality	Plumbing and Electric work		
013	Building inspector provides ongoing inspections	Pass inspection	Quality	Quality		
014						
015						
016						

Guidelines for Collecting Project Requirements

- Review the scope management plan.
- Review the requirements management plan.
- Review the stakeholder engagement plan.
- Review the project charter.
- Review the stakeholder register.
- Use tools and techniques such as interviews, focus groups, facilitated workshops, group creativity techniques, and so on.
- Document the requirements and the requirements traceability matrix.

Project Scope Statement

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

Project Scope Statement

Project Name: _____ Date: _____

Project Manager: _____

Prepared By

Document Owner(s)	Project/Organization Role
<Name>	Project Manager


Version History

Version	Date	Author	Change Description
1.0	<Today's Date>	<Name>	Created document

Project Description:

A building project conducted by *My Organization* that will construct a single-family home for the Andrews family. The building site is located at 234 West Adams Street. The project manager will provide consistent project status reports to senior management as well as the project sponsor.

Acceptance Criteria:

 These definitions are taken from the Glossary of Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* – Sixth Edition, Project Management Institute Inc., 2017.

Scope Tools and Techniques

- Expert judgment
- Alternatives analysis
- Multi-criteria decision analysis
- Facilitation
- Product analysis

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.

- Product breakdown
- Systems analysis
- Requirements analysis
- Systems engineering
- Value engineering
- Value analysis

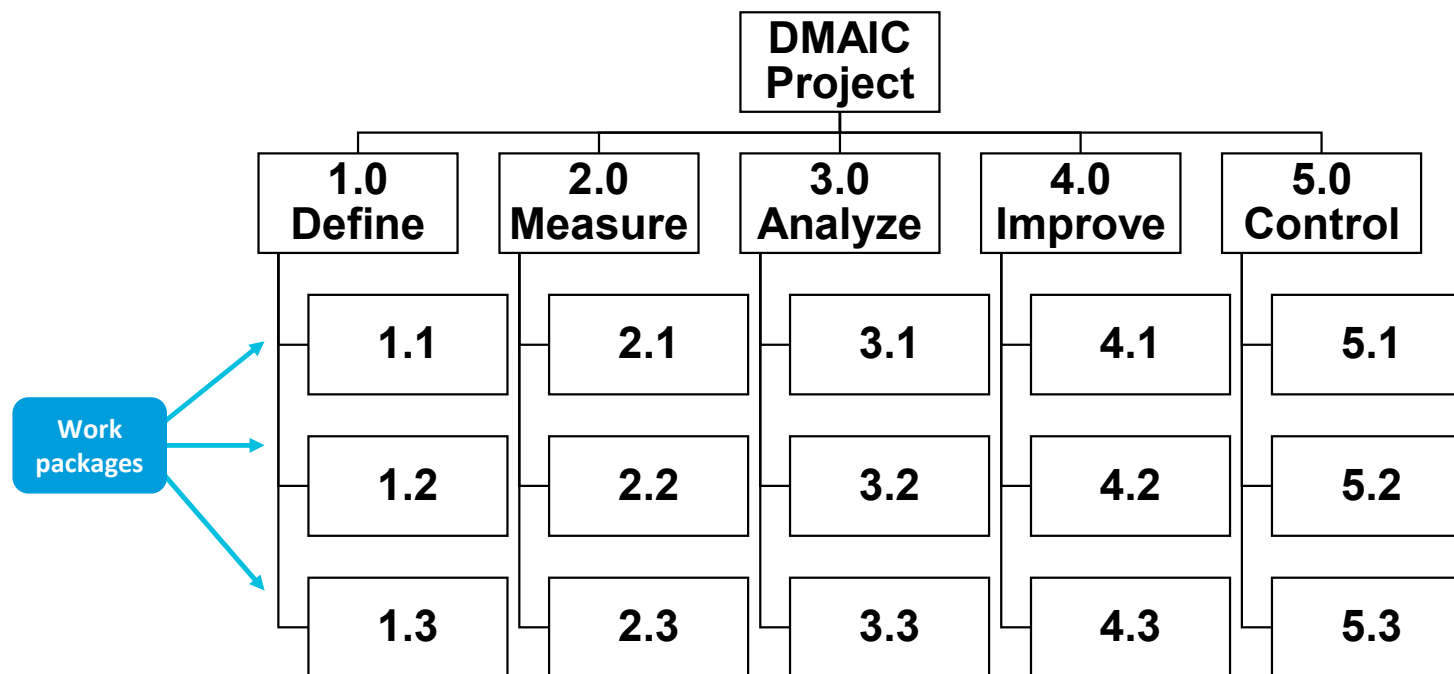


Guidelines to Develop a Project Scope Statement

- Review the scope management plan for the activities for developing, monitoring, and controlling the project scope.
- Review the project charter for the high-level project description and product characteristic and project approval requirements.
- Review the requirements documentation.
- Review the OPAs.
- Use tools and techniques such as expert judgment, product analysis, alternatives generation, and facilitated workshops to define the project scope.
- Document the project scope statement and update any project documents, as needed.

WBS

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

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:

- Code of account identifier
- Description of work
- Assumptions and constraints
- Responsible organization
- Schedule milestones
- Associated schedule activities
- Resources required to complete the work
- Cost estimations
- Quality requirements
- Acceptance criteria
- Technical references
- Agreement information



Decomposition

Decomposition* A technique used for dividing and subdividing the project scope and project deliverables into smaller, more manageable parts.

- 1.0 Value Management System Project
 - 1.1 Needs Assessment
 - 1.1.1 Current System Audit
 - 1.1.1.1 Components Identification
 - 1.1.1.2 Components Analysis
 - 1.1.2 Requirements Determination
 - 1.1.2.1 Gap Assessment
 - 1.1.2.2 Requirements Changes Identification
 - 1.1.3 Alternatives Development
 - 1.1.3.1 Alternatives Identification
 - 1.1.3.2 Alternatives Analysis
 - 1.1.4 Systems Requirements Development
 - 1.2 Standards Development
 - 1.3 Systems Engineering
 - 1.4 Project Management

A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition,
Project Management Institute, Inc., 2017, Page 158.



Control Accounts

Control account* A management control point where scope, budget, actual cost, and schedule are integrated and compared to earned value for performance measurement.

- Control accounts are associated with different work packages and verified against the earned value to check performance.
- Work packages are assigned a control account and work will be managed within that account throughout the project.
- Control accounts can contain more than one work package, but each work package is assigned to only one control account.



Planning Packages

Planning package* A WBS component below the control account with known work content but without detailed schedule activities.



Code of Accounts

Code of accounts* A numbering system used to uniquely identify each component of the WBS.



Scope Baseline

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



Guidelines to Create a WBS

- Review the scope management plan
- Review the project scope statement
- Review the requirements documentation
- Review the EEFs
- Review OPAs
- Use tools and techniques, such as decomposition
- Use expert judgment
- Include notes on work products that might be delivered incrementally
- Document the scope baseline

Product and Iteration Backlogs

- A **product backlog** is essentially a list of the expected work to deliver the product.
- A project's product backlog changes throughout the project.
- Grooming and refining the product backlog is an ongoing exercise, typically scheduled in weekly or monthly intervals.
- **Product backlog items (PBI)** drop off when work is completed.
 - PBIs are edited and clarified as more becomes known or as product requirements change.
 - PBIs are continually added as necessary when more work must be done.
- The **iteration backlog** includes items from the product backlog that can conceivably be completed within the time period based on the team's capacity.
- Teams must estimate the effort size of the work and understand the priorities of the business.

User Stories

- Projects deliver value.
- User stories help teams focus on that value provided to the user.
- User stories frame who is to benefit from the work of the team.
- Framing the user's desire as a story instead of a detailed requirement or specification enables the team to focus on the user and what they value.

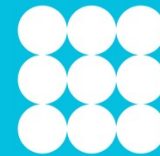
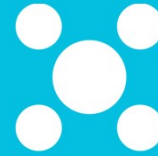
Tools and Techniques for Verifying the Scope

Tool and Technique	Description
Definition of Done*	A team's checklist of all the criteria required to be met so that a deliverable can be considered ready for customer use.
Definition of Ready*	A team's checklist for a user-centric requirement that has all the information the team needs to be able to begin working on it.
Acceptance Criteria*	A set of conditions that is required to be met before deliverables are accepted.
Validate Scope*	The process of formalizing acceptance of the completed project deliverables.
Iteration Reviews	At or near the conclusion of a timeboxed iteration, the project team shares and demonstrates all the work produced during the iteration with the business and other stakeholders.
Variance Analysis*	A technique for determining the cause and degree of difference between the baseline and actual performance.
Trend Analysis*	An analytical technique that uses mathematical models to forecast future outcomes based on historical results.



ACTIVITY: PLANNING AND MANAGING SCOPE

TOPIC C: PLAN AND MANAGE BUDGET AND RESOURCES



Enablers

- Estimate budgetary needs. (ECO 2.5.1)
- Anticipate future budget challenges. (ECO 2.5.2)
- Monitor budget variations and work with governance process. (ECO 2.5.3)
- Plan and manage resources. (ECO 2.5.4)

Deliverables and Tools

Deliverables	Tools
Cost baseline	Estimating techniques: Three Point, Analogous, Parametric, T-Shirt sizing, Planning poker
Management reserve	Review organization data
Resource management plan	Meetings
Change requests	Leverage PMIS
Cost forecasts	Understand change control
Risk analysis	Use velocity data and analysis
	Throughput analysis
	Cost Variance, EVM, EAC
	Features accepted vs feature remaining

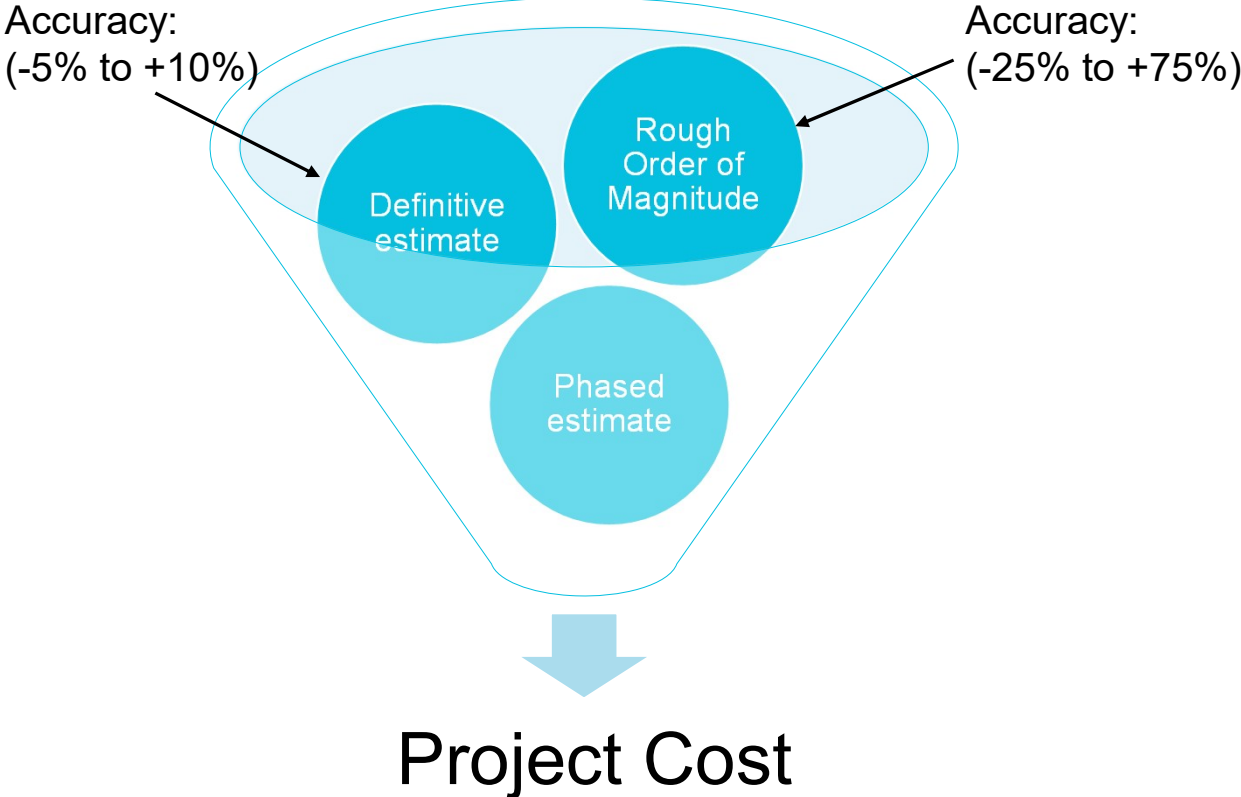
Cost Estimates

- 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
- Logical estimates provide basis for making sound decisions and they establish baselines.

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.

Common Estimate Types



Project Governance

- As applied to cost estimates, it is managing project phases.
- A different type of cost estimate and level of accuracy may be required for different phases of the project life cycle.
- A cost estimating method might be chosen due to:
 - Software availability
 - Team member experience
 - Project life cycle phase
 - Time constraints
 - Project definition
 - Personal preference

Lessons-Learned Register

- Lessons learned in early project work can be applied to later project work.
- Experience from previous projects is an important component in budgeting.
- Lessons-learned registers contain valuable cost-estimating information—both successes and shortcomings.

Guidelines to Estimate Costs

- Gather cost figures that go into the cost estimates for individual work packages.
- Check with the resource supplier to make sure no incorrect assumptions have been made.
- Gather any relevant input information that may help you prepare the estimates.
- Determine which estimating technique to use.
- Look for alternative costing options.
- Determine the units of measure that will be used.
- Consider possible risks that may impact cost.
- Ensure that all cost estimates are assigned to the appropriate account.
- Make sure estimates include costs for resources, level of estimate, and a list of assumptions.

ACTIVITY: ESTIMATING PROJECT COSTS

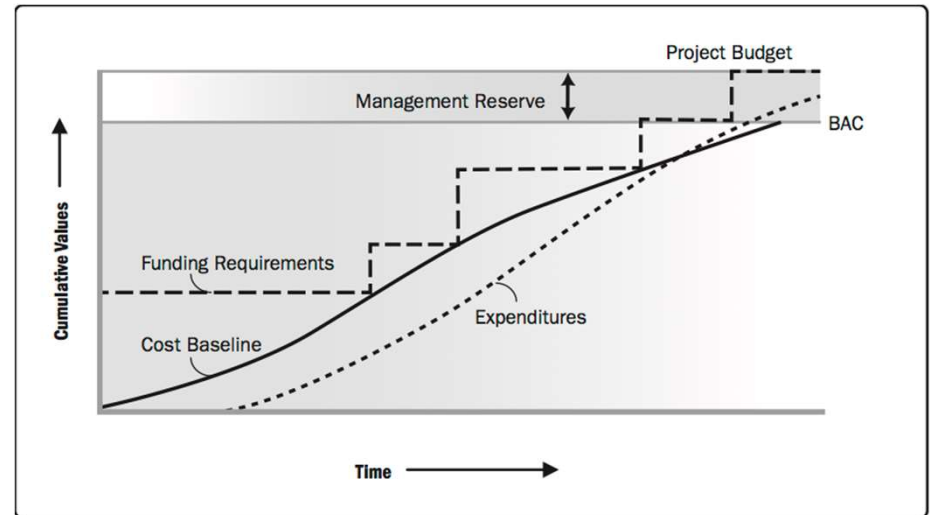
Budget Estimates

- Estimating the project budget consists of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.
- This budget contains all the funding needed to complete the project as defined in the scope baseline and the project schedule.
- The project cost performance is then measured against this cost baseline.

Cost Baseline

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.

- Time-phased budget
- Monitors and measures cost performance
- Includes a budget contingency
- Varies from project to project



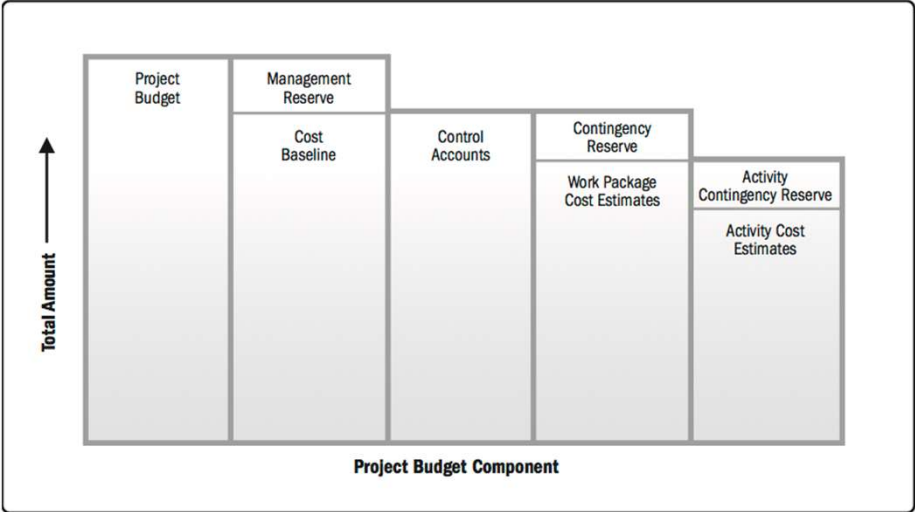
A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 255.



Guidelines for Estimating the Cost Baseline

- Gather the inputs you will need to establish the baseline, such as the WBS, the project schedule, the cost estimates, and the risk management plan.
- Use the project schedule to determine when activities will take place.
- Use one of the methods for assigning costs to allocate funds for each activity or work package for the time period in which it will take place.
- Consider adding a contingency reserve to accommodate the risk of incurring extra expenses.
- Avoid adding contingency reserves for small one-time miniscule amounts.
- Total the costs for each time period.
- Plot the costs for each period on a chart to create an S-curve of the baseline.
- Publish and distribute the cost baseline to the appropriate project stakeholders.

Project Budgeting Components



A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 255.

Budget Challenges

- Ideally, budget is set during project planning and does not change.
- Projects do not exist in a perfect world and the following can pose a challenge to the project manager:
 - New or changed project requirements.
 - New risks, or changes to the probabilities or impacts of existing risks.
 - Changes to cost estimates resulting from economic factors, procurement contract modifications, resource costs, etc.
- When any of these things occur, one or more of the following must change:
 - The project budget.
 - The project cost.
 - The project schedule.
 - The scope.
- If the budget remains fixed and additional funds are not available, then the project must change.

Funding Limit Reconciliation

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 between the funding limits and the planned expenditures.

- Most budgets assume steady incoming and outgoing flows.
- Large, sporadic expenditures are usually incompatible with organizational operations.
- Funding limits help regulate the outgoing capital flow to protect against overspending.



Guidelines to Anticipate Future Budget Challenges

- Keep the stakeholder register current and be aware of changes to project requirements if new stakeholders are added to the project.
- Monitor risks frequently to look for new risks and changes to existing ones.
- Monitor the performance of suppliers and vendors.
- Monitor all changes to the project and follow the Change Management System to try to keep them within budget.

Guidelines to Determine a Budget

- Review the cost management plan.
- Review the human resource management plan.
- Review the scope baseline for project scope statement, WBS, and WBS dictionary.
- Check the project schedule for type, quantity, and duration of resources.
- Review the risk register to consider any risks that may impact cost estimation.
- Review the EEFs.
- Review the OPAs.
- Use appropriate tools and techniques.
- Document the project budget, creating a cost baseline.
- Understand project funding requirements or cash flow to enable the project.
- Update project documents, as needed.

ACTIVITY: ESTIMATING THE COST BASELINE

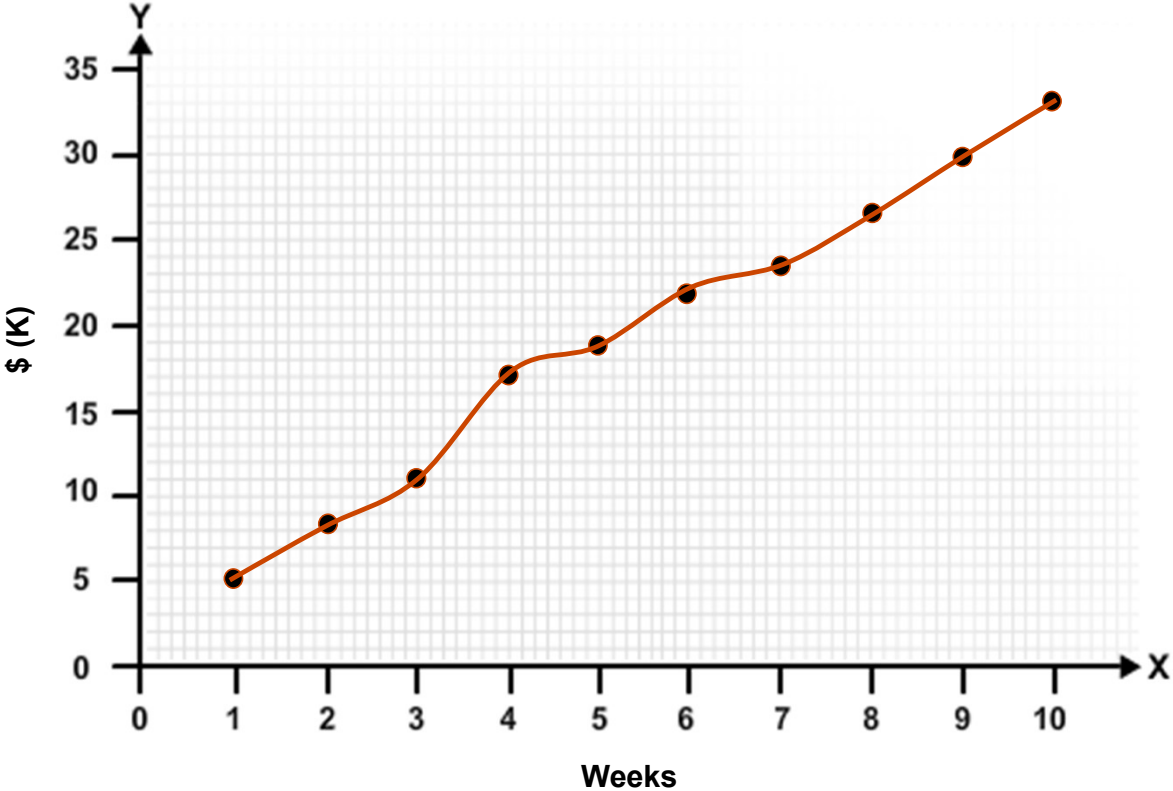
Completed Costs Per Week

1.1.4.2		Week									
Public Meeting	Total Budgeted Cost (K)	1	2	3	4	5	6	7	8	9	10
Conduct Planning Meetings	10	3			2		3		2		
Arrange Location	5	2	3								
Arrange Staffing	7			3	4						
Publicize Event	8					1	1	1	1	4	
Hold Event	3										3
Total	33	5	3	3	6	1	4	1	3	4	3
Cumulative		5	8	11	17	18	22	23	26	30	33

Activity
Solution

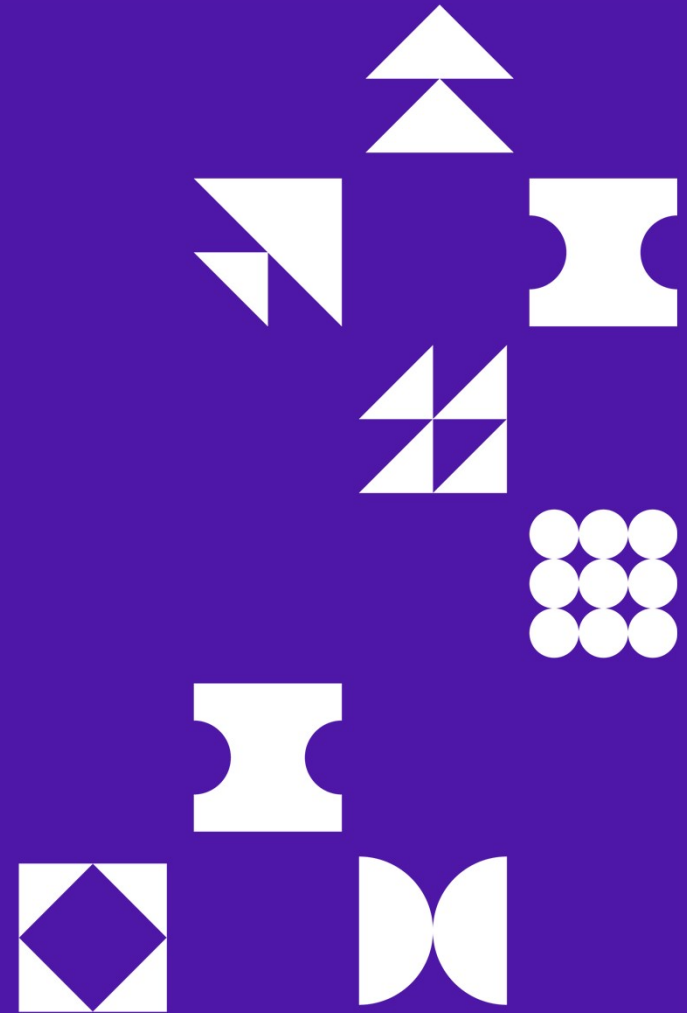
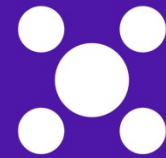


Completed S-Curve Graph



**Activity
Solution**

TOPIC D: PLAN AND MANAGE SCHEDULE



Enablers

- Estimate project tasks (milestones, dependencies, story points). (ECO 2.6.1)
- Utilize benchmarks and historical data. (ECO 2.6.2)
- Prepare schedule based on methodology. (ECO 2.6.3)
- Measure ongoing progress based on methodology. (ECO 2.6.4)
- Modify schedule, as needed, based on methodology. (ECO 2.6.5)
- Coordinate with other projects and other operations. (ECO 2.6.6)

Deliverables and Tools (Slide 1 of 2)

Deliverables	
Activity cost estimates	Release plan
Activity duration estimates	Product Roadmaps
Task estimates	Earned Value
Story estimates	Updated schedule
Feature estimates	Updated release plan
Updated documents	Updated product backlog
Backlog	Network diagram
Velocity data	Planning meetings
Project schedule	Negotiations

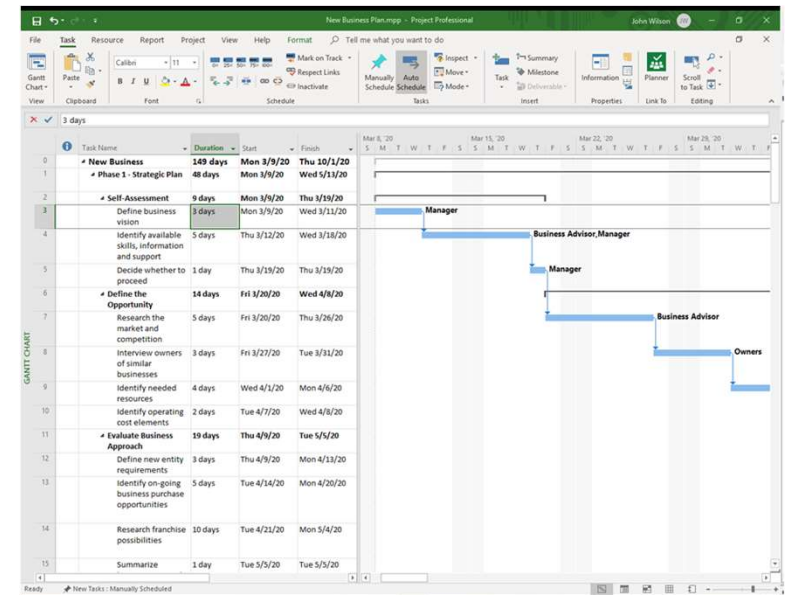
Deliverables and Tools (Slide 2 of 2)

Tools		
Top Down Estimating: Expert, Analogous, Parametric	Process assets	Retrospectives
Bottom Up Estimating: Roll up WBS packages	Backlog management	Review work produced
T-Shirt sizing	Release planning	Backlog reprioritization
Estimating using Fibonacci sequences	Iteration planning	Scaling projects
Story points	Burndown / Burnup charts	Meetings
Relative estimating	Cumulative flow diagrams	Procurement negotiations
Affinity estimates	Throughput analysis	
PMIS	Velocity analysis	

Project Schedule

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

- Includes starting and finishing activities on specific dates and in a certain sequence.
- Specifies planned dates for meeting project milestones.
- Coordinates activities to form a master plan in order to complete the project objectives on time.
- Tracks schedule performance and keeps upper management and project stakeholders informed about the project's status.



Benchmarks and Historical Data

- When scheduling, **benchmarking** is the comparison of a project schedule to a schedule for a similar product or service produced elsewhere.
- Benchmarks can be useful in the initial stage of scheduling to help assess the feasibility of a project.
- **Historical data** can come from other projects completed within an organization for which detailed information is available.
- Historical data provides a good “starting point” for how long something should take prior to detailed analysis.

Schedule Management Plan (Slide 1 of 2)

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.

- Describes how activities will be defined and progressively elaborated.
- Identifies a scheduling method and scheduling tool to be used.
- Determines the format of the schedule.
- Establishes criteria for developing and controlling the project schedule.

Schedule Management Plan (Slide 2 of 2)

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.

Schedule Management Considerations for Agile/Adaptive Environments

- Total project timeline may be developed
- Individual activities scheduled iteratively
- Two main iterative approaches:
 - Iterative scheduling with backlog
 - On-demand scheduling

Iterative Scheduling with a Backlog

- Progressive elaboration (rolling wave) techniques used to schedule activities
- Uses a specific time window, often two weeks
- Requirements defined in user stories
- Stories prioritized
- Selected based on priority and time box
- Remaining stories added to backlog
- Constructed later based on their priority
- Delivers business value early and incrementally
- Allows changes/adaptations during entire project
- Does not work well when there are complex dependency relationships

On-Demand Scheduling

- Does not use traditional schedules
- Team members “pull” work from a queue when available
- Based on Kanban and Lean methodologies
- Provides incremental business value
- Levels out work of team members
- Works best when activities can be divided into equal amounts
- Does not work well when there are complex dependency relationships

Guidelines to Develop a Schedule Management Plan

- Review the project management plan for information to develop the schedule.
- Review the project charter for a summary, high-level milestone schedule.
- Review the EEFs.
- Review the OPAs.
- Use tools and techniques such as expert judgment and historical information.
- Use meetings to develop the schedule management plan.
- Document the schedule management plan for the project.

Project Activities

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.

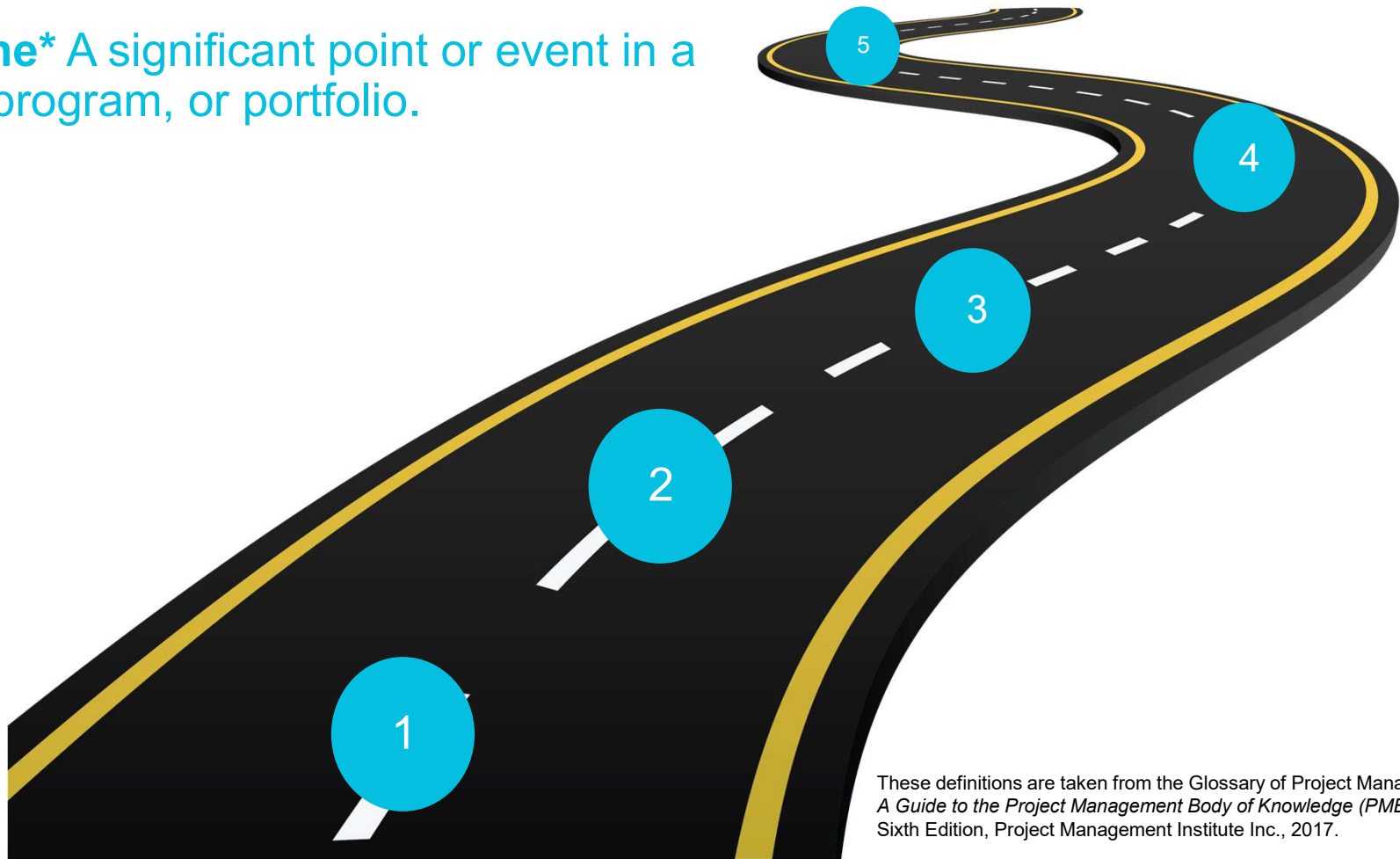


Features

- Used to group related functionality together to deliver business value.
- Activities and efforts, such as documentation, bug fixes, testing, and quality/defect repairs.
- Delivers the capability that can be estimated, tracked, and managed as a set.
- Scheduling aligned to features ensures associated work is coordinated.
- Estimating features offers a view of when blocks of functionality can be released to the business and end users.
- Progress can be measured based on the features that have been accepted compared to features remaining.

Milestones

Milestone* A significant point or event in a project, program, or portfolio.



These definitions are taken from the Glossary of Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* – Sixth Edition, Project Management Institute Inc., 2017.

Guidelines for Estimating Project Activities

- Review the schedule management plan.
- Review the scope baseline for the WBS, deliverables, assumptions, and constraints.
- Review the EEFs.
- Review the OPAs.
- Analyze and decompose each work package of the WBS into activities that will be required to produce the deliverable.
- Consult SMEs about unfamiliar material.
- Evaluate all constraints and assumptions for their possible impact on activity definition.
- Once you have decomposed each work package into activities, evaluate your activity list.

ACTIVITY: CREATING AN ACTIVITY LIST AND A MILESTONE LIST

Activity Dependency

- 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.
- Example: Designing room layouts.
 - Architect needs to assess the functionality of his room design.
 - Assessment cannot start until workers finish framing the walls, windows, and roof.
 - After structure is in place, then architect can reassess design plans to determine if modifications are necessary.

Types of Activity Dependencies

Mandatory*

- A relationship that is contractually required or inherent in the nature of the work.

Discretionary*

- A relationship that is established based on knowledge of best practices within a particular application area or an aspect of the project where a specific sequence is desired.

External*

- A relationship between project activities and non-project activities.

Internal

- Contingent on inputs within the project team's control.



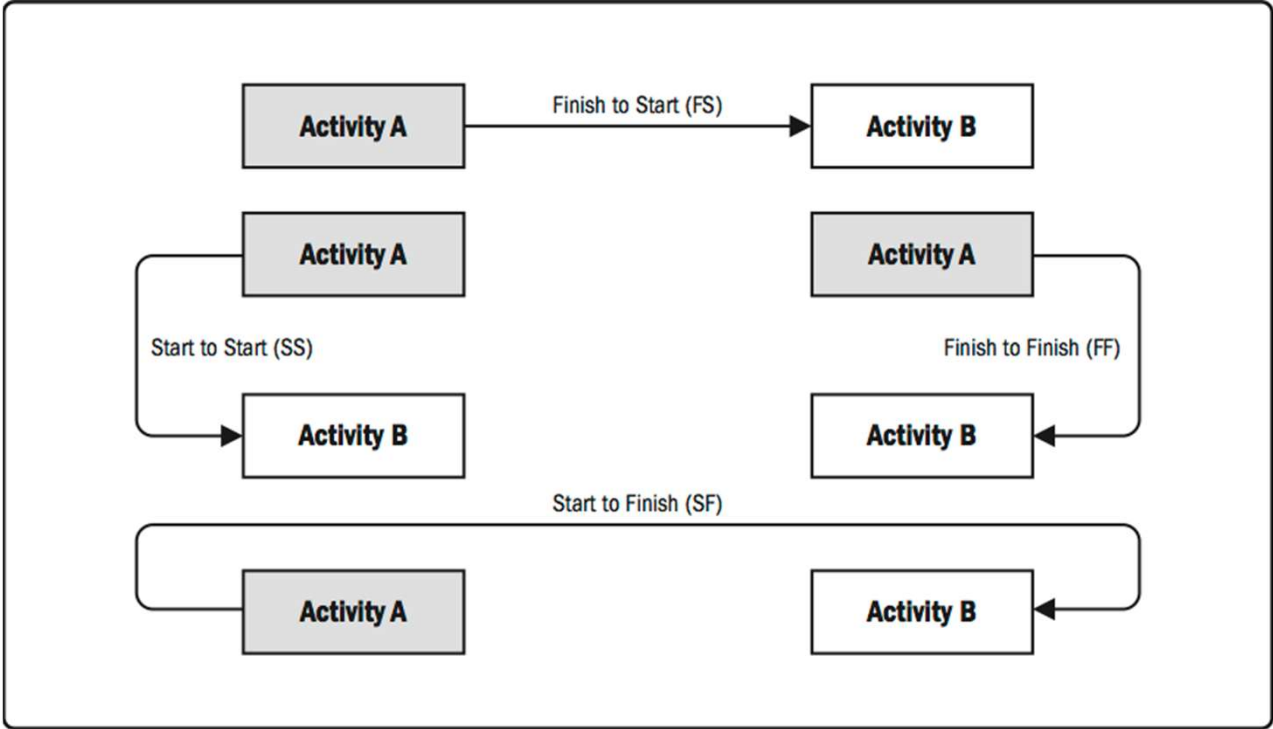
Precedence Relationships

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

- The logical relationship between activities that describes the sequence in which the activities should be carried out.
- Each activity has start and finish dates.
- Precedence relationships are always assigned to activities based on the dependencies of each activity:
 - Predecessor activity drives the relationship, and most often, occurs first.
 - Successor activity is driven by the relationship.



Types of Precedence Relationships



A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 190.

Guidelines to Sequence Project Activities

- Review the schedule management plan for information on the scheduling method and tool, and information on how activities may be sequenced.
- Review the activity list for all project schedule activities.
- Review the activity attributes for each activity.
- Review the milestone list for the dates for specific schedule milestone events.
- Review the project scope statement.
- Review the EEFs.
- Review the OPAs.
- Use tools and techniques such as PDM, dependency determination, and leads and lags to develop the project schedule network diagram.
- Document the project schedule network diagram and update any project documents, as needed.

Activity Duration Estimates

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.



Guidelines to Estimate Activity Durations

- Involve the work package owners or others who are very familiar with the work of the activity.
- Consult lessons learned and historical information.
- Review the schedule management plan.
- Determine how you want to quantify the work that needs to be done.
- Consider resource requirements and capabilities.
- Review the resource requirements for each activity.
- Check the resource calendars for when resources are available.
- Consider interactions with other projects or operations.
- Review the project scope statement for assumptions and constraints.
- Review the risk register to consider any risks that may affect resource estimation.
- Review the resource breakdown structure of resources listed by category and type.
- Use tools and techniques.
- Document the activity duration estimates.

Schedule Presentation Formats

Gantt Chart

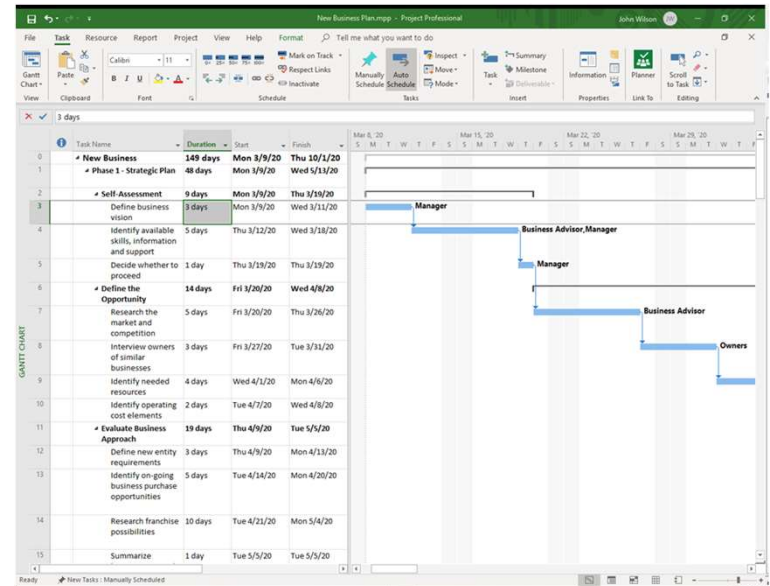
Milestone Chart

Project Schedule
Network
Diagram with
Dates

Gantt Chart

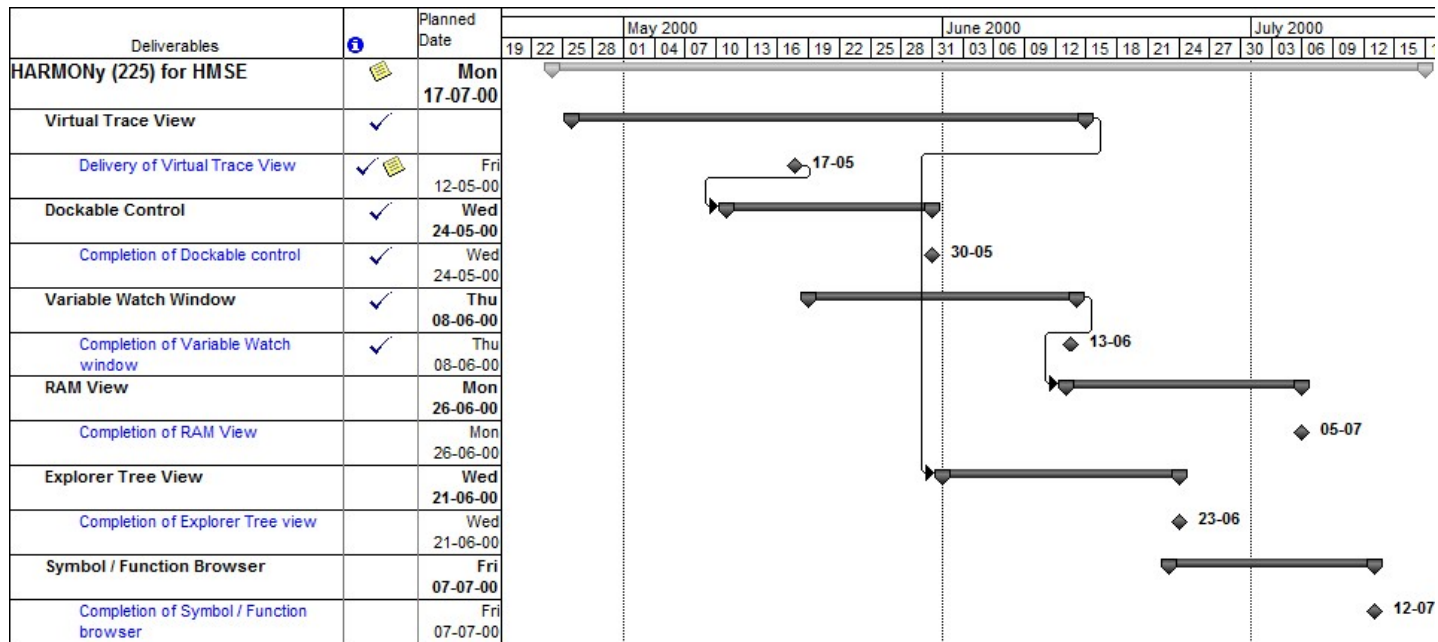
Gantt chart* A bar chart of schedule information where activities are listed on the vertical axis, dates are shown on the horizontal axis, and the activity durations are shown as horizontal bars placed according to start and finish dates.

- Shows start and end dates, duration, and order.
- Shows precedence relationships.
- Shows percentage completion and actual progress.
- Used to present project status to the project team and management.



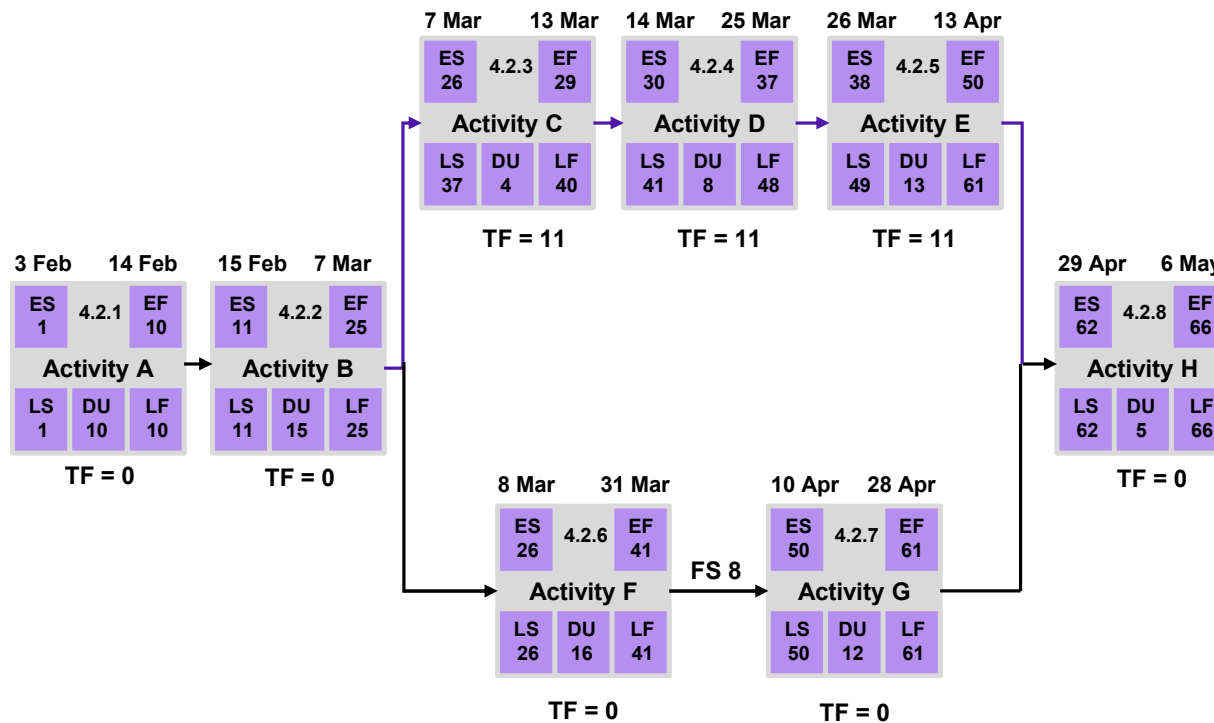
Milestone Chart

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



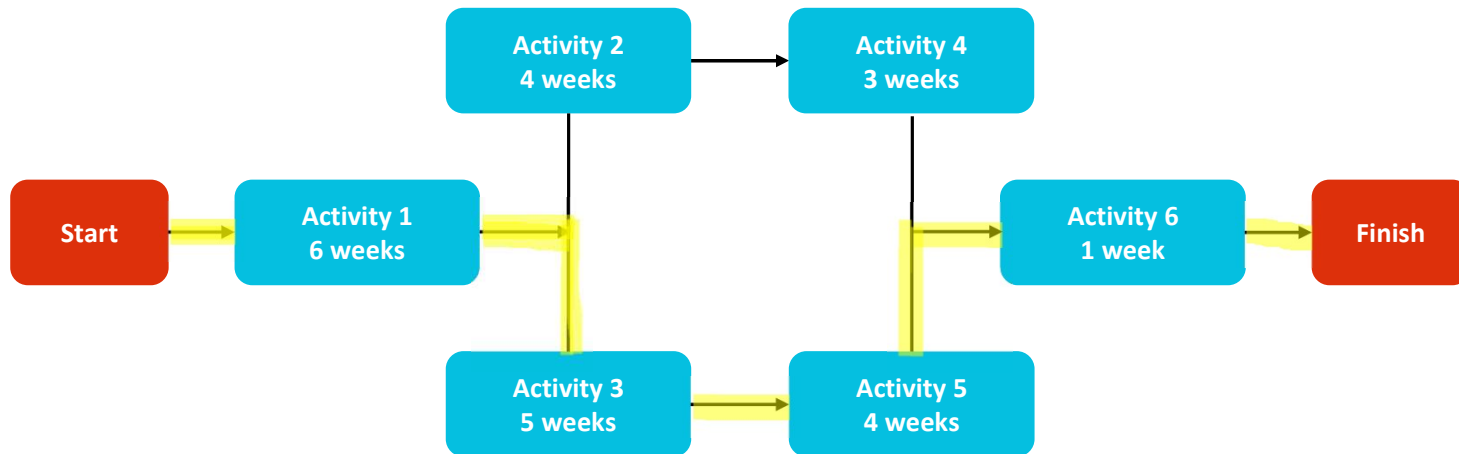
Project Schedule Network Diagram with Dates (Refer Page 211 of PMBOK)

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



Critical Path

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



$$1[6w] + 2[4w] + 4[3w] + 6[1w] = 14 \text{ weeks}$$

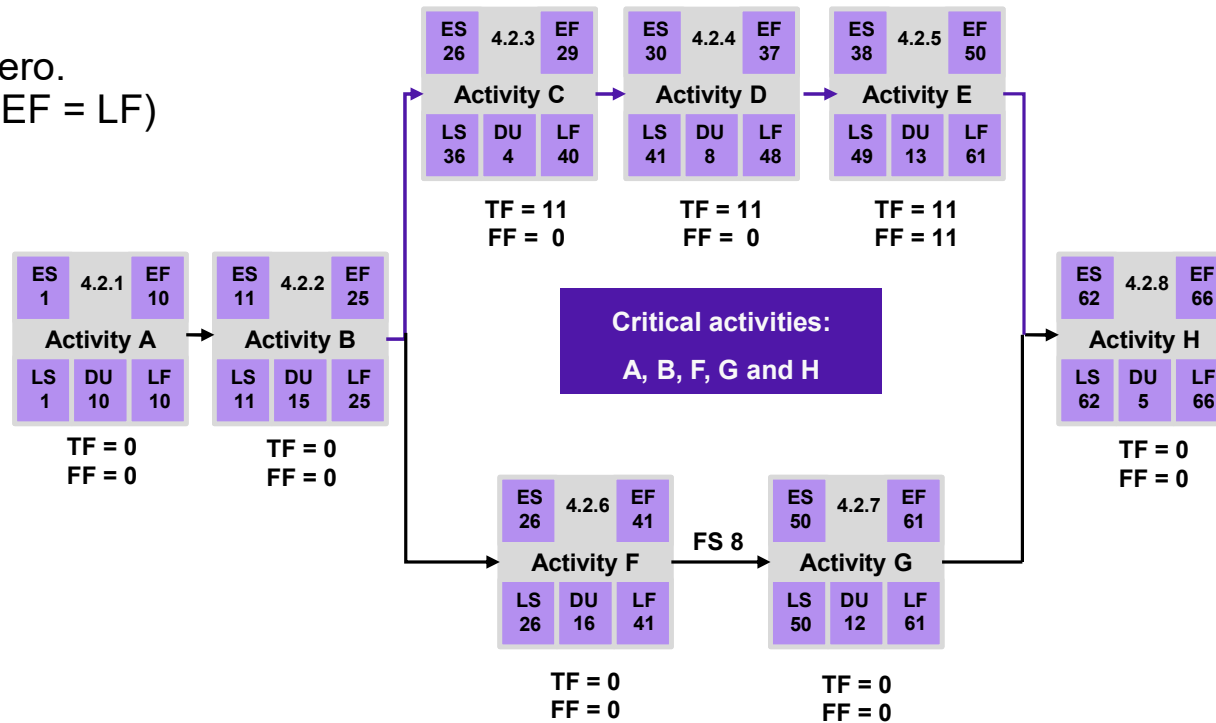
$$1[6w] + 3[5w] + 5[4w] + 6[1w] = 16 \text{ weeks } \textbf{Critical Path}$$



Critical Path Activities

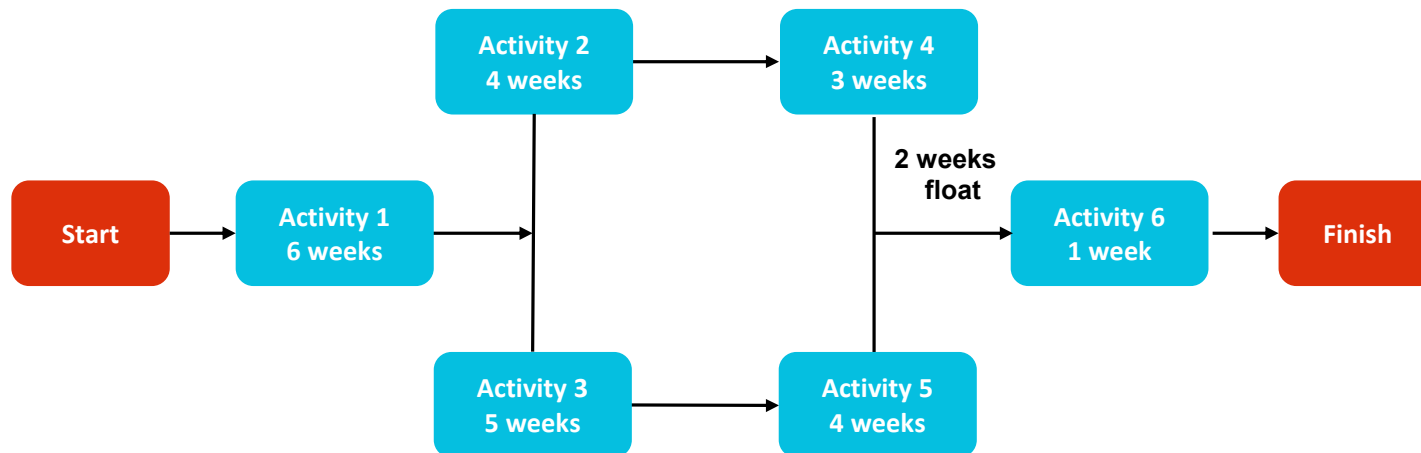
Critical path activity* Any activity on the critical path in a project schedule.

Total float of zero.
(ES = LS and EF = LF)



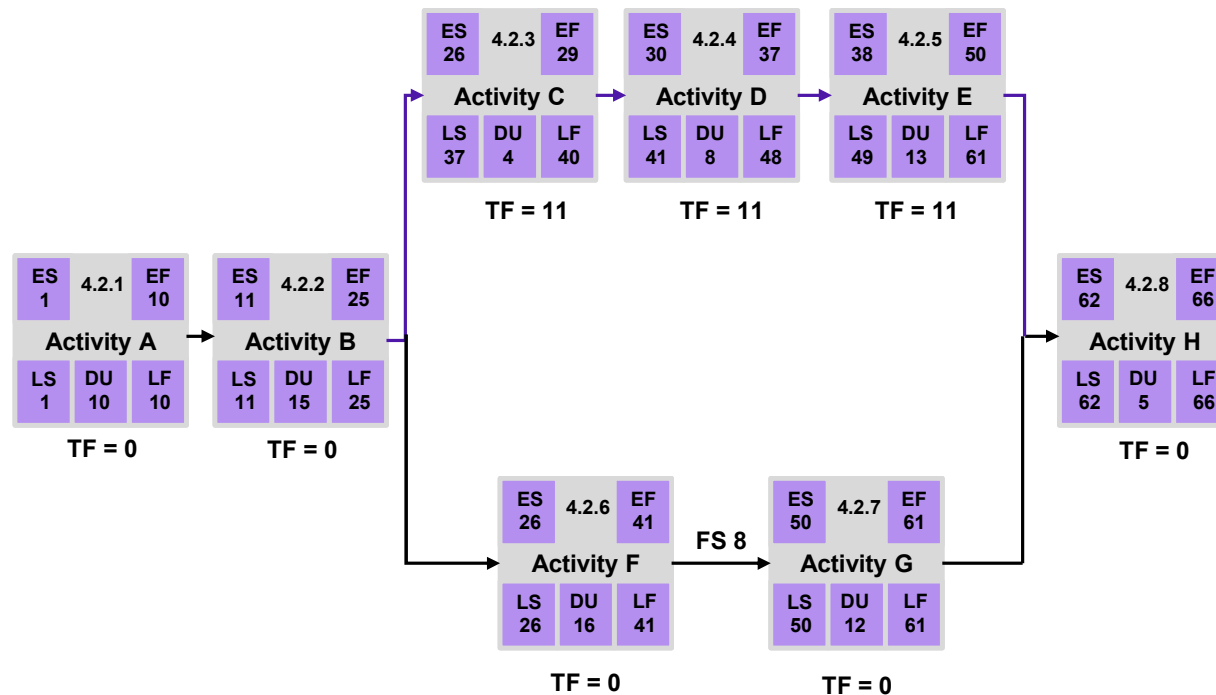
Float

Float: The amount of time an activity can be delayed from its ES without delaying the project finish date or the consecutive activities.



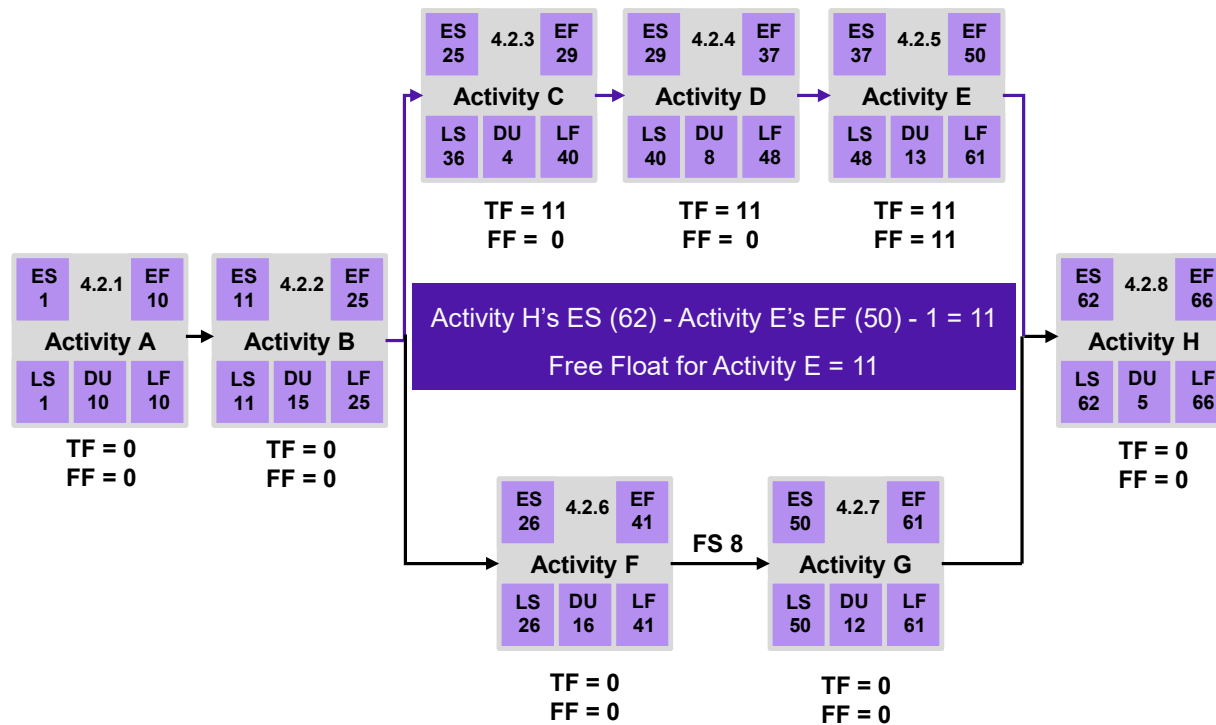
Total Float

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.

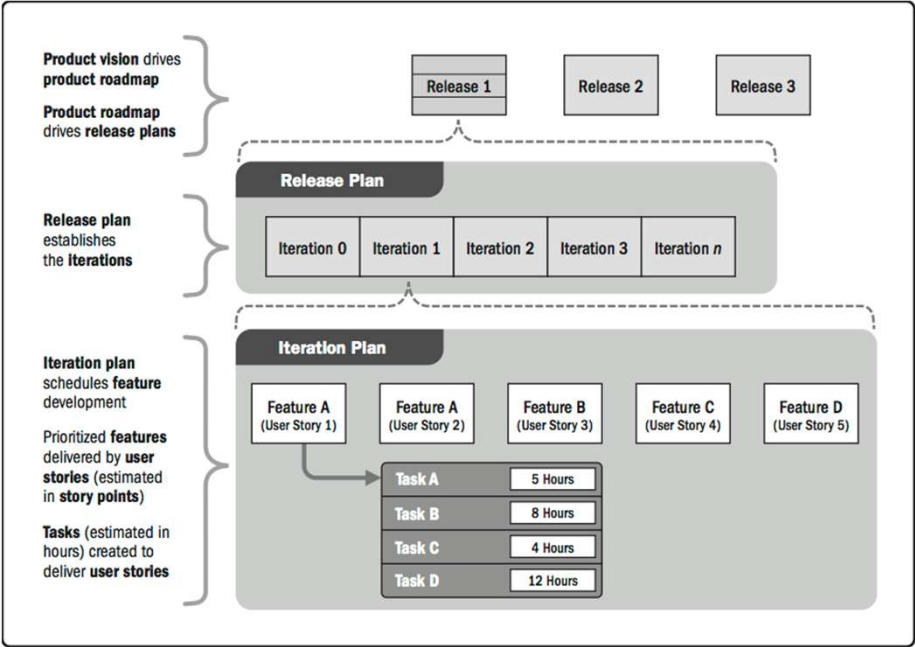


Free Float

Free float* The amount of time that a schedule activity can be delayed without delaying the early start date of any successor or violating a schedule constraint.



Agile Release Planning



A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 216.

Ongoing Progress Based on Methodology

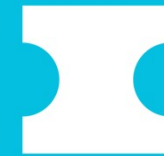
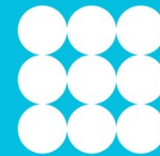
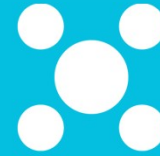
- Measuring the project's progress with respect to the schedule consists of:
 - Monitoring the status of the project to update the project schedule.
 - Managing changes to the schedule baseline.
- In an agile approach, evaluate progress by:
 - Compare the total amount of work delivered and accepted to the estimate of the work to be completed for the current time period.
 - Review completed work in regular Sprint demos.
 - Conduct scheduled reviews to record lessons learned (or retrospectives).
 - Determine the rate at which deliverables are produced, validated, and accepted.

Coordination with Other Products

- If the project is part of a program or a portfolio, the schedule status of the project should be evaluated for any effect it has on the other components of the program or portfolio.
- In some situations, a delay (or acceleration) of a project may not impact other projects.
- However, if the delay or acceleration is caused by activities on the project's critical path and that project is critical to the schedule of other projects, the overall effect can be significant.

ACTIVITY: SEQUENCING ACTIVITIES

TOPIC E: PLAN AND MANAGE QUALITY OF PRODUCTS AND DELIVERABLES



Enablers

- Plan quality standard required for project deliverables. (ECO 2.7.1)
- Recommend options for improvement based on quality gaps. (ECO 2.7.2)
- Continually survey project deliverable quality. (ECO 2.7.3)

Deliverables and Tools

Deliverables	Tools
Quality Management Plan	Cost benefits analysis
Define Quality Metrics	Cost of Quality
Quality Assurance	Benchmarking
Quality Control	Quality audit
	Process analysis
	Measure quality
	Validate deliverables
	Quality measurement tools

Quality

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



Quality Standards and Regulations

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.

De facto regulations: Regulations that are widely accepted and adopted through use.

De jure regulations: Regulations that are mandated by law or have been approved by a recognized body of experts.

ISO 9000 Series: A quality system standard that can be applied to any product, service, or process in the world.



Validated Deliverables

- Products and outputs are measured against the quality standards set by the project.
- When quality standards are neither met nor within acceptable ranges, corrections and controls are put into action.
- Project team performs the validation and deliverables are verified by the customer, which equates to validated deliverables.
- All project deliverables must be validated based on quality standards or acceptance criteria.

Quality Management Plan

Quality Management Plan Andrews Family House Project

INTRODUCTION

The Quality Management Plan for the Andrews Family House project will establish the activities, processes, and procedures for ensuring a quality product upon the conclusion of the project.

QUALITY MANAGEMENT APPROACH

This section describes the approach the organization will use for managing quality through the project's lifecycle.

QUALITY REQUIREMENTS/STANDARDS

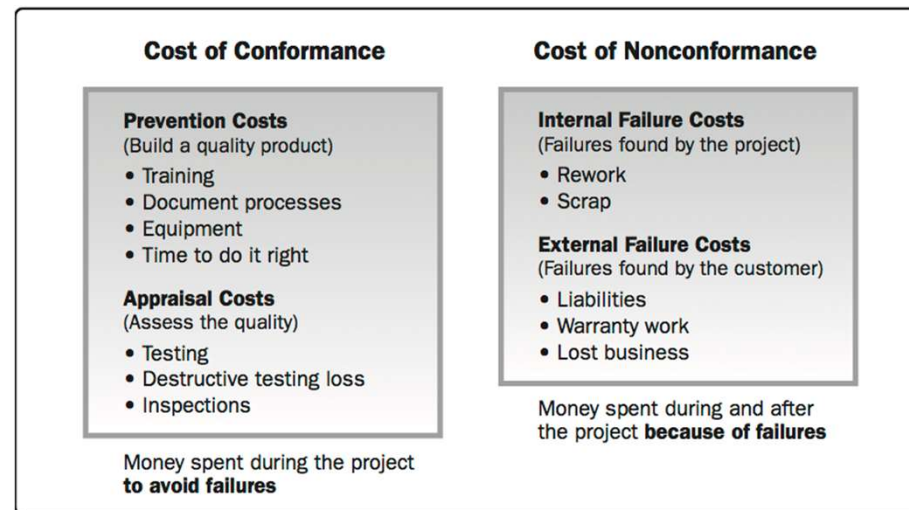
This section should describe how the project team or quality group will identify and document the quality requirements and standards. Additionally, there should be an explanation of how the project will demonstrate compliance with the identified quality standards. The quality standards and requirements should include both the project and processes.

QUALITY ASSURANCE

This section should explain how you will define and document the process for auditing the quality requirements and results from quality control measurements to ensure that quality standards and operational definitions are used. This section should also document the actual quality assurance metrics used for this project.

Cost of Quality

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.



A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 283.



These definitions are taken from the Glossary of Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition*, Project Management Institute Inc., 2017.

Quality Metrics

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 Audits

Quality audit* A structured, independent process to determine if project activities comply with organizational and project policies, processes, and procedures.

- Improves quality performance of a project.
- Can be conducted at scheduled or random intervals.
- Topics include:
 - Quality management policy
 - Collection and use of information
 - Analytical methods
 - Cost of quality
 - Quality process design



Guidelines to Manage Quality

- Ensure that random and/or scheduled quality audits are conducted by qualified auditors
- Use one or more of the quality assurance tools and techniques to determine the causes of quality problems of the project's product, service, systems, or processes
- Identify and implement the appropriate actions to take to increase the effectiveness and efficiency of the project team's work results

Quality Measurement Tools

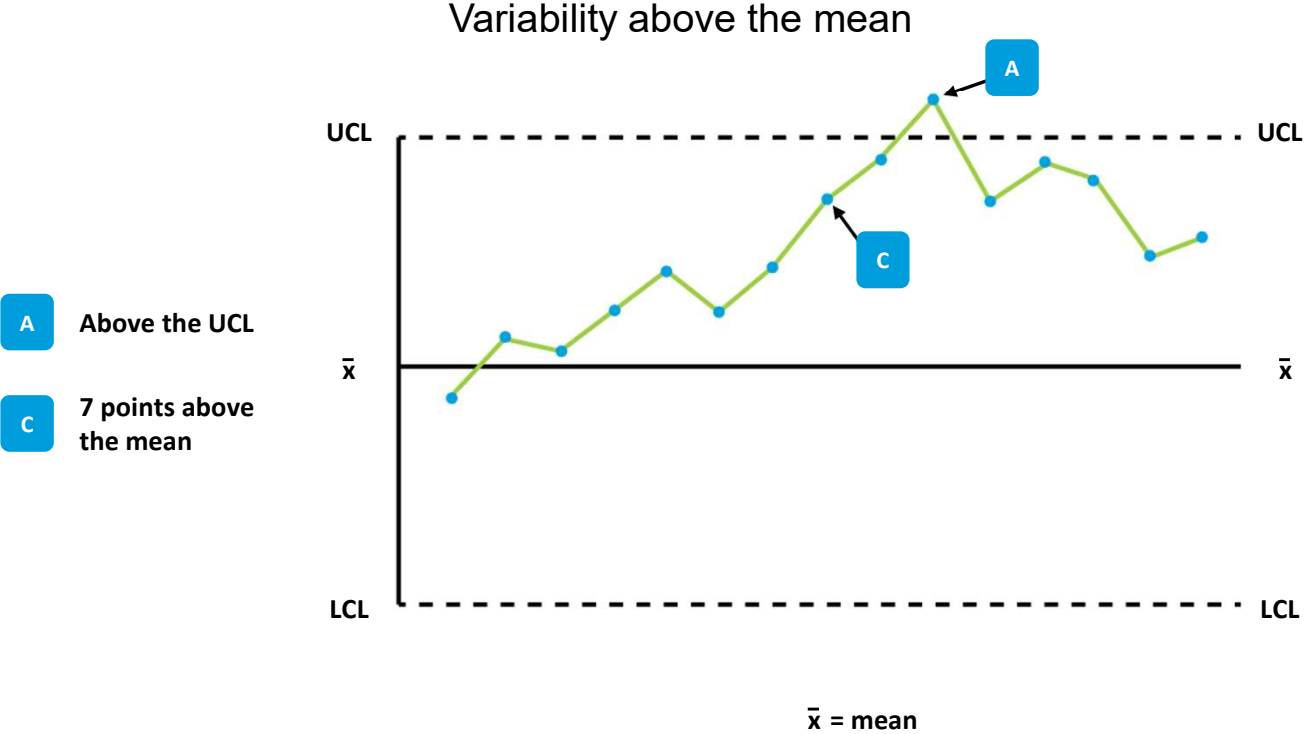
Control
Charts and
Variability

Pareto
Charts

Statistical
Sampling

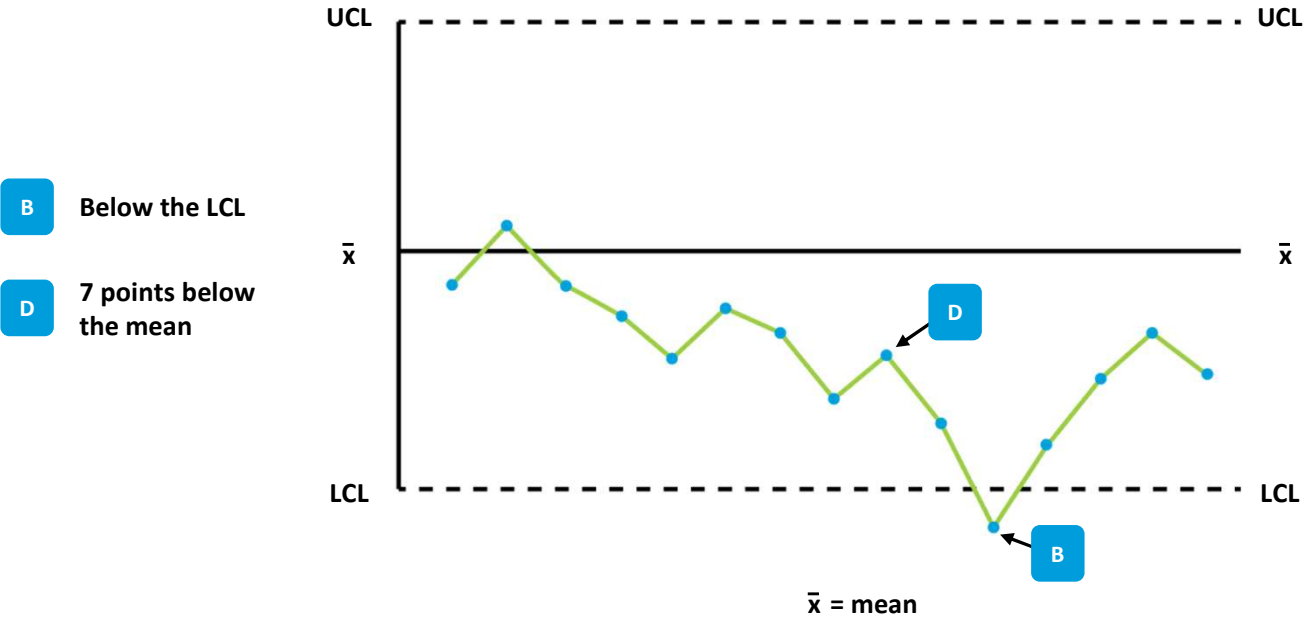
Statistical
Sampling
Process

Control Charts and Variability (Slide 1 of 2)



Control Charts and Variability (Slide 2 of 2)

Variability below the mean

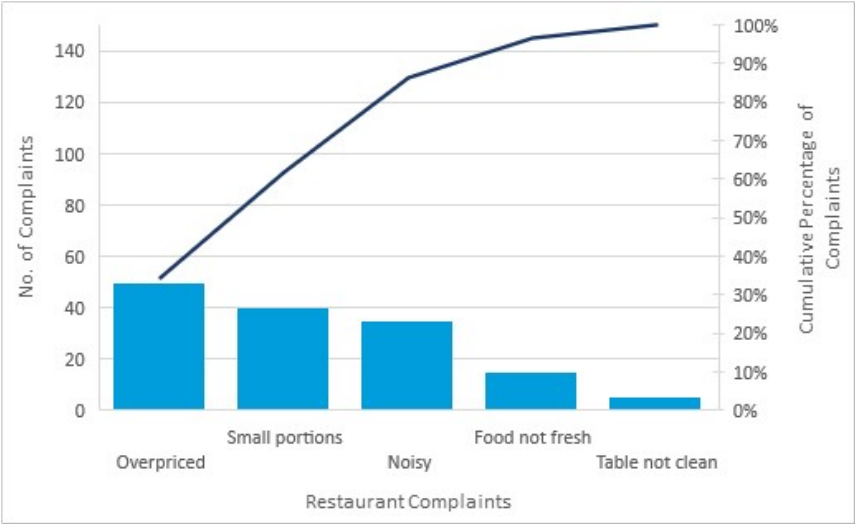


Variability Indications

- Measurements that exceed the range between the upper and lower control limits are considered to be an indication of instability.
- The variability expressed is atypical for the process and may be an indication of a special source of variance.

Pareto Chart

Pareto chart: A histogram that is used to rank causes of problems in a hierarchical format.

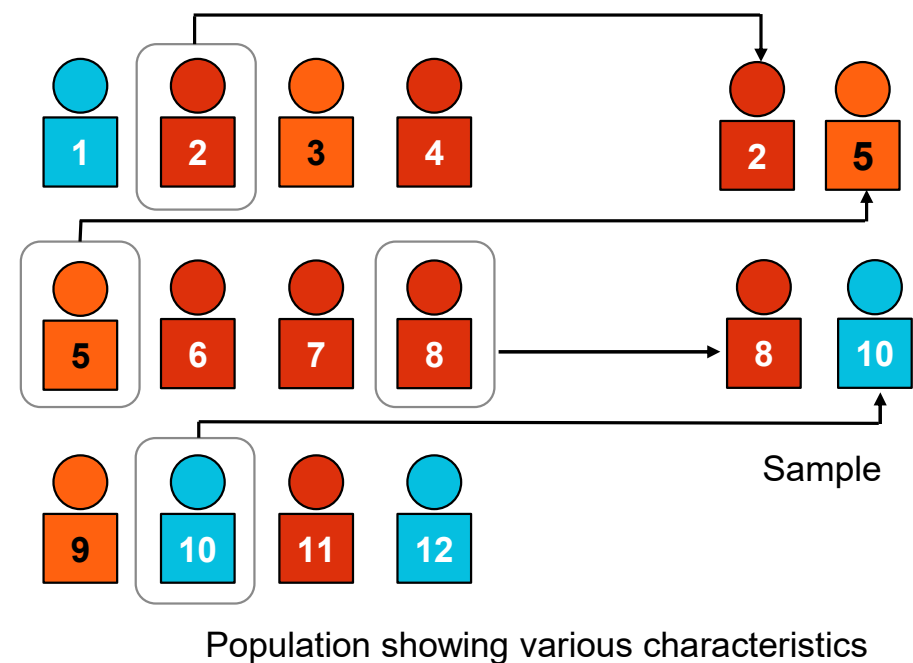


An example of a Pareto chart

Statistical Sampling

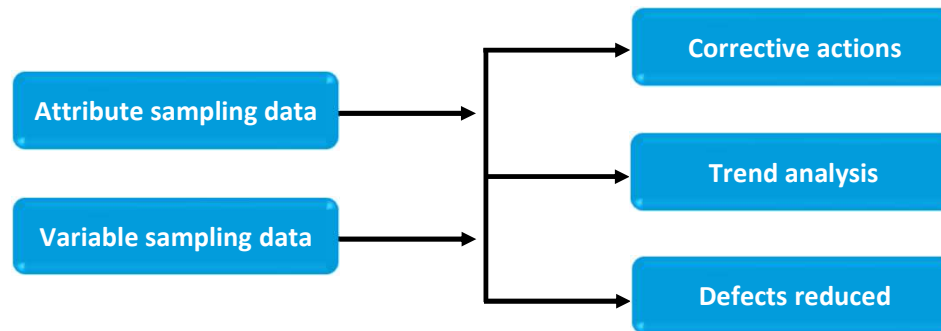
Statistical sampling* is choosing part of a population of interest for inspection.

- Used to determine characteristics of an entire population based on actual measurement of its representative sample.
- Produces a process that does not require inspection of every item.



Statistical Sampling Process

- Involves dividing sampling data into two categories: attribute and variable—each of which is gathered according to sampling plans.
- Helps reduce overall quality costs when used during quality control.



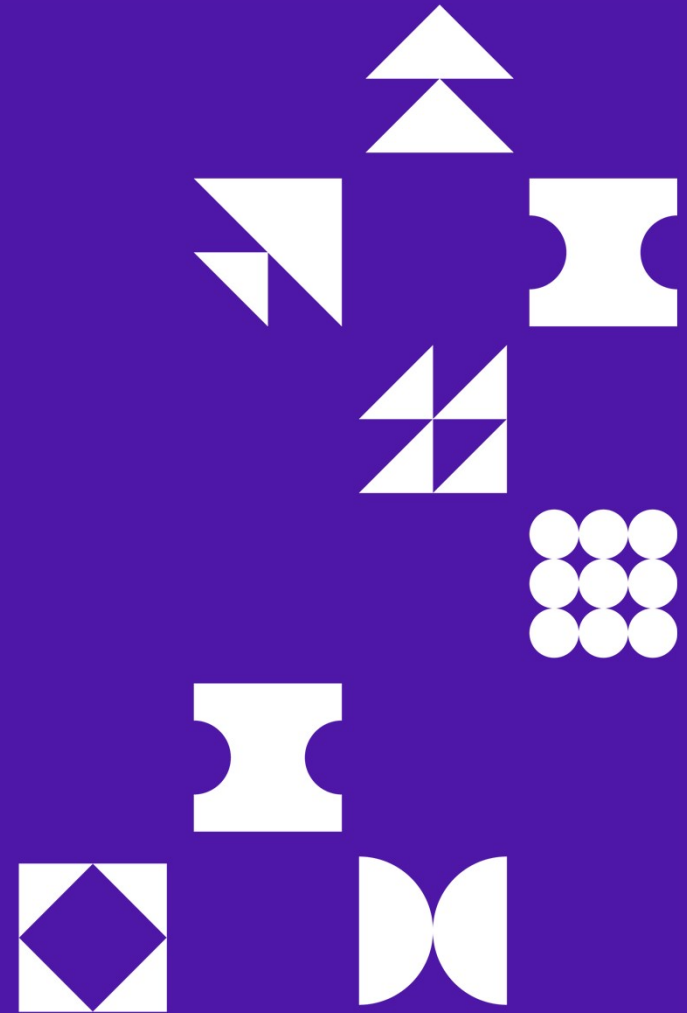
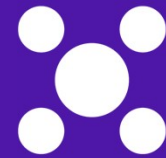
The statistical sampling process

Guidelines to Controlling Project Quality

- Conduct inspections to detect quality errors as project work is ongoing.
- Use Pareto diagrams to focus corrective actions on the problems having the greatest effect on overall quality performance.
- Use control charts to analyze and communicate the variability of a process or project activity over time.
- Identify ways to eliminate causes of unsatisfactory results.
- Use flowcharts to identify redundancies, missed steps, or the source of quality performance problems.
- Initiate process adjustments by implementing corrective or preventive actions necessary to bring the quality of work results to an acceptable level.
- Continue to monitor, measure, and adjust quality throughout the project life cycle.

ACTIVITY: PLANNING AND MANAGING QUALITY

TOPIC F: INTEGRATE PROJECT PLANNING ACTIVITIES



Enablers

- Manage and rectify ground rule violations. (ECO 1.12.3)
- Consolidate the project/phase plans. (ECO 2.9.1)
- Assess plans for dependencies, gaps, and continued business value. (ECO 2.9.2)
- Analyze the data collected. (ECO 2.9.3)
- Collect and analyze data to make informed project decisions. (ECO 2.9.4)
- Determine critical information requirements. (ECO 2.9.5)
- Plan and manage project compliance to business factors.

Deliverables and Tools

Deliverables	Tools
No specific deliverables	No specific tools

Integration Management

- Many plans are built, maintained, and executed throughout a project.
- Project manager and others must assess and coordinate all plans and activities.
- A holistic, integrated view ties plans together, aligns efforts, and highlights how they depend on each other.
- An integrated view of all plans can identify and correct gaps or conflicts.
- A consolidation of the plans encapsulates the overall project plan and its intended business value.

Project Management Plan

Project management plan* The document that describes how the project will be executed, monitored, controlled, and closed.

Project Management Plan	Project Documents	
1. Scope management plan	1. Activity attributes	19. Quality control measurements
2. Requirements management plan	2. Activity list	20. Quality metrics
3. Schedule management plan	3. Assumption log	21. Quality report
4. Cost management plan	4. Basis of estimates	22. Requirements documentation
5. Quality management plan	5. Change log	23. Requirements traceability matrix
6. Resource management plan	6. Cost estimates	24. Resource breakdown structure
7. Communications management plan	7. Cost forecasts	25. Resource calendars
8. Risk management plan	8. Duration estimates	26. Resource requirements
9. Procurement management plan	9. Issue log	27. Risk register
10. Stakeholder engagement plan	10. Lessons learned register	28. Risk report
11. Change management plan	11. Milestone list	29. Schedule data
12. Configuration management plan	12. Physical resource assignments	30. Schedule forecasts
13. Scope baseline	13. Project calendars	31. Stakeholder register
14. Schedule baseline	14. Project communications	32. Team charter
15. Cost baseline	15. Project schedule	33. Test and evaluation documents
16. Performance measurement baseline	16. Project schedule network diagram	
17. Project life cycle description	17. Project scope statement	
18. Development approach	18. Project team assignments	

A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 89.



These definitions are taken from the Glossary of Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition*, Project Management Institute Inc., 2017.

Project Management Plan Components

- Baselines
 - Scope baseline
 - Schedule baseline
 - Cost baseline
 - Performance measurement baseline
- Subsidiary plans
 - Scope management plan
 - Requirements management plan
 - Schedule management plan
 - Cost management plan
 - Quality management plan
 - Resource management plan
 - Communications management plan
 - Risk management plan
 - Procurement management plan
- Stakeholder engagement plan
- Configuration management plan
- Change management plan
- Compliance management plan*
- Life cycle
- Project processes
 - Project management processes
 - Level of implementation
 - Tools and techniques
 - How the selected processes will be used to manage
- Work explanation
- Agile project plan



**Not an official subplan of the project management plan.*

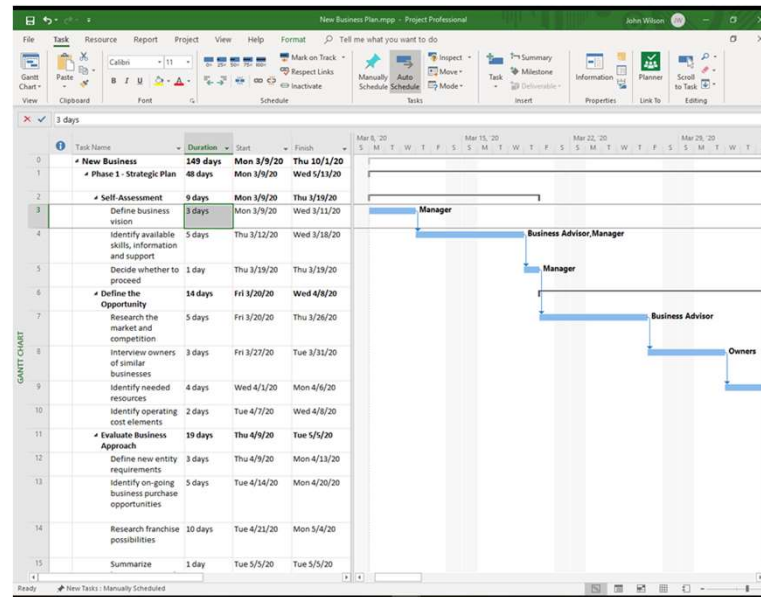
Project Management Plan Tools and Techniques

- Expert judgment
 - Determine the appropriate methodology approach
 - Customize the process to meet project needs
 - Develop technical and management details
 - Determine the resources and skills needed
 - Define the level of configuration management needed
 - Identify the project documents that will be affected
 - Prioritize the work to allocate resources appropriately
- Data gathering
 - Brainstorming
 - Checklists
 - Focus groups
 - Interviews
- Interpersonal and team skills
 - Conflict management
 - Facilitation
 - Meeting management
- Meetings

Project Management Information System (PMIS)

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

- Enables quick and efficient scheduling because calculating is performed automatically.
- PMIS example: Microsoft Project



Configuration Management Plan

Configuration Management Plan* is a component of the project management plan that describes how to identify and account for project artifacts under configuration control, and how to record and report changes to them.



Change Management Plan

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.

Answers the following questions:

- Who can propose a change?
- What exactly constitutes a change?
- What is 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?



Compliance Management Plan

- Another important aspect of planning involves compliance goals and requirements.
- Compliance with:
 - Appropriate government regulations
 - Corporate policies
 - Product and project quality
 - Project risk
- Project Compliance Plan is a sub-plan of the project management plan.
- Components include:
 - Classify compliance categories
 - Determine potential threats to compliance
 - Analyze the consequences of noncompliance
 - Determine necessary approach and action to address compliance needs

Guidelines to Develop a Project Management Plan

- Review the project charter for the high-level boundaries of the project.
- Review outputs from other processes.
- Review EEFs.
- Review OPAs.
- Use tools and techniques.
- Use facilitation techniques.
- Document the project management plan.
- Assess incremental delivery options.

Scrum of Scrums and SAFe®

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.

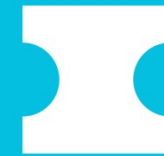
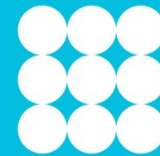
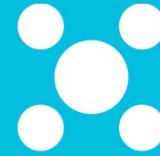


Guidelines to Determine Critical Information Requirements

- Review the project stakeholders identified for the project.
- Review and update the communication needs and expectations for each stakeholder.
- Determine the primary points in the project that have the most touchpoints or stakeholders affected.
- Evaluate those project points for the information contained.
- Assess whether that information is best communicated to stakeholders.
- Examine smaller points around the primary points to assess their value to stakeholders.
- Prioritize the points of information needs.
- Agree as a group or with the impacted stakeholders a cutoff line between the most business-critical information and those less critical.
- Set those at higher priorities to be critical information requirements.
- Review and update these requirements regularly.

ACTIVITY: INTEGRATING PROJECT PLANNING ACTIVITIES

TOPIC G: PLAN AND MANAGE PROCUREMENT



Enablers

- Define external resource requirements and needs. (ECO 2.11.1)
- Communicate external resource requirements. (ECO 2.11.2)
- Manage suppliers/contracts. (ECO 2.11.3)
- Plan and manage procurement strategy. (ECO 2.11.4)
- Develop a delivery solution. (ECO 2.11.5)

Deliverables and Tools

Deliverables	Tools
Statement of Work	Make or Buy Analysis
Procurement Management Plan	Market research
Source selection criteria	Meetings
Select sellers	Expert judgment
Monitor work and changes	Set up evaluation techniques and bidder conferences
	Negotiations
	Prepare agreements
	Monitor work / deliverables
	Prepare and process change requests

Procurement Strategy

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.

Make-or-buy decision considerations:

- What is the impact on cost, time, or quality?
- Is there an on-going need for the specific skill set?
- How steep is the learning curve?
- Are required resources readily available within the organization?



Procurement SOW

Procurement SOW* describes the procurement item in sufficient detail to allow prospective sellers to determine if they are capable of providing the products, services, or results.

- Distributed to potential vendors to evaluate their capability to perform the work or provide the services.
- Serves as a basis to develop the procurement documents during the solicitation process.
- A project scope baseline is used to create the procurement SOW.



Procurement Management Plan

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.

- Specifies the types of contracts that will be used
- Describes the process for obtaining and evaluating bids
- Mandates the standardized procurement documents that must be used
- Describes how multiple providers will be managed



Source Selection Criteria

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.

Sample source selection criteria:

- Overall or life-cycle cost
- Understanding of need
- Technical capability
- Management approach
- Technical approach
- Warranty
- Financial capacity
- Production capacity and interest
- Business size and type
- Past performance of sellers
- References
- Intellectual property rights
- Proprietary rights



Qualified Vendors

- Vendors approved to deliver products, services, or results based on the procurement requirements identified for a project.
- The list of qualified vendors can be created based on historical information about different vendors.
- If the required resources are new to the organization, market research can help identify qualified resources.

Qualified Vendors List

Qualified Vendors List					
Project Name: Computer Network Upgrade Project					
Vendor	Industry/Expertise	Capacity	Staff	Reputation	References
Company 1	Computer networking consultants	100 to 500 machines in local network	60	Able to provide solutions for large businesses on time	<i>Name 1:</i> Designation/Contact details <i>Name 2:</i> Designation/Contact details
Company 2	Networking hardware router manufacturers	1000	500	Quality equipment providers – rated #1	<i>Name 1:</i> Designation/Contact details <i>Name 2:</i> Designation/Contact details
Company 3	Networking cable suppliers	Any quantity within 2 weeks	150	Can provide required brands at competitive prices	<i>Name 1:</i> Designation/Contact details <i>Name 2:</i> Designation/Contact details



Bidder Conferences

- Meetings conducted by the buyer prior to submissions of a bid or proposal by the vendors.
- The buyer explains the requirements, proposed terms, and conditions, and the buyer clarifies the vendors' queries.
- Buyer ensures all prospective vendors have a clear and common understanding of the technical and contractual requirements of the procurement.
- Also known as vendor conferences, pre-bid conferences, pre-proposal conferences, and contractor conferences.

External Resource Requirements and Needs

- Moving beyond the organization to secure services and expertise from outside sources on a contract or short-term basis.
- Used frequently.
- Helps businesses to focus more on their core competencies.

Communication

- Critical component of the procurement process due to the people involved.
- The Communication Plan should include provisions for working with vendors or suppliers, such as:
 - Periodic progress reports of supplier activities.
 - Advance notification of potential supplier cost overruns or schedule delays, and acknowledgement by the project manager to the supplier.
 - Formal acceptance by the project manager of supplier's contract deliverables.

Supplier and Contracts

Contract* A mutually binding agreement that obligates the seller to provide the specified project or service or result and obligates the buyer to pay for it.

- Customized for each agreement
- Contract types:
 - Fixed-price
 - Cost-reimbursable
 - Time-and-material (T&M)



Components of Contracts

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

Contract Types

Contract type	Description
Fixed-price*	<ul style="list-style-type: none"> • An agreement that sets the fee that will be paid for a defined scope of work regardless of the cost or effort to deliver it. • Also known as a lump sum contract. • Provides maximum protection to buyer but requires a lengthy preparation and bid evaluation. • Suited for projects with a high degree of certainty about their parameters.
Cost-reimbursable*	<ul style="list-style-type: none"> • A contract involving payment to the seller for the seller's actual costs, plus a fee typically representing the seller's profit. • Includes incentives for meeting certain objectives, such as costs, schedule, or technical performance targets. • Suited for projects when parameters are uncertain.
Time and Material (T&M)*	<ul style="list-style-type: none"> • A type of contract that is a hybrid contractual arrangement containing aspects of both cost-reimbursable and fixed-price contracts. • Combines a negotiated hourly rate and full reimbursement for materials. • Include not-to-exceed values and time limits to prevent unlimited cost growth. • Suited for projects when a precise statement of work cannot be quickly prescribed.



Delivery Solution

- The goal of procurement is the delivery of procured goods or services by the supplier to the procuring organization.

Solution Delivery Phase	Description
Planning and analysis	Customer requirements are documented
Detailed design	Solution is documented
Implementation or installation	Solution is implemented or installed
Testing	Solution is tested
Training	Training is provided to the customer
Handover	Solution is formally handed over to the customer
Support and maintenance	Solution is transferred to customer support

Control Procurements Process

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

Other processes applied to the contractual relationship and integrated include:

- Project plan execution to formally sanction the seller's work to begin at the appropriate time.
- Performance reporting to monitor seller cost, schedule, and technical performance.
- Quality control to ensure that the quality of the seller's service or product meets contract objectives.
- Change control to ensure that changes to the contract are carefully managed and properly approved.
- Monitor and control the project risks to ensure that the risks are properly managed.

Contract Change Control System

Contract change control system* The system used to collect, track, adjudicate, and communicate changes to a contract.

- Might be a component of the integrated change control system or a separate system.
- Specifically dedicated to control contract changes.
- Specifies the process by which project contract changes can be made.
- Includes the documentation, dispute-resolution processes, and approval levels to authorize the changes to contract specifications.

Types of Contract Changes

Component	Description
Administrative changes	Non-substantive changes, which are the most common changes to the way the contract is administered.
Contract modification	A substantive change to the contract requirements such as a new deadline or a change to the product requirements.
Supplemental agreement	An additional agreement related to the contract but negotiated separately.
Constructive changes	Changes that the buyer may have caused through action or inaction.
Termination of contract	A contract may be terminated due to vendor default or for customer convenience. Defaults are due to nonperformance, such as late deliveries and poor quality, or nonperformance of some or all project requirements.

Legal Concepts when Managing Disputes

- If the buyer and seller cannot agree that the terms of a contract have been met by both parties, legal advice might be sought to resolve the dispute.
- Negotiated settlements might be undertaken to arrive at a final equitable settlement of all outstanding issues, claims, and disputes by negotiation.

Legal Issue	Description
Warranty	A promise, explicit or implied, that goods or services will meet a pre-determined standard. The standard may cover reliability, fitness for use, and safety.
Waiver	The giving up of a contract right, even inadvertently.
Breach of contract	Failure to meet some or all of the obligations of a contract. It may result in damages paid to the injured party, litigation, or other ramifications.
Cease and desist (C&D) letter	A letter sent to an individual or a business to stop (cease) allegedly illegal activities and to not undertake them again (desist). Often used as a warning of impending legal action if it is ignored.

Guidelines for Handling Disputes

- Have a good understanding of the differences between important legal terms that can, if ignored, have a significant impact on the project—warranty, waiver, and breach of contract.
- Be sure to consult with somebody in your company's legal department or seek advice from an outside legal expert so you thoroughly understand any contracts that affect your project.
- If your contract isn't written specifically to exclude inadvertent waivers, avoid doing any of the following that would waive your contract rights:
 - Accept a product that fails to meet standards for quality or performance.
 - Accept late deliveries.
 - Overlook an aspect of nonconformance to contractual obligations.

Closing Procurements

- A written notice usually provided from the buyer to the seller once the contract is complete
- Usually documented in the terms and conditions that were specified in the contract and the procurement management plan
- Procurements can be closed at any time throughout the life of the project, not necessarily at the end.

Guidelines to Close Procurements

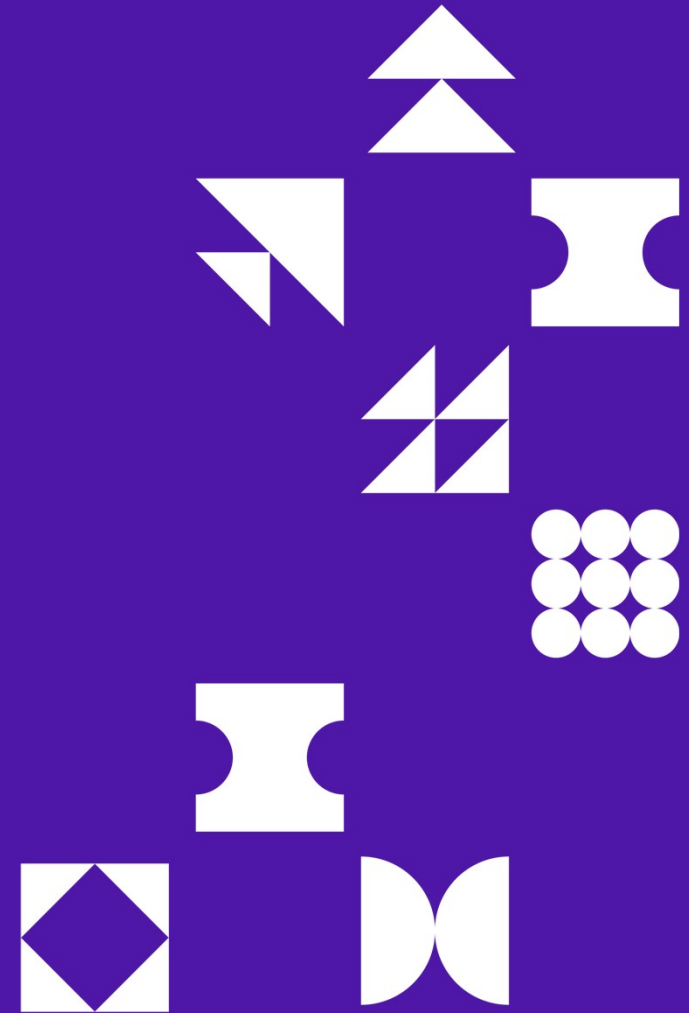
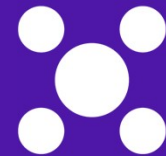
- Ensure that all required products or services were provided by the seller.
- Make sure that any buyer-furnished property or information was returned to the buyer.
- Settle any outstanding contracting issues. Are there any claims or investigations pending on this contract?
- Conduct a procurement audit to identify successes and failures of the procurement process and to evaluate the performance of the seller.
- Address any outstanding invoices and payments.
- Archive the complete contract file with the project archives.
- Provide the seller with formal written notice that the contract has been completed.
- Communicate that all procurements are closed and update OPA documents as needed.

Guidelines to Manage Suppliers and Contracts

- Index and store all contract correspondence for ease of retrieval.
- Develop and implement an effective contract change control system.
- Evaluate the risk of each contract change request.
- Document all contract changes and incorporate any effects of the changes into the project plan.
- Develop and implement an effective performance reporting system for the seller.
- In the contract, specify any performance reporting specifications to be imposed on the seller.
- Set performance milestones to monitor project progress.
- If work is performed at another site, conduct site visits to determine how the seller's work is progressing.
- Submit approved invoices for payment in accordance with the contract and the project's payment system.

ACTIVITY: MANAGING SUPPLIERS AND CONTRACTS

TOPIC H: ESTABLISH PROJECT GOVERNANCE STRUCTURE



Enablers

- Determine appropriate governance for a project. (ECO 2.14.1)
- Define escalation paths and thresholds. (ECO 2.14.2)

Deliverables and Tools

Deliverables	Tools
Create project team	Meetings
Identify governance structure	Leverage Organizational Process Assets
Project change / configuration control	PMIS
	Update documents

Project Governance

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



Project Governance Framework

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 Phases

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

- Produce one or more deliverables
- Can be performed sequentially or can overlap
- Outputs from one phase are generally inputs to the next phase



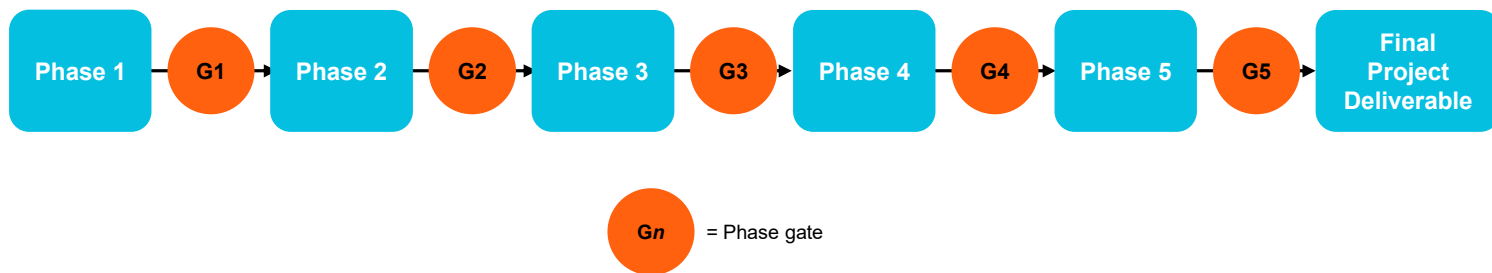
Applying Governance to the Project Life Cycle

- At the beginning of a phase, verify and validate the former assumptions made to the project, analyze risks, and provide detailed explanation of the phase's deliverables.
- After the phase's key deliverables are produced, a review ensures completeness and acceptance.
- A phase can be closed, or the project terminated when huge risks are involved for the project or when the objectives are no longer required.

Escalation Paths

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.

- Synonyms include governance gate, tollgate, and kill point.
- Used to check if each phase has fulfilled the exit criteria and is eligible to move to the next step.
- Software development projects use a specialized type of phase gate called a quality gate.



Phase-to-Phase Relationships

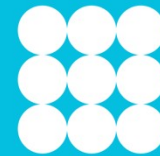
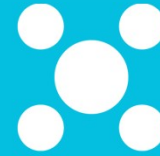
- **Sequential relationships** contain consecutive phases that start only when the previous phase is complete. This relationship reduces the level of uncertainty, which may eliminate the option for shortening a project's schedule.
- **Overlapping relationships** contain phases that start prior to the previous phase ending. This relationship increases the level of risk and may cause rework if something from the previous phase directly affects the next phase.

Guidelines to Determine Appropriate Governance for a Project

- Involve the organization's decision managers, who are frequently its senior managers.
- Choose the most appropriate governance goals and try to keep them simple.
- Select a group of experienced individuals to be responsible for all governance activities.
- Practice governance for projects, programs, and portfolios.
- Keep the governance process transparent to the project stakeholders.
- Remember that governance is an evolutionary process and take advantage of the lessons you have learned during it.

ACTIVITY: DETERMINING GOVERNANCE

TOPIC I: PLAN AND MANAGE PROJECT / PHASE CLOSURE



Enablers

- Determine criteria to successfully close the project or phase. (ECO 2.17.1)
- Develop transition planning artifacts.
- Validate readiness for transition (e.g., to operations team or next phase). (ECO 2.17.2)
- Conclude activities to close out project or phase. (ECO 2.17.3)

Deliverables and Tools

Deliverables	Tools
Definition of Done	No specific tools
Validate work	

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.

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.
- External factors arise that do away with the need for the project. Examples of these factors include:
 - Change in laws or regulations.
 - Merger or acquisition that affects the organization.
 - Global or national economic changes.

Close Procurements

- Procurements are closed when the contract terms of a procurement have been satisfied by both the buyer and seller.
- This occurs throughout the life of the project, not during project closure.
- Contracts are not kept open any longer than necessary, to avoid erroneous or unintentional charges against the contract.

Acceptance

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

- Project deliverables are deemed accepted when certain acceptance criteria have been met.
- These criteria generally refer to some or all of the requirements that were established at the beginning of the project (and which might have been modified during the project's life cycle).
- Deliverables that meet these acceptance criteria are formally signed off and approved by the customer or sponsor.

Payments

- Payments made to a supplier or vendor are made in accordance with the terms of the contract between the buyer and the supplier or vendor.
- Unless a contract is closed at the completion of the project or phase, payment will most likely have been made at the time of contract closure.
- It should not be delayed until project or phase closure (unless specified in the contract), to avoid the potential for accidental charges to the contract.

Knowledge Management

Lessons-learned repository* A store of historical information about lessons learned in projects.

- Knowledge management during project or phase closure consists of finalizing the lessons-learned register, which is compiled throughout the project life cycle.
- This document should then be added to the lessons-learned repository, which is a database of lessons learned from multiple projects.



Transition Planning Artifacts

- Coordination and strategy about how to best deliver and transition the product and other deliverables is needed.
- Releasing and deploying deliverables in the most suitable manner ensures end-user awareness and increases the proper usages and adoption of outputs.
- Preparation of artifacts includes:
 - Training
 - Documentation
 - Communication
 - Support

Transition Readiness

- Releasing, delivering, and deploying the project's work into an environment that is not ready may negate its value.
- Project teams must examine the readiness of all parties and prepare them for delivery, including:
 - End users
 - The business
 - The physical resources
 - The project team
- Most critical in situations where there is an upgrade or improvement to an existing product or service.
- Assess the readiness of all parties, implement the transition plans accordingly, and capture lessons learned for the next release or project.

Lessons-Learned Register

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.

- Considerations:
 - Scheduling lessons learned
 - Conflict management lessons learned
 - Sellers lessons learned
 - Customer lessons learned
 - Strategic lessons learned
 - Tactical lessons learned
 - Any other aspects of lessons learned



Close-Out Meetings

- Sessions held at end of project or phase
- Involve:
 - Discussing the work
 - Reviewing lessons learned
- May include stakeholders, team members, project resources, and customers

Retrospective

- The close-out meeting in an agile project is called a retrospective.
- Includes the agile team, Product Owner, and key stakeholders.
- Encourages participants to review:
 - What went well
 - What could have been done better
- This assessment includes the work on the product and also:
 - Processes
 - Level of collaboration inside and outside the agile team
 - Other areas that influence the effectiveness of product delivery

Guidelines to Close a Project or Phase

- Review the project management plan.
- If applicable, use a project termination checklist.
- Gather and organize performance measurement documentation, product documentation, and other relevant project records.
- Confirm project's products meet compliance requirements.
- Release project resources.
- Update records to ensure that they reflect final specifications.
- Be sure to update the resource pool database to reflect new skills and increased levels of proficiency.
- Analyze project success and effectiveness and document lessons learned.
- Prepare lessons-learned reports and a final project report.
- Obtain project approval and formal project acceptance.
- Archive a complete set of indexed project records.
- Celebrate the success of the project with the team and other stakeholders.

ACTIVITY: CLOSING A PROJECT OR PHASE

Learning Goals

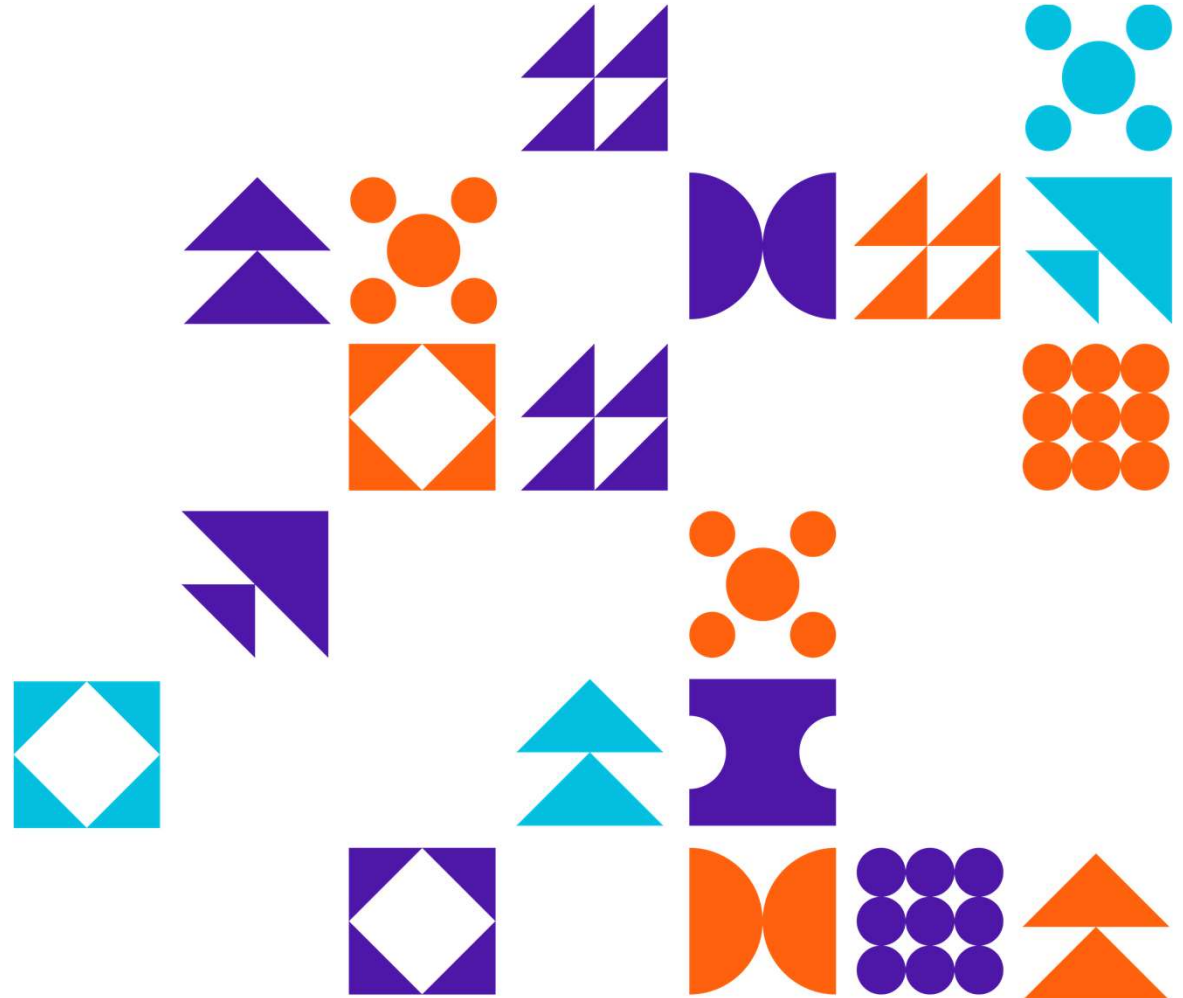
- Assess project needs, complexity, and magnitude to determine the appropriate project methodology/methods and practices.
- Plan and manage the scope.
- Plan and manage the budget and resources.
- Plan, prepare, modify, and manage the project schedule based on methodology.
- Plan and manage the quality of products and deliverables.
- Integrate project planning activities.
- Plan and manage procurement strategy.
- Establish the project governance structure.
- Plan and manage project/phase closure.

Reflective Questions

1. Why do you think developing project and scope management plans is important?
2. Why do you think it's important to collect requirements, define scope, and create a work breakdown structure?

DOING THE WORK

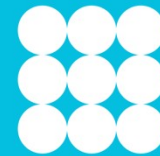
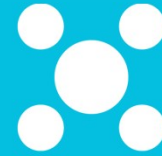
- Assess and Manage Risks
- Execute Project to Deliver Business Value
- Manage Communications
- Engage Stakeholders
- Create Project Artifacts
- Manage Project Changes
- Manage Project Issues
- Ensure Knowledge Transfer to Project Continuity



Lesson Objectives by Topic

- A. Assess and manage risks. (ECO Task 2.3)
- B. Execute the project with the urgency required to deliver business value. (ECO Tasks 2.1, 2.6, 2.9)
- C. Manage communications. (ECO Task 2.2)
- D. Engage stakeholders. (ECO Task 2.4)
- E. Create project artifacts. (ECO Tasks 1.12, 2.9, 3.1)
- F. Manage project changes. (ECO Task 2.10)
- G. Attack issues with the optimal action to achieve project success. (ECO Task 2.15)
- H. Confirm approach for knowledge transfers. (ECO Tasks 1.6, 2.16)

TOPIC A: ASSESS AND MANAGE RISKS



Enablers

- Determine risk management approach. (ECO 2.3.1)
- Iteratively identify, assess and prioritize risks and risk responses. (ECO 2.3.2)
- Determine risk response.
- Implement risk response.

Deliverables and Tools

Deliverables	Tools
Risk Management Plan	Organizational Process Assets
Risk Register	Meetings
Create Risk Response Plan	Expert judgment
Implement Risk Response Plan	Risk analysis techniques
	Update Risk Register
	Risk probability and impact assessment
	Monitor and manage risks

Risk

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

Trigger condition* An event or situation that indicates that a risk is about to occur.

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 Management Plan* A component of the project, program, or portfolio management plan that describes how risk management activities will be structured and performed.

- Risk strategy
- Methodology
- Roles and responsibilities
- Funding
- Timing
- Risk categories
- Stakeholder risk appetite
- Definition of risk probability and impact
- Probability and impact matrix
- Reporting formats
- Tracking documents



Risk Identification

- Expert judgment
- Data gathering
 - Brainstorming
 - Checklist analysis
 - Interviews
- Data analysis
 - Root cause analysis with a cause and effect diagram
 - Assumption and constraint analysis
 - SWOT analysis
 - Document analysis
- Facilitation
- Prompt lists
- Meetings—risk workshop

Risk Management Approach

Project Risk Management* The project management knowledge area that includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project.



Risk Classification

Effect-Based Risk Classification

- Analyzing the major risks that are inherent to a project, and their effect upon:
 - Time
 - Cost
 - Quality
 - Scope

Source-Based Risk Classification

- A method of analyzing risk in terms of its origins.
- Sources may be:
 - Internal to the project
 - External to the project
 - Technical
 - Nontechnical
 - Industry-specific
 - Generic

Business Risk Types (Slide 1 of 2)

Business risk

- Inherent in business.
- All projects have potential for loss or profit.
- **Example:** Purchasing inventory without guaranteed sales.

Insurable risk

- Only the potential for loss.
- No potential for profit.
- Insurance may be purchased to offset losses.
- **Example:** Loss of inventory due to fire.

Business Risk Types (Slide 2 of 2)

Business Risk	Description
Competitive	Increased competition in the marketplace and a rival company developing a superior product.
Legislative	New laws or changes in regulations governing your products, goods, or services, requiring your company to spend more to maintain compliance.
Monetary	Increased prices for raw materials, increased taxes, increased operating costs, and losses due to nonpayment by customers.
Operational	Fraud, theft, employee injury, workplace accidents, and damage to equipment.



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.

Risk threshold* The level of risk exposure above which risks are addressed and below which risks may be accepted.



Guidelines to Iteratively Identify, Assess, and Prioritize Risks

- Perform a structured review of appropriate documentation from other planning processes with key project stakeholders to ensure an understanding of each.
- Use one or more risk identification techniques to identify risks and their possible triggers.
- Be consistent. Whatever method you adopt, apply it systematically across your project. Before the project begins, identify risks in every project segment and work package.
- Apply your method consistently but be on the lookout for special circumstances that might arise in any project segment.
- Consult relevant historical information, such as risk response plans and final reports from previous, similar projects that may include lessons learned describing problems and their resolutions.
- Once risks have been identified, group them into categories that reflect common sources of risk for your industry or application area.
- Use the results of your analysis to initiate the risk register.

Qualitative Risk Analysis

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


- Determines the risk exposure of the project by multiplying the probability and impact
- Provides the list of prioritized risks for further actions

Probability and Impact Matrix

Probability and Impact Matrix* A grid for mapping the probability of occurrence of each risk and its impact on project objectives if that risk occurs.

		Threats					Opportunities						
Probability	Very High 0.90	0.05	0.09	0.18	0.36	0.72	0.72	0.36	0.18	0.09	0.05	Very High 0.90	
	High 0.70	0.04	0.07	0.14	0.28	0.56	0.56	0.28	0.14	0.07	0.04	High 0.70	
	Medium 0.50	0.03	0.05	0.10	0.20	0.40	0.40	0.20	0.10	0.05	0.03	Medium 0.50	
	Low 0.30	0.02	0.03	0.06	0.12	0.24	0.24	0.12	0.06	0.03	0.02	Low 0.30	
	Very Low 0.10	0.01	0.01	0.02	0.04	0.08	0.08	0.04	0.02	0.01	0.01	Very Low 0.10	
		Very Low 0.05	Low 0.10	Moderate 0.20	High 0.40	Very High 0.80	Very High 0.80	High 0.40	Moderate 0.20	Low 0.10	Very Low 0.05		
		Negative Impact					Positive Impact						

A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 408.

 These definitions are taken from the Glossary of Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition*, Project Management Institute Inc., 2017.

Quantitative Risk Analysis

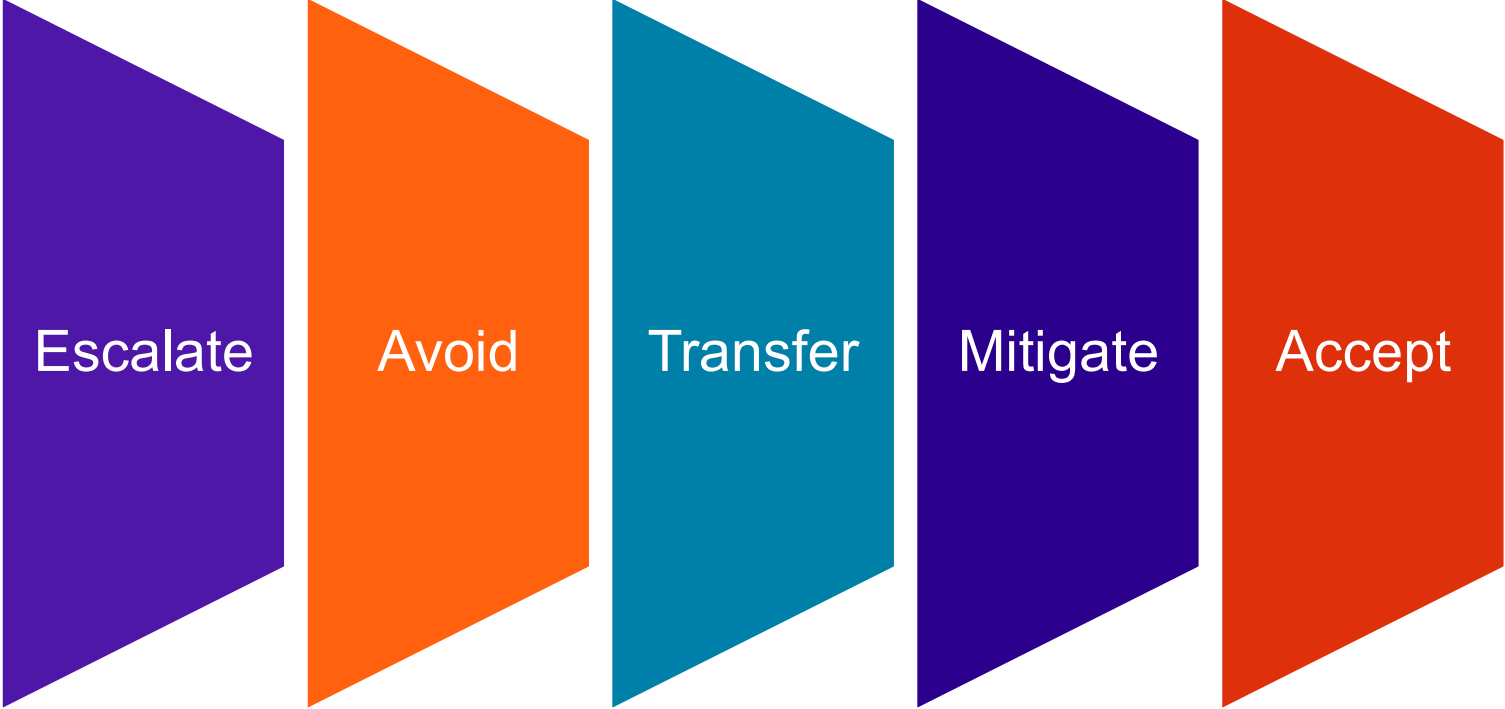
Quantitative risk analysis: Technique used to assess the risk exposure events to overall project objectives and determine the confidence levels of achieving the project objectives.

- Helps to identify time and cost contingencies of a project
- Refines and enhances the prioritization and scoring of risks

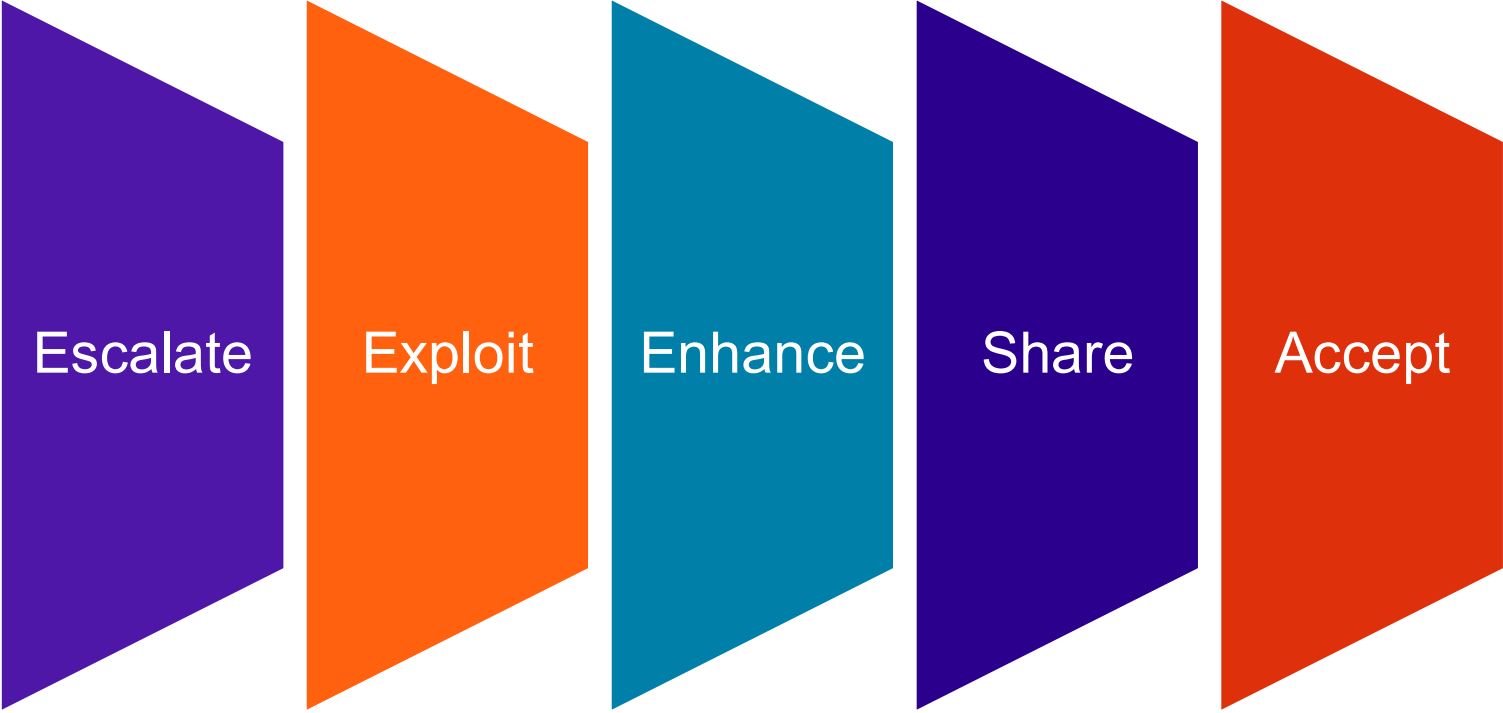
Risk Responses

- Planning risk responses consists of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as to treat individual project risks.
- Risks are addressed by priority, and resources and activities can be added to the budget, schedule, and project management plan to support the risks.
- Each risk is assigned a risk response, which is an action to address that risk and a person to implement that action.
- There are various risk response strategies to choose from to determine a risk response for each risk.
- A fallback plan can also be developed in case the primary strategy is not effective. Secondary risks should also be reviewed. These are risks that could occur as a result of implementing a risk response.

Negative Risk Strategies



Positive Risk Strategies



Contingency Plans

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.

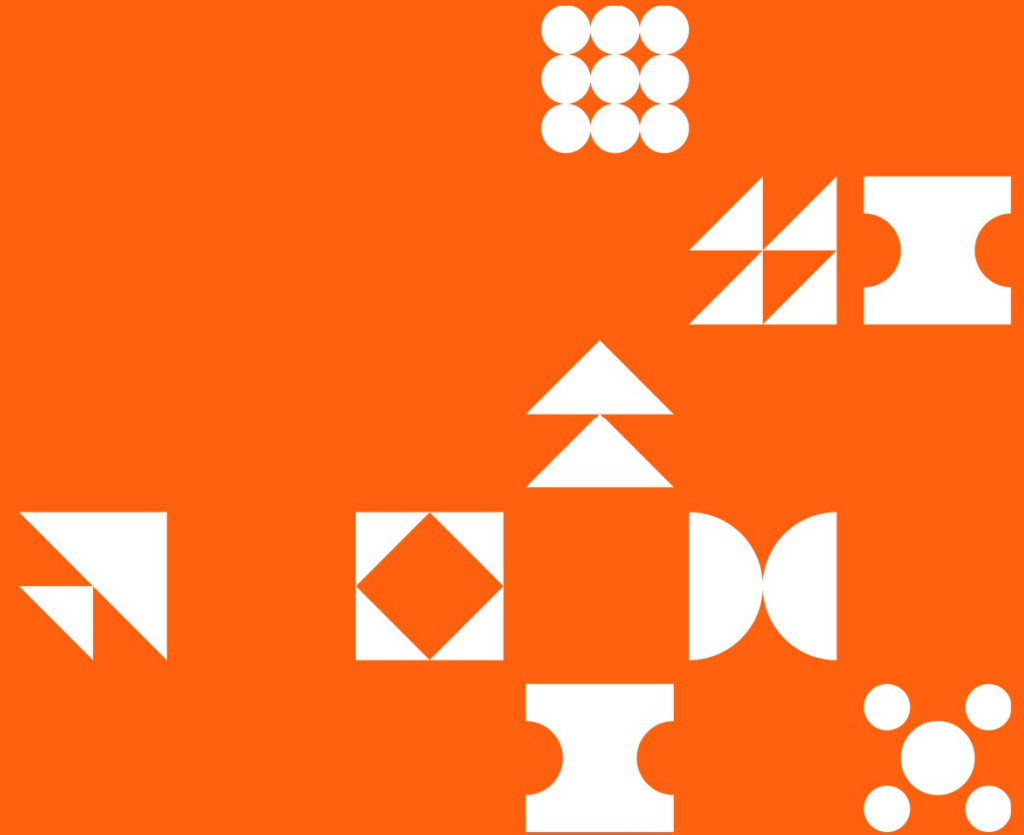
- Allows a project manager to react quickly and appropriately to the risk event, mitigating its negative impact or increasing its potential benefits.
- May include a fallback plan for risks with high impact.

Guidelines to Determine and Implement Risk Responses

- Examine each identified risk to determine its causes and how it may affect project objectives. Brainstorm possible strategies for each risk.
- Choose the response strategy that is most likely to be effective for each identified risk.
- If you are unable to bring a risk's rating below the organization's risk threshold, ask your sponsor for help.
- Identify backup strategies for risks with high risk factor scores.
- Determine the amount of contingency reserves necessary to deal with accepted risks.
- Determine how much of a contingency reserve you should set aside for unknown risks.
- Consult the risk management plan for the description of the content and format of the risk response plan.
- Incorporate the risk response plan into the overall project plan so the strategies can be implemented and monitored.

ACTIVITY: ASSESSING AND MANAGING RISKS

TOPIC B:
EXECUTE PROJECT
TO DELIVER
BUSINESS VALUE



Enablers

- Assess opportunities to deliver value incrementally. (ECO 2.1.1)
- Examine the business value throughout the project. (ECO 2.1.2)
- Support the team to subdivide tasks to find the minimum viable product. (ECO 2.1.3)
- Measure ongoing progress based on methodology. (ECO 2.6.4)
- Collect and analyze data to make informed project decisions. (ECO 2.9.4)

Deliverables and Tools

Deliverables	Tools
No specific deliverables	No specific tools

Creating a Culture of Urgency

- Ingrain a sense of urgency in the project environment and culture.
- Establishing and cultivating the appropriate project urgency culture is an ongoing task.
- The project manager can lead the way by articulating the project's importance and vision.
- Everyone involved can commit to and be accountable for striving towards that vision.
- Bringing in the voice of the customer can express the desires and personalize the value.
- The project team can promote the culture in their daily actions, responsiveness, and attentiveness.

Examination of Business Value

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

- Determining exactly what is of value requires examination, evaluation, and confirmation.
- Throughout a project, a variety of means for determining what is of value can be used.
- Business value can be:
 - Financial
 - Improvements
 - New customers
 - First to market
 - Social
 - Technological



Product Roadmaps

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

- Roadmaps can vary in appearance and presentation.
- Objective is to display the strategy and direction of the product being built and value to be delivered.
- Roadmaps start with the overarching vision of the product.
- Over time, the roadmap is progressively elaborated as more information is known, work is being completed or not completed, and vision is refined.
- Themes, which equate to goals, emerge to provide structure and associations.
- Product roadmaps provide short-term and long-term visualization of the product.

Incremental Delivery

- Provides the means to deliver value sooner rather than later.
- Early and regular incremental releases lead to higher customer value and increased market share.
- Enables the customers to receive parts or elements of the product prior to the full product delivery.
- Allows users and the business to consume the targeted value and provide feedback to the project team.
- Feedback enables adjustments to the direction, priorities, and quality of the product.
- Conversation with stakeholders is required to finding suitable increments.
- Stakeholders receive a usable product with the expectation that additional features and revisions will come.

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" functionality.

- An MVP allows all stakeholders to see and experience some form of project outcomes.
- A tangible output channels target conversations, which generates feedback and ideas.
- MVP provides inspiration to the team and ignites shorter-termed urgency and a sense of accomplishment.

Minimum Business Increment

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

- MBI is more viable when an MVP might be disruptive to the users and business, especially when a basic preliminary product to gauge interest is not necessary.
- MBI works best when:
 - The product and functions are understood.
 - An incremental increase of value can be pinpointed.
 - The delivery of some of that value benefits the business.
- Advantages of MBIs:
 - Enables project team to deliver bits of value sooner.
 - Helps team validate whether or not improvement has been captured.
 - Enables team to incrementally build on that success or pivot as needed.

Cycles and Timeboxes

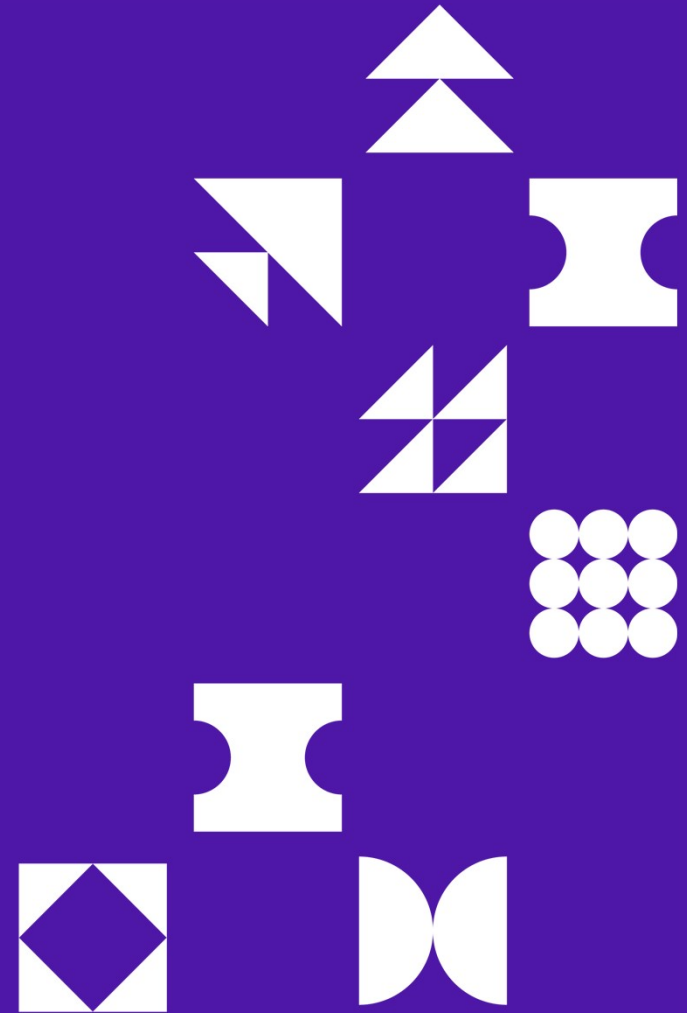
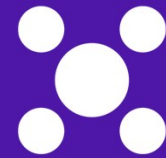
- Project teams can set up release cycles and working time blocks.
- Timeboxes are typically in the form of weeks or days for urgency sake.
- Timeboxes allow for better telemetry over time.
- Cycling the project through similar timeboxes provides progress measurements from one timebox to the next.
- With time and repeated cycles, the team gains more predictable measurements that can communicate expectations of cycle times, throughput, and velocity.

Guidelines to Measure Ongoing Progress

- Define value from the customer's, business, and/or user's perspective.
- Determine value expectations.
- Set targets and baselines based on expectations.
- Determine metrics that communicate progress towards those value expectations.
- Select one or more means of collecting metric data that is not too cumbersome or time consuming for the project team.
- Collect data at a regular interval.
- Present the data of the progress.
- Compare the progress with the baselines and expectations.
- Improve on success or correct areas where progress is not meeting expectations.

ACTIVITY: EXECUTING A PROJECT WITH URGENCY

TOPIC C: MANAGE COMMUNICATIONS



Enablers

- Analyze communication needs of all stakeholders. (ECO 2.2.1)
- Plan communication methods, channels, frequency, and level of detail. (ECO 2.2.2)
- Communicate project information and updates effectively. (ECO 2.2.3)
- Confirm communication is understood and feedback is received. (ECO 2.2.4)

Deliverables and Tools

Deliverables	Tools
Communications Management Plan	Stakeholder analysis
Project communications	Create and update project communications plan
Stakeholder Register	Update documents
Work performance and change updates	Understand and practice Sender-Receiver Model
Update project communications	

Project 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

Communications Management Plan

Stakeholder	Communication Method	Frequency	Responsibility	Notes
Key Stakeholders	Project Kickoff Meeting	Start of project	Project Management Office	Both team and client kickoff meetings recommended
	Extranet	Ongoing	Project Management Office	Includes project schedule, key project deliverables, meeting minutes, change request log, issues log
Client Executive	Executive Steering Committee	Monthly – first Wednesday of each month	Account Manager	Review status, milestones met, earned value indicators, key issues
Client Sponsor	Status Meetings Status Report (Email)	Weekly – Friday 2 p.m.	Project Manager	Review project status, schedule, change requests, issues
Development Team	Status Meetings	Weekly – Friday 11 a.m.	Project Manager	Provides input for subsequent meetings with client sponsor
Client Managers	Newsletter (Email)	Weekly – Friday	Project Management Office	
Client Sponsor/Key Client Stakeholders	Client Satisfaction Survey	Monthly/end of each phase	Account Manager/Project Manager	Informal (Monthly) Formal (End of each phase)

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 that will be used to convey the 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

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.

- Investigation that leads to a clear articulation of the stakeholders' communications needs
- Helps the project manager make effective choices regarding the technologies to be recommended
- Takes the form of a grid, questionnaire, or survey that documents the communications and technology requirements for each stakeholder

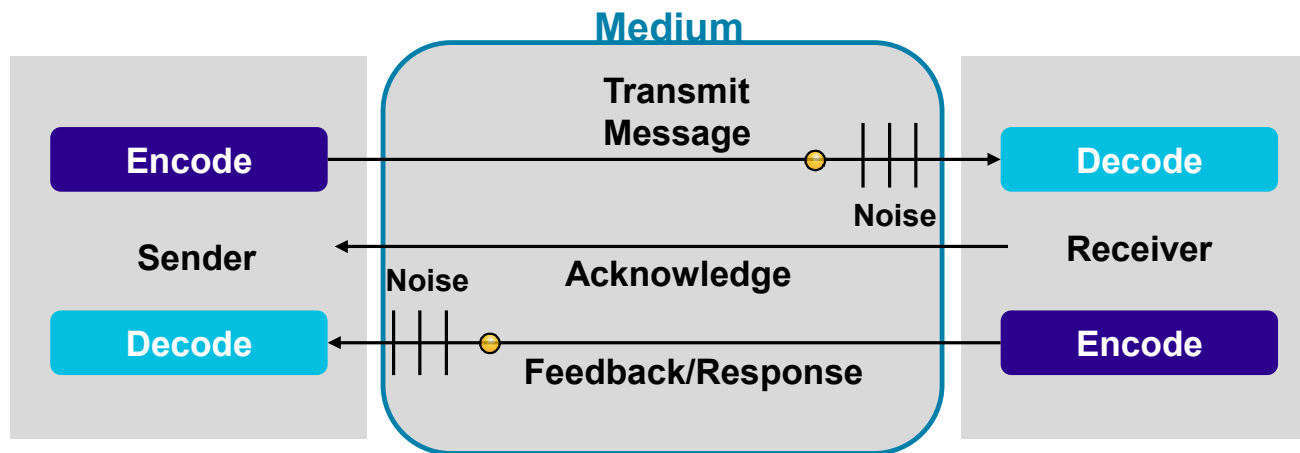


Communication Types

- Face-to-face meetings
- Video and voice conferencing (virtual meetings)
- Email
- Fax
- Instant Messaging (IM)
- Text messaging
- Print media and documents
- Social media
- Company website

Communication Models

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



A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, Project Management Institute, Inc., 2017, Page 373.



Communication Methods

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



Interactive



Feedback

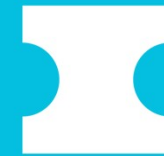
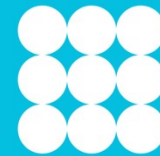
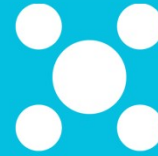
- Communication is a two-way street.
- Feedback can be positive if the message is received and understood as the sender intended.
- Feedback can be negative if the receiver does not understand what the sender intended.
- No feedback provides an implicit acceptance of the message by the receiver.
- Effective feedback should be clear, specific, and offered in a timely manner.

Guidelines to Effectively Manage Communication throughout the Project

- Gather and distribute contact information for all involved parties.
- Determine the communication needs of project stakeholders.
- As a rule of thumb, project team members require more detail on a more frequent basis. Senior management typically requires summary information on a less frequent basis.
- Analyze the value to the project of providing the information.
- Evaluate any constraints and assumptions to determine their possible impact on communication planning.
- Determine the appropriate communications technologies to use for communicating project information.
- Make sure your communications management plan includes all key elements.
- Integrate the communications management plan into the overall project plan.
- Distribute the plan to project stakeholders.

ACTIVITY: PLANNING COMMUNICATIONS MANAGEMENT

TOPIC D: ENGAGE STAKEHOLDERS



Enablers

- Analyze stakeholders. (ECO 2.4.1)
- Categorize stakeholders. (ECO 2.4.2)
- Engage stakeholders by category. (ECO 2.4.3)
- Develop, execute, and validate a strategy for stakeholder engagement. (ECO 2.4.4)

Deliverables and Tools

Deliverables	Tools
Create Stakeholder Register	Organization Process Assets
Update Stakeholder Register	Expert judgment
Stakeholder Engagement Plan	Meetings
Assess work performance information	Create Power or Influence vs. Impact Grid
	Interpersonal skills
	Management skills
	Update Stakeholder Register

Stakeholder Categories

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



Stakeholder Engagement Strategy


- Develop a strategy to involve each project stakeholder based on needs, expectations, interests, and potential impact on the project.
- Strategy can be used to effectively involve stakeholders throughout the lifecycle of the project.
- Enables the right-level of management to the number of stakeholders.
- Enables development of appropriate management strategies to engage stakeholders.
- Creation and maintenance of relationships between the project team and stakeholders.

Stakeholder Engagement Assessment Matrix

Stakeholder Engagement Assessment Matrix* is a matrix that compares current and desired stakeholder engagement levels.

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Stakeholder 1	C			D	
Stakeholder 2			C	D	
Stakeholder 3				C	D

C = Current engagement level D = Desired engagement level

 These definitions are taken from the Glossary of Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* – Sixth Edition, Project Management Institute Inc., 2017.

Guidelines to Develop, Execute, and Validate a Strategy for Stakeholder Engagement

- Review the project management plan.
- Review the stakeholder register.
- Review Enterprise Environmental Factors (EEFs).
- Review Organizational Process Assets (OPAs).
- Use tools and techniques such as expert judgment.
- Hold meetings with experts and the project team.
- Use analytical techniques to classify the level of engagement for stakeholders.
- Document the stakeholder engagement plan.

ACTIVITY: CREATING A STAKEHOLDER REGISTER

ACTIVITY: CREATING A STAKEHOLDER ENGAGEMENT ASSESSMENT MATRIX

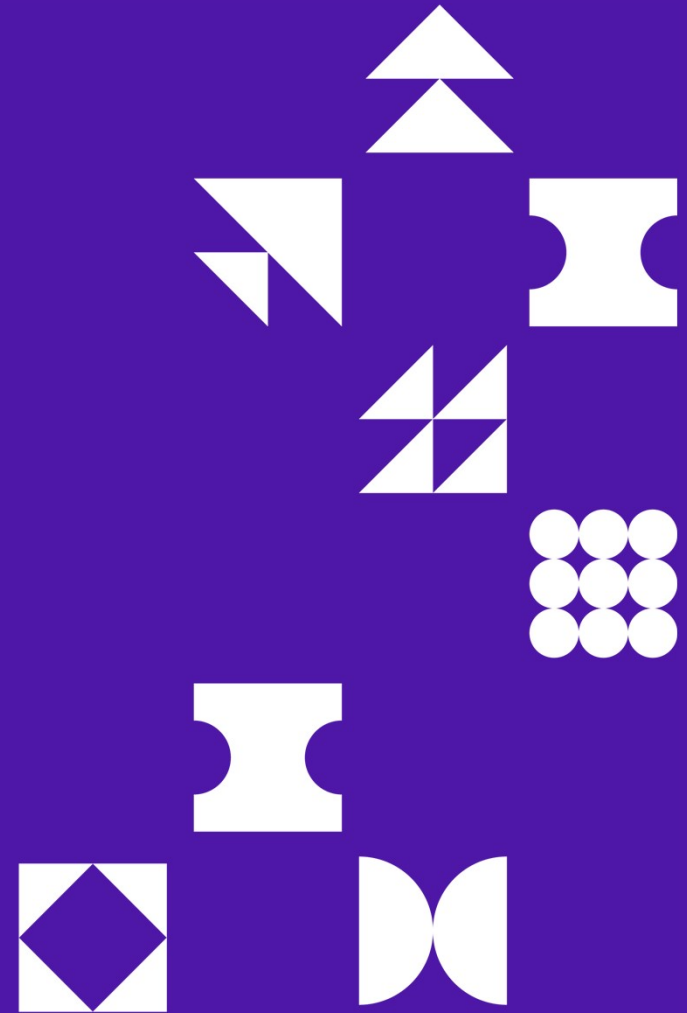
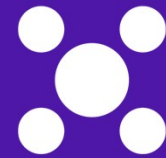
Completed Stakeholder Engagement Assessment Matrix

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Dave		x			
Accountants			x		
Seth					x
John				x	

Activity Solution



TOPIC E: CREATE PROJECT ARTIFACTS



Enablers

- Determine the requirements for managing project artifacts. (ECO 2.12.1)
- Validate that the project information is kept up to date and accessible. (ECO 2.12.2)
- Continually assess effectiveness of the management of the project artifacts. (ECO 2.12.3)

Deliverables and Tools

Deliverables	Tools
No specific deliverables	No specific tools

Project Artifact Characteristics (Slide 1 of 2)

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.

- Artifacts are living documents and updated to reflect changes in project requirements and scope.

Project Artifact Characteristics (Slide 2 of 2)

Project artifacts might include:

- Acceptance Criteria
- Assumptions
- Business Case
- Change Requests
- Constraints
- Lessons learned
- Minutes of status meetings
- Project Charter
- Slide decks
- Requirements
- Scope
- Scope Baseline
- Subsidiary project management plans

Artifacts unique to agile projects:

- Product Backlog
- Product Increment
- Product Roadmap
- Product Vision Statement
- Release Plan
- Sprint Backlog

Configuration Management

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 is used to:

- Control product iterations.
- Ensure that product specifications are current.
- Control the steps for reviewing and approving product prototypes, testing standards, and drawings or blueprints.

Configuration management system* A collection of procedures used to track project artifacts and monitor and control changes to these artifacts.



Version Control

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

- Each time the file is updated, it is automatically saved and then given a new version number.
- The version control system can contain a date/time stamp and the name of the user who made the changes, thus providing a digital “paper trail” of the document’s history.
- A robust project management system will contain version control for important artifacts such as the project management plan, the subsidiary project management plans, the scope, and other documents.

Storage/Distribution of Artifacts

- Artifacts should be stored in a location that is accessible to the people who use them.
- The system should be manageable given the complexity of the project—not a cumbersome system that is better suited for a large project.
- Cloud-based document storage and retrieval systems are appropriate for larger projects, especially where team members are geographically distributed.
- Features of off-the-shelf systems might include:
 - Built-in version control.
 - Document check-out and check-in.
 - User-based document security.
 - Automatic email notification to specified users when a document is created or edited.
- The system chosen to distribute project artifacts should also be based on the size and complexity of the project.

Project Artifact Management

- An effective archive management system includes these provisions:
 - A way to produce and control documents without unnecessary administrative overhead.
 - Standardized formats and templates.
 - A structured process for the review and approval of documents.
 - Version control and security.
 - Timely distribution of documents.

Guidelines to Continually Assess the Effectiveness of Management of Project Artifacts

- Use an appropriate degree of configuration management for your project.
- Follow any organizational procedures regarding project management documentation.
- Develop an archive management system that is of appropriate size and complexity for your project. Pay particular attention to these issues:
 - Types of documents needed and their purpose.
 - Templates to facilitate document creation.
 - Authors, reviewers, and approvers of documents.
- Implement version control of documents, so you will be able to reconstruct changes and revert to an earlier version if necessary.

ACTIVITY: CREATING PROJECT ARTIFACTS

Enablers

- Anticipate and embrace the need for change. (ECO 2.10.1)
- Determine strategy to handle change. (ECO 2.10.2)
- Execute change management strategy according to the methodology. (ECO 2.10.3)
- Determine a change response to move the project forward. (ECO 2.10.4)

Deliverables and Tools

Deliverables	Tools
Issues Log	Manage and update Issues Log
Risk Register	PMIS
Stakeholders Register	Communicate with stakeholders
Updated Issues Log	Negotiate with stakeholders

Change Management Plan

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.

Answers the following questions:

- Who can propose a change?
- What exactly constitutes a change?
- What is 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 Systems

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

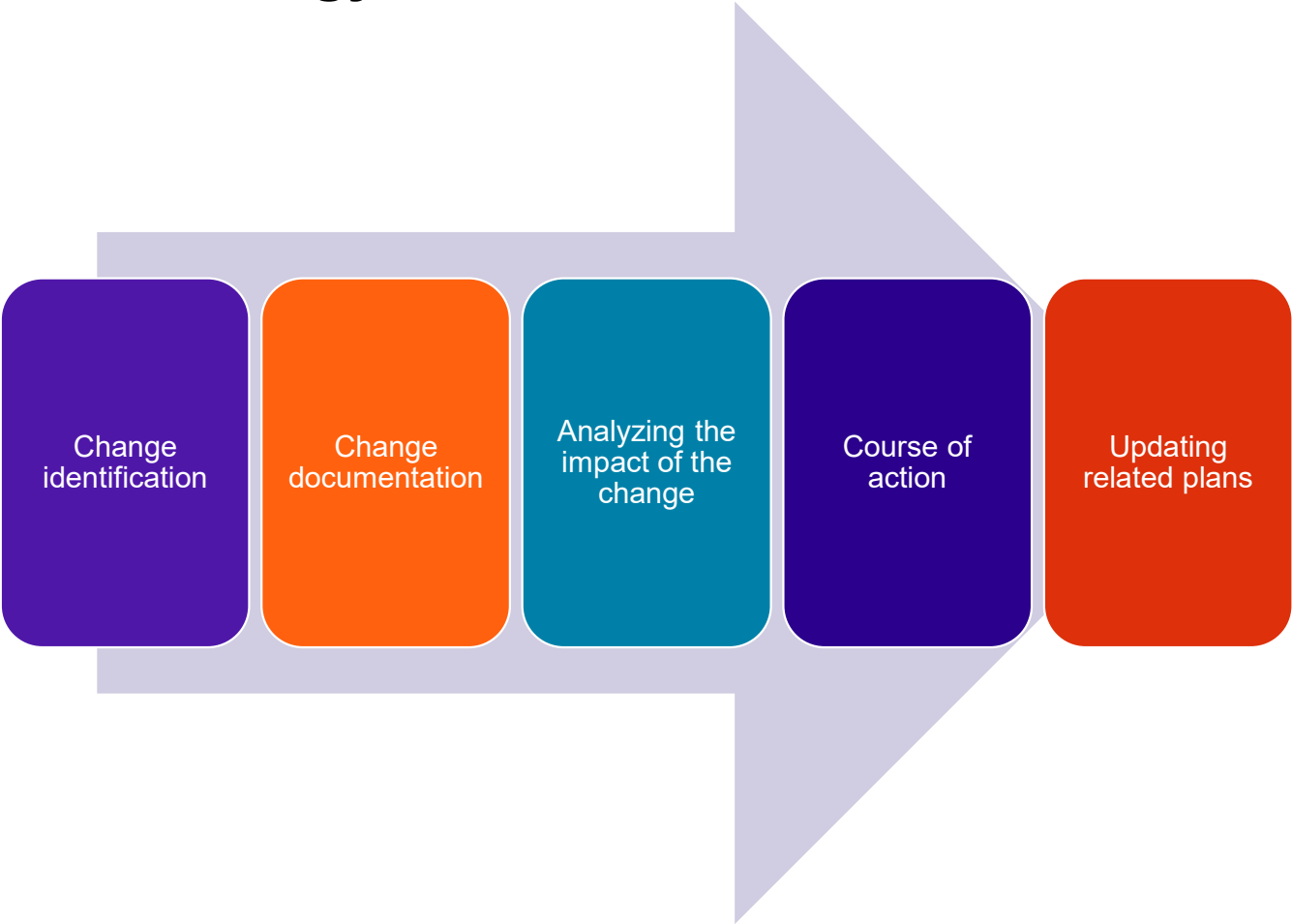
Change control systems can include:

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

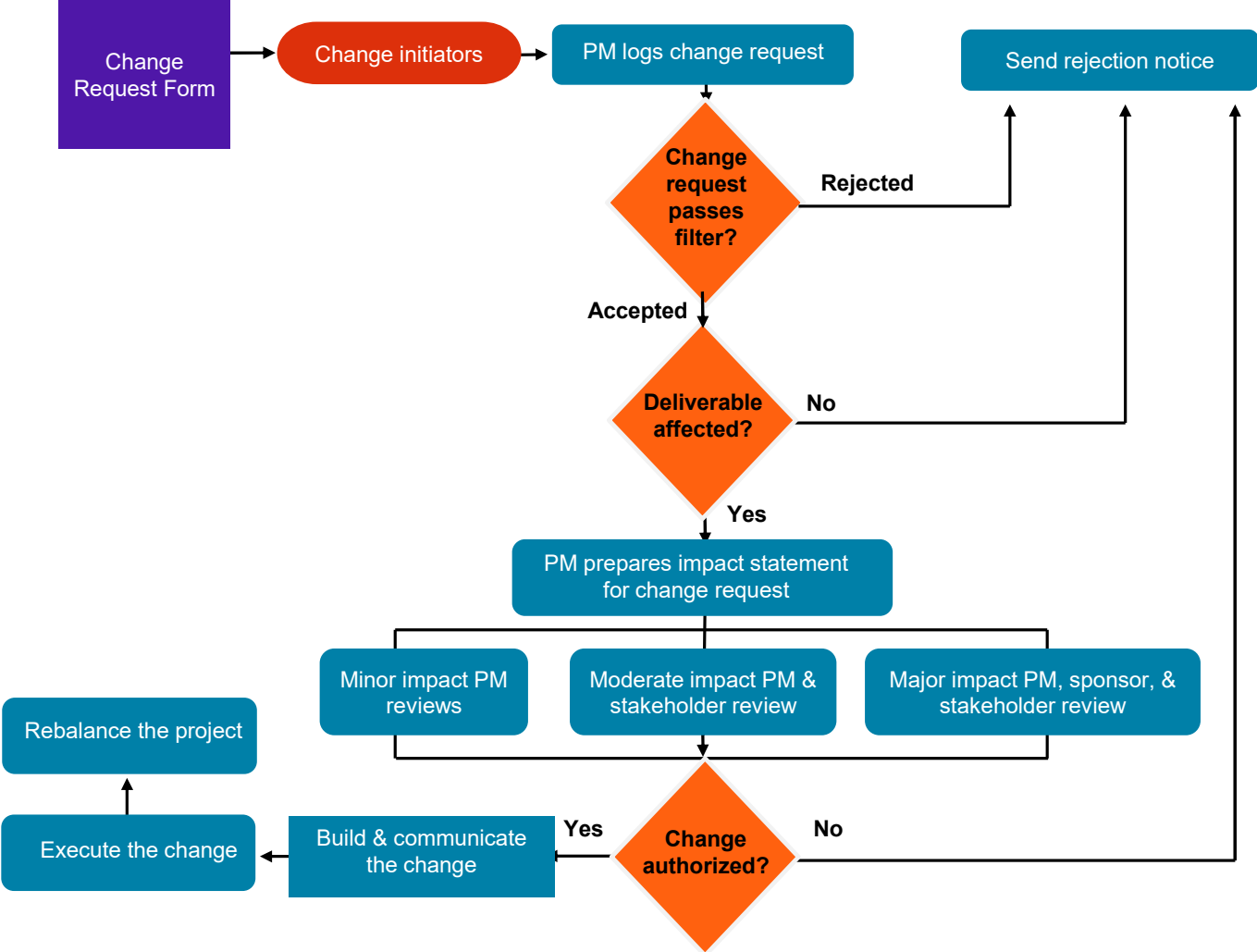
Change Control Board (CCB)* A formally chartered group responsible for reviewing, evaluating, approving, delaying, or rejecting changes to the project, and for recording and communicating such decisions.



Change Control Strategy



Change Management Process Flowchart



Approved Change Requests

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.

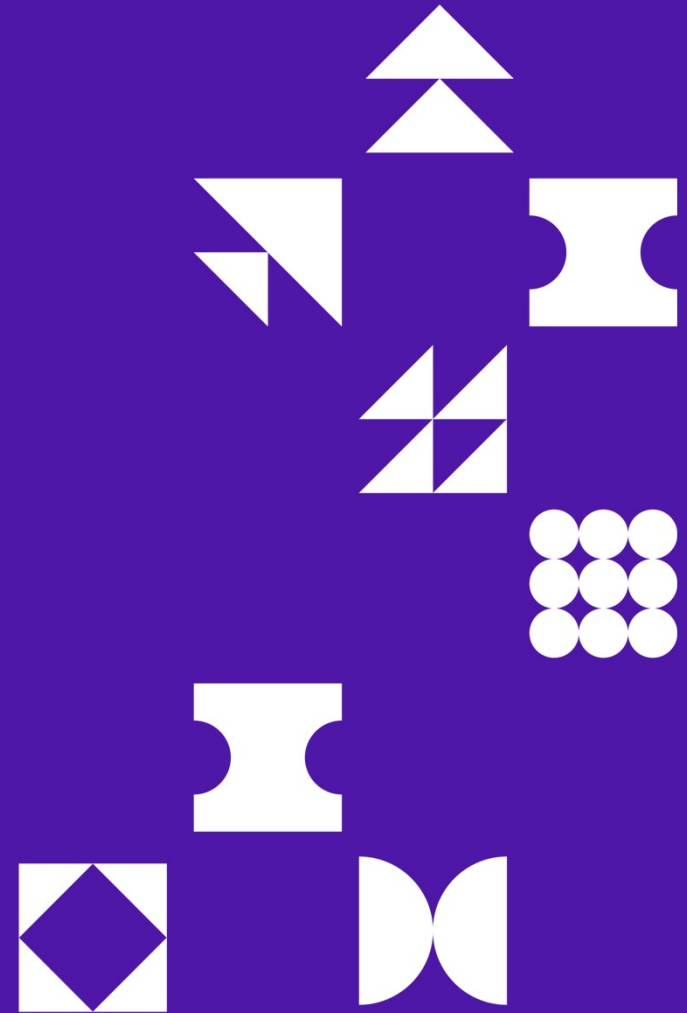
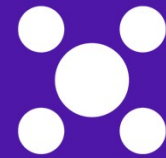
- Approved changes can include:
- Corrective action—adjusts the performance of the project work with the project management plan.
- Preventive action—ensures future performance of the project work with the project management plan.
- Defect repair—modifies a non-conformance within the project.
- Update—modifies a project document or plan.

Guidelines to Manage Project Changes

- Make sure your change control system is cost effective.
- Establish or make use of an existing CCB composed of project stakeholders to evaluate change requests.
- Document the effect the changes have on the applicable project baselines.
- Obtain approval from the appropriate parties for all change requests before implementing the change.
- Use configuration management to document and control changes to original product characteristics.
- Coordinate changes across knowledge areas as appropriate. For example, does a proposed schedule change affect cost, risk, quality, and/or staffing?
- Use performance reports to measure project performance.
- Identify corrective action necessary to bring expected performance in line with the project plan.
- Update the project plan to reflect changes made that affect performance baselines.
- Document the causes of variances, the steps taken to correct performance problems, and the rationale behind the decision-making process.

ACTIVITY: MANAGING PROJECT CHANGES

TOPIC G: MANAGE PROJECT ISSUES



Enablers

- Recognize when a risk becomes an issue. (ECO 2.15.1)
- Attack the issue with the optimal action to achieve project success. (ECO 2.15.2)
- Collaborate with relevant stakeholders on the approach to resolve the issues. (ECO 2.15.3)

Deliverables and Tools

Deliverables	Tools
No specific deliverables	No specific tools

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

Risks

- Focused on the future
- Can be positive or negative
- Is documented in the Risk Register
- Response is called a “risk response”

Issues

- Focused on the present
- Will always be negative
- Is documented in the Issue Log
- Response is called a “workaround”

Issue Log

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.

ID	Description	Opened	Due Date	Priority	Owner	Response	Status	Comments
25	Truck strike	10/15/20xx	11/01/20xx	High	R. Smith	TBD	Open	Tasks are on the critical path

Issue Resolution

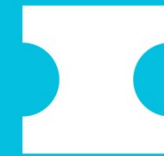
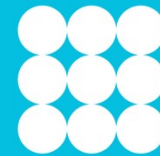
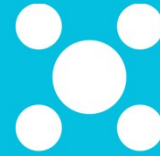
- As issues arise, promptly add them to the issue log.
- Each issue should have an owner who is responsible for tracking the progress of the workaround and reporting back to the project manager.
- The due date should be realistic and every reasonable attempt should be made to meet it.
- Issues should be a regular topic of every status meeting, with the goal to keep the number of open issues to a manageable number.
- Don't hesitate to escalate an issue to the project sponsor if it begins to have a major effect on the project.

Guidelines to Resolving Issues

- Use your organization's Issue Log template, or in the absence of one, create an Issue Log.
- Train project team members to promptly report potential issues to the project manager, who will determine if they belong in the Issue Log.
- Enter the issue into the Issue Log and assign an owner and a due date.
- Monitor progress and discuss each open issue at every project status meeting.
- Develop a response (also known as a workaround) to the issue.
- Assess the impact of the response.
- Approve the response.
- Close the issue.

ACTIVITY: MANAGING PROJECT ISSUES

TOPIC H:
ENSURE KNOWLEDGE
TRANSFER FOR
PROJECT CONTINUITY



Enablers

- Maintain team and knowledge transfer. (ECO 1.6.4)
- Discuss project responsibilities within team. (ECO 2.16.1)
- Outline expectations for working environment. (ECO 2.16.2)
- Confirm approach for knowledge transfers. (ECO 2.16.3)

Deliverables and Tools

Deliverables	Tools
No specific deliverables	No specific tools

Types of Knowledge

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

- This type of knowledge can be documented and shared with others.

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

- This type of knowledge is essential to provide the context of the explicit knowledge.



Knowledge Management

Level	Description
Individual	<ul style="list-style-type: none">• Each team member needs to know how to perform their work in accordance with each assigned task's scope, schedule, and cost.• Required knowledge can be acquired by:<ul style="list-style-type: none">• Research• Collaborating with team members• Examining the project's or organization's knowledge repository
Project	<ul style="list-style-type: none">• The focus is on achieving the goals of the current project.• Project manager solicits knowledge about other projects that can be applied to the current project.• Project Management Office (PMO) is an excellent source of knowledge, as it exists for the purpose of defining and maintaining standards for project management within an organization.
Organization	<ul style="list-style-type: none">• The focus is on managing programs or portfolios.• The program manager or portfolio manager seeks information from peers who manage other programs or portfolios, in an effort to adapt this knowledge to their specific need.

Lessons Learned

- Knowledge gained during a project can be useful to subsequent phases of a project and to other projects.
- Both positive and negative experiences that occur throughout the project life cycle.
- Reinventing the wheel is both time-consuming and costly.
- The amount of time and effort on documenting lessons learned can pay big dividends in the future.

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

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.



Lessons-Learned Register



Lessons-Learned Repository

Project Responsibilities Within the Team

- **Leadership** to communicate the organization's vision and inspire the project team to focus on the goals of the project.
- **Facilitation** to effectively guide a group to a successful solution to a problem.
- **Political awareness** to keep the project manager aware of the organization's political environment.
- **Networking** to facilitate relations among project stakeholders so that knowledge is shared at all levels.

Working Environment Expectations

- Knowledge is not constant: what we knew yesterday can change based on what we did today.
- Continuously evaluate the project environment for new risks and follow the risk management plan to proactively address them before they become issues that will affect the project objectives.
- Don't hoard knowledge; follow the communications management plan and inform stakeholders of changes affecting their work.
- Use appropriate tools to share knowledge with stakeholders:
 - Face-to-face during formal meetings
 - Face-to-face during informal meetings and discussions
 - Telephone
 - Email
 - Wikis
 - Intranet
 - Printed documents

Knowledge Transfer Approach

- Knowledge transfer consists of connecting individuals, in person or virtually, to share tacit knowledge and collaborate together.
- Techniques include:
 - Networking.
 - Facilitating special interest groups.
 - Meetings, seminars, and various other types of in-person and virtual events that encourage people to interact and exchange ideas and knowledge.
 - Training that involves interaction between attendees.
 - Work shadowing and reverse shadowing provide a more individualized method to the exchange of specialized knowledge.

Guidelines to Maintain Team and Knowledge Transfer

- If your organization has a Project Management Office, follow its guidelines on documenting new knowledge.
- Be alert to new sources of project knowledge and follow the communications management plan to convey that knowledge to stakeholders.
- Proactively seek new knowledge.
- Compile a lessons-learned register throughout the project's lifecycle and add it to a lessons-learned repository with registers from other projects.

ACTIVITY: ENSURING KNOWLEDGE TRANSFER FOR PROJECT CONTINUITY

Learning Goals

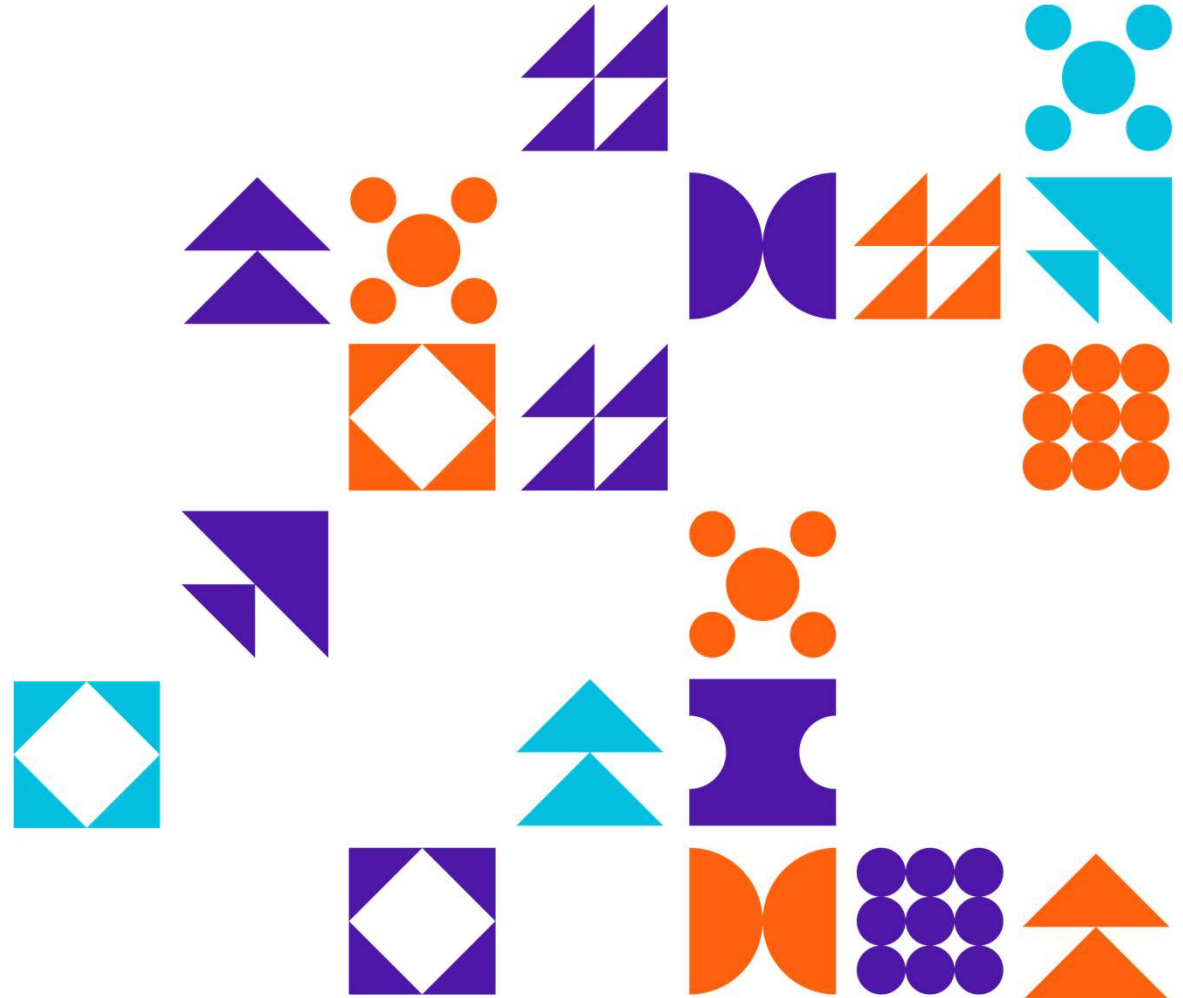
- Assess and manage risks.
- Execute the project with the urgency required to deliver business value.
- Manage communications.
- Engage stakeholders.
- Create project artifacts.
- Manage project changes.
- Attack issues with the optimal action to achieve project success.
- Confirm approach for knowledge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

Reflective Questions

1. What aspects of executing the project plan have you found to be the most challenging? Why?
2. What tools will you use to effectively execute projects in the future?

KEEPING THE TEAM ON TRACK

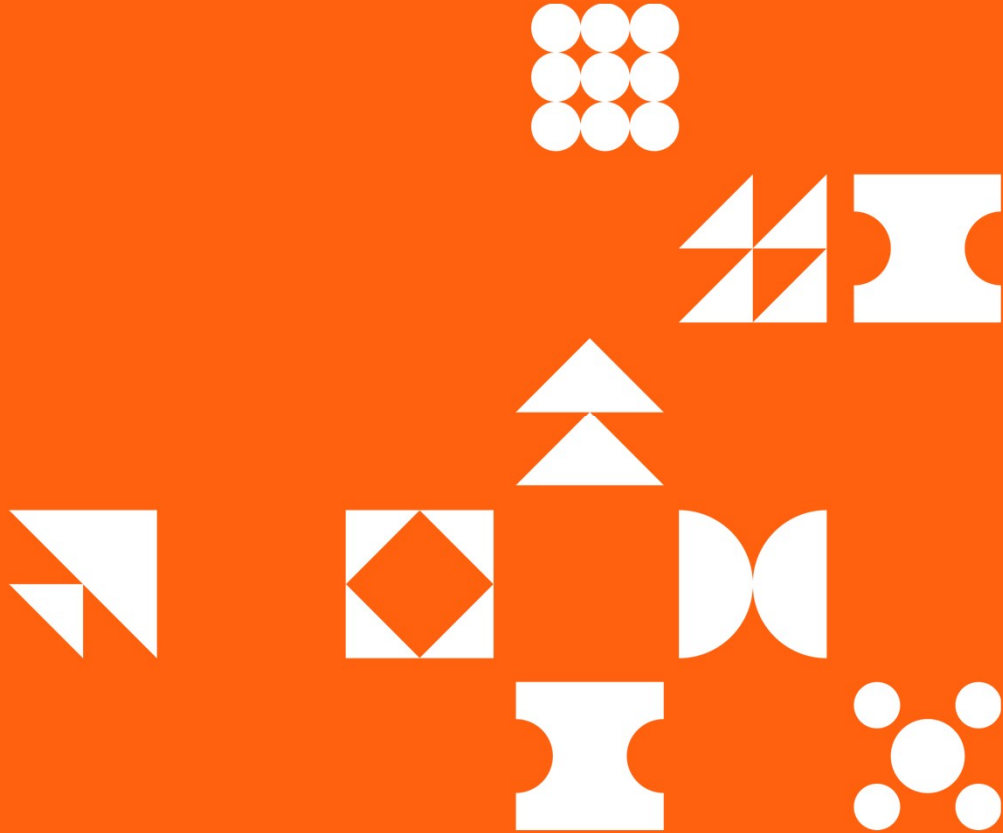
- Lead a Team
- Support Team Performance
- Address and Remove Impediments, Obstacles, and Blockers
- Manage Conflict
- Collaborate with Stakeholders
- Mentor Relevant Stakeholders
- Apply Emotional Intelligence to Promote Team Performance



Lesson Objectives by Topic

- A. Inspire, motivate, and influence team members and stakeholders.
(ECO Tasks 1.2, 1.6)
- B. Appraise team performance against key performance indicators. (ECO Tasks 1.3, 1.4)
- C. Determine, prioritize, and remove impediments, obstacles, and blockers for the team. (ECO Task 1.7)
- D. Investigate and interpret the source and stage of a conflict and recommend an appropriate conflict resolution solution. (ECO Tasks 1.1, 1.10)
- E. Evaluate stakeholder engagement needs and influence stakeholders to accomplish project objectives. (ECO Task 1.9)
- F. Recognize mentoring opportunities and mentor relevant stakeholders.
(ECO Tasks 1.3, 1.13)
- G. Promote team performance through the application of emotional intelligence.
(ECO Tasks 1.3, 1.14)

TOPIC A: LEAD A TEAM



Enablers

- Set a clear vision and mission. (ECO 1.2.1)
- Support diversity and inclusion. (ECO 1.2.2)
- Value servant leadership. (ECO 1.2.3)
- Determine an appropriate leadership style. (ECO 1.2.4)
- Inspire, motivate, and influence team member/stakeholders. (ECO 1.2.5)
- Analyze team members and stakeholders' influence. (ECO 1.2.6)
- Distinguish various options to lead various team members and stakeholders. (ECO 1.2.7)
- Maintain team. (ECO 1.6.4)

Deliverables and Tools

Deliverables	Tools
Vision / Mission document	Diversity awareness
Charter	Leadership styles
Product box	Influence matrix
Reward and Recognition Plan	Salience model
	Power grids
	Behavior modeling
	Challenge status quo
	Recognize contributions
	Remove impediments
	Communicate vision



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
- Promoting the project's mission and value inspires the team to remain focused and feel pride

Diversity Awareness and Cultural Competencies

- Use the leadership approach and style that best suits the situation and the stakeholders.
- Be aware of individual and team aims and working relationships.
- Motivations and working styles of groups and individuals vary based on experiences, age, culture, job roles, and many more influences.
- Projects that include more diverse locations, industries, organizations, stakeholders, working styles, and cultures require communication and openness to build trust.

Leadership Styles

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

Leadership ≠ Management

Servant Leadership

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

Challenge the Status Quo

- Past experiences and processes provide guidance but should not dictate the current project.
- Challenging the status quo provides an avenue for new ideas and perspectives.
- Through challenge and introspection, the best approach can be discovered, and complacency and blind acceptance are avoided.

Influence Matrix

- Leading a team is based partially on your influence and the influence of the other project stakeholders.
- Influence goes in many directions.
- The direction is often dictated by roles or titles:
 - Upwards (senior management)
 - Downwards (team or specialists)
 - Outwards (external)
 - Sideward (project manager's peers)
- The salience classification model can also distinguish influence based on prioritization, urgency, and other aspects.

Saliency Model

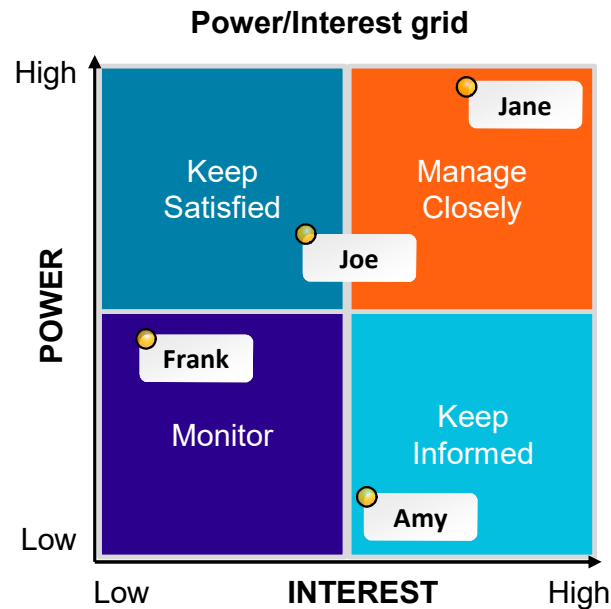
Saliency model: A classification model that groups stakeholders on the basis of their level of authority, their immediate needs, and how appropriate their involvement is in terms of the project.



Power Grids

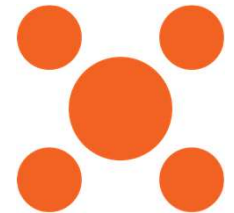
Power/interest grid: Groups stakeholders on the basis of their levels of authority and interest in the project.

Power/influence grid: A classification model that groups stakeholders on the basis of their levels of authority and involvement in the project.



Team Building

- Teams perform better when increased cohesion and solidarity exists.
- Good leadership facilitates the bonding between project team members.
- Team-building activities build unity, trust, empathy, and focus on the team over the individual.



Reward and Recognition Plans

Rewards

- Tangible, consumable items
- Given as a result of reaching a specific outcome or achievement
- Definite start and finish, or fixed time
- Usually expected when goal is met
- Purpose is to motivate towards a specific outcome; never given without recognition too

Recognition

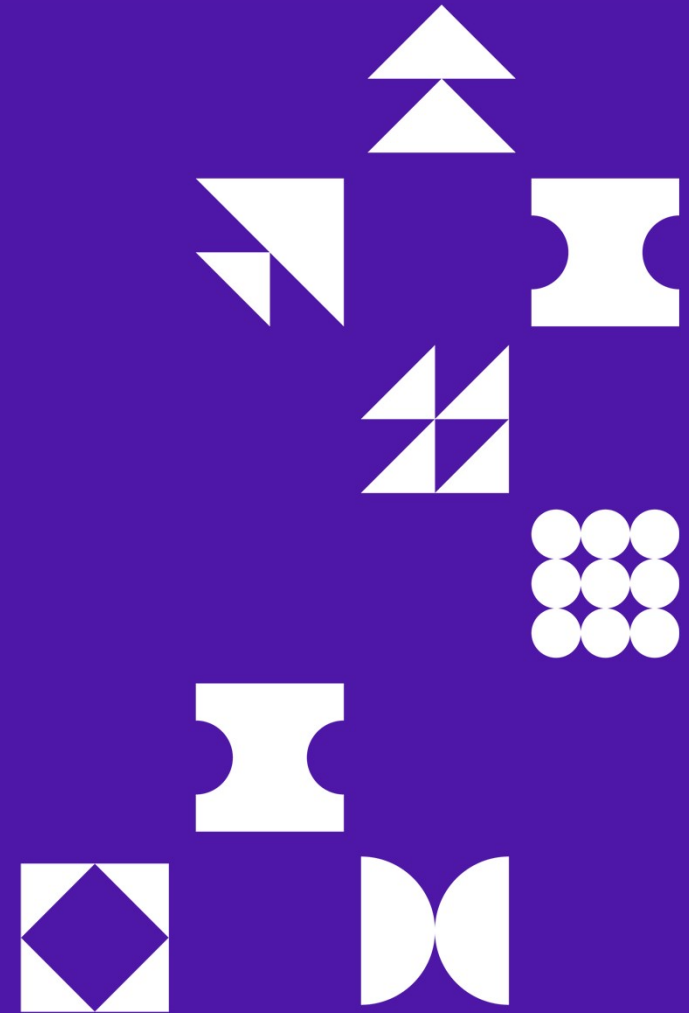
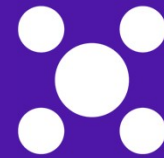
- Intangible, experiential event
- Given as a result of recipient's behavior rather than outcome
- Not restricted to a set time
- Usually unexpected by recipient
- Purpose is to increase recipient's feeling of appreciation; can be given without a reward

Guidelines to Manage a Team

- Use emotional intelligence and other style-typing methods to flex your style to work best with each stakeholder.
- Establish good communication among team members, internally and externally.
- Monitor performance of team members on an ongoing basis.
- Manage conflict.
- Establish an issues log to track and assign project issues.

ACTIVITY: LEADING A TEAM

TOPIC B: SUPPORT TEAM PERFORMANCE



Enablers

- Appraise team performance against key performance indicators. (ECO 1.3.1)
- Support and recognize team growth and development. (ECO 1.3.2)
- Determine appropriate feedback approach. (ECO 1.3.3)
- Verify team member performance improvements. (ECO 1.3.4)
- Support team task accountability. (ECO 1.4.2)

Deliverables and Tools

Deliverables	Tools
RACI matrix	RACI matrix
Management by Objectives	Task boards
Benchmarking	Performance tracking tools
Performance reports	Information Radiators
	Burnup charts
	Earned Value
	Throughput metrics
	Cycle time
	Value stream map

Key Performance Indicators

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

Team Culture and Empowerment

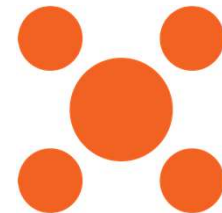
- In projects, the team is the most important part and must be unified.
- Empowering the team to make decisions in a timely manner increases the team's responsibility to deliver a product with complete ownership.
- Interfering with the team is disruptive and reduces motivation.
- Encourage the team to foster team collaboration and decision making.
- The team should be included in:
 - Clarifying and prioritizing requirements
 - Splitting requirements into tasks
 - Estimating the effort

Team Structure and Workspaces

- Important elements for leading and managing projects is the team's environment and location.
- Meaningful interaction is a core tenet of agile.
- Team members need to be able to contribute from everywhere and at any time.
- Everyone is engaged at all times and can take initiative when needed.
- Co-locating the team in a shared workspace fosters more informal and immediate collaboration.
- Establishing a culture of fluid communication and engagement in a workspace that promotes positive interactions makes leading and managing a team easier.

Team Building Activities

- Using team-building activities to influence diverse individuals from many functional areas, each with their own goals, needs, and perspectives, to work as a cohesive team, for the good of the project.
- Also known as “team-building strategies.”
- Formal or informal.
- Brief or extended.
- Facilitated by the project manager or a group facilitator.

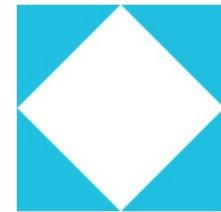


Team Performance Assessments

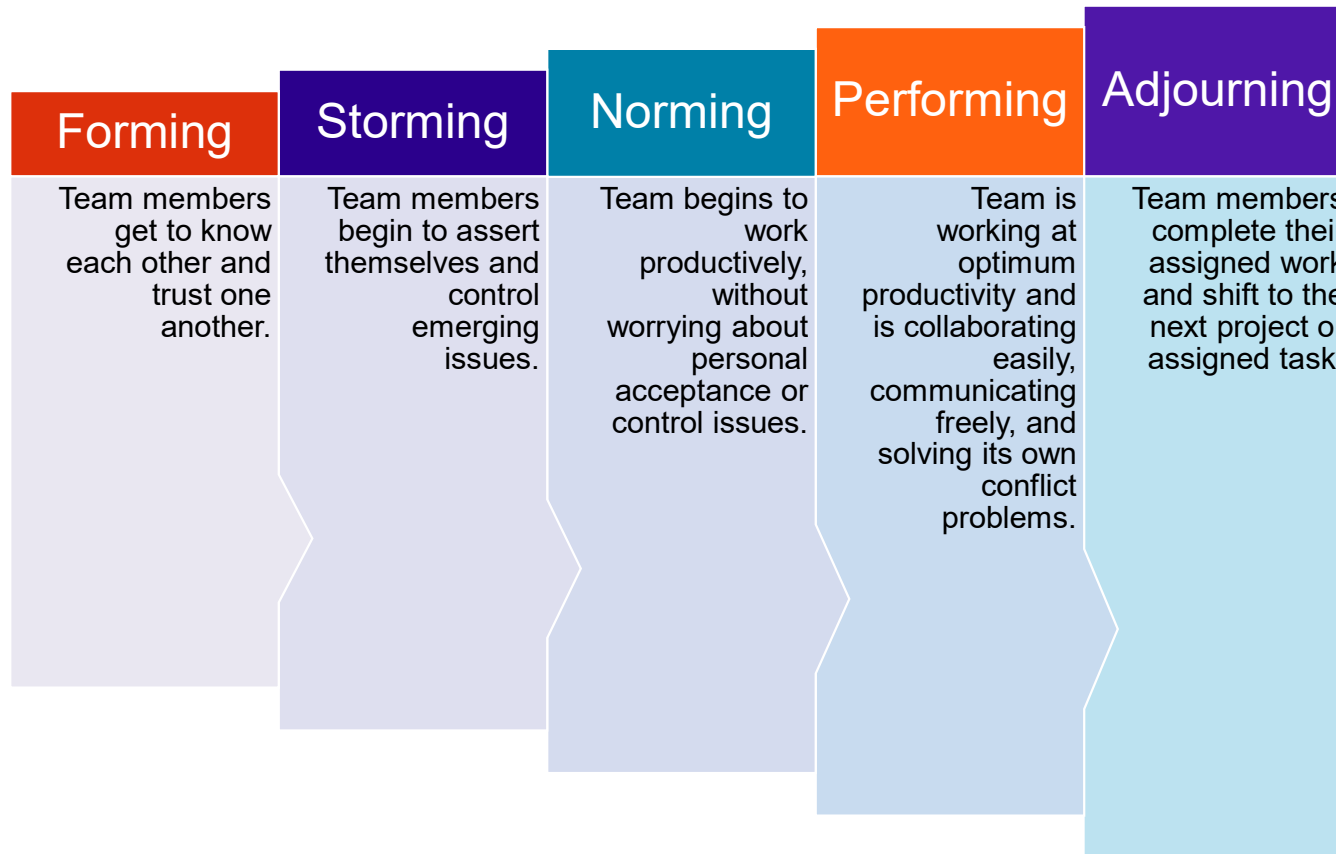
- Assess and identify the potential of each team member on a continual basis.
- Can be formal or informal.
- Purpose of assessment:
 - Improve interaction between team members
 - Solve issues
 - Deal with conflicts
 - Improve skills and competencies of team members
 - Increase team cohesiveness
- Techniques for assessing team performance:
 - Ask key questions to the team members.
 - Speak to team members frequently through one-to-one meetings and regular project meetings.
 - Provide constructive criticism and acclaim to team members, as necessary.
 - Evaluate individual performance.
 - Remove under-performing team members or reassign their work to a new resource.

Performance Assessment Tasks

- Comparing performance to goals
- Reclarifying roles and responsibilities
- Delivering positive as well as negative feedback
- Discovering unknown or unresolved issues
- Creating and monitoring individual training plans
- Establishing future goals



Team Development Stages



Effective Teams

It's the project manager's role to build the team and foster teamwork.

- Work collaboratively.
- Communicate effectively.
- Develop trust among team members.
- Manage conflicts.
- Promote collaborative decision making and problem solving.

Management by Objectives

- Teams with clear objectives are more productive and driven.
- Project managers and team should collaboratively set objectives.
- Objectives should be challenging, yet attainable.
- Objective settings can be conducted:
 - At the start of a project or phase
 - Throughout the project life cycle, as in an iteration planning session

Feedback

- Continuous feedback is essential for agility.
- Regular feedback is crucial for all teams in all methodologies and team environments.
- Discovering the most appropriate and timely feedback is the project manager's responsibility.

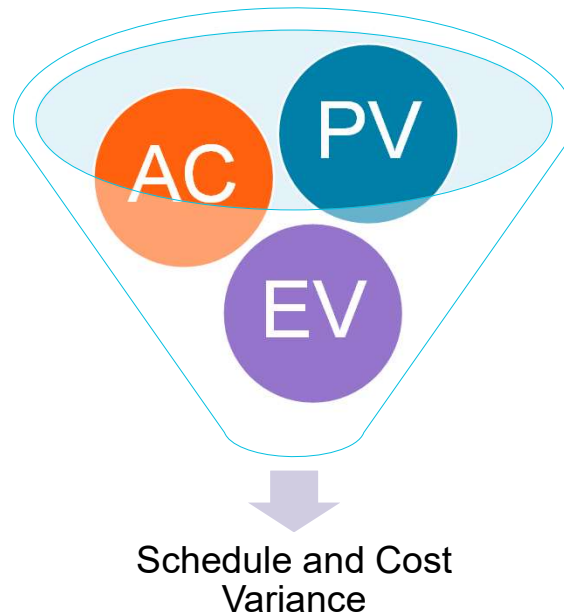
Performance Tracking Tools

Tool	Description
Scrum/Agile/Kanban boards	Based on the Japanese management method of pulling cards to various stages as they are worked on, physical or electronic boards can track work as it progresses across various stages or categories.
Throughput Metrics	Measurement of the team's work that has moved from one stage to another stage over a certain time.
Cycle Time	Measurement of work that has progressed all the way from plan to completed or delivered.
Quality Metrics	Various measurements to track quality deliverables, defects, and acceptable output.
Earned Value	Tracking cost and effort performance against a planned value.
Bar Charts (Gantt)	Using the project schedule to track performance over time.
Velocity	Measurement of total output from an iteration to attempt to predict future iteration outputs.

Earned Value Management (EVM)

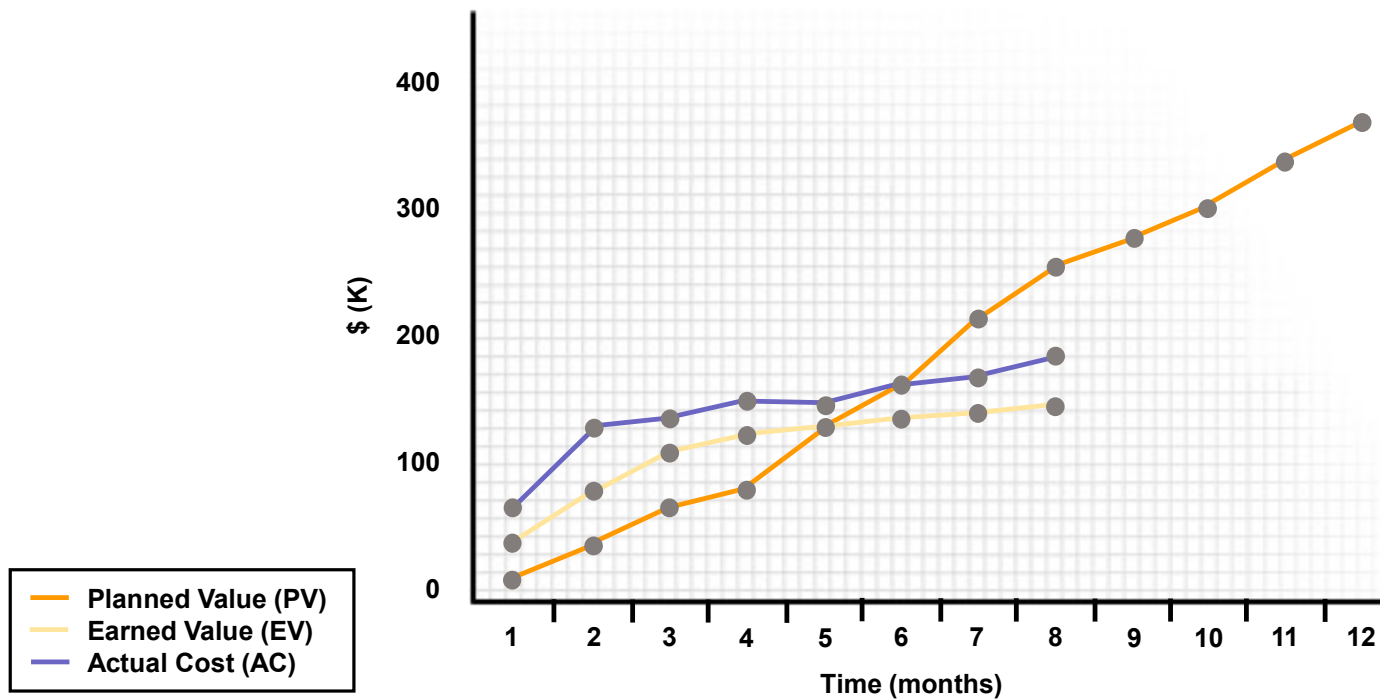
EVM* A methodology that combines scope, schedule, and resource measurements to assess project performance and progress.

- Important to understand the monetary value of work contribution.



Planned Value

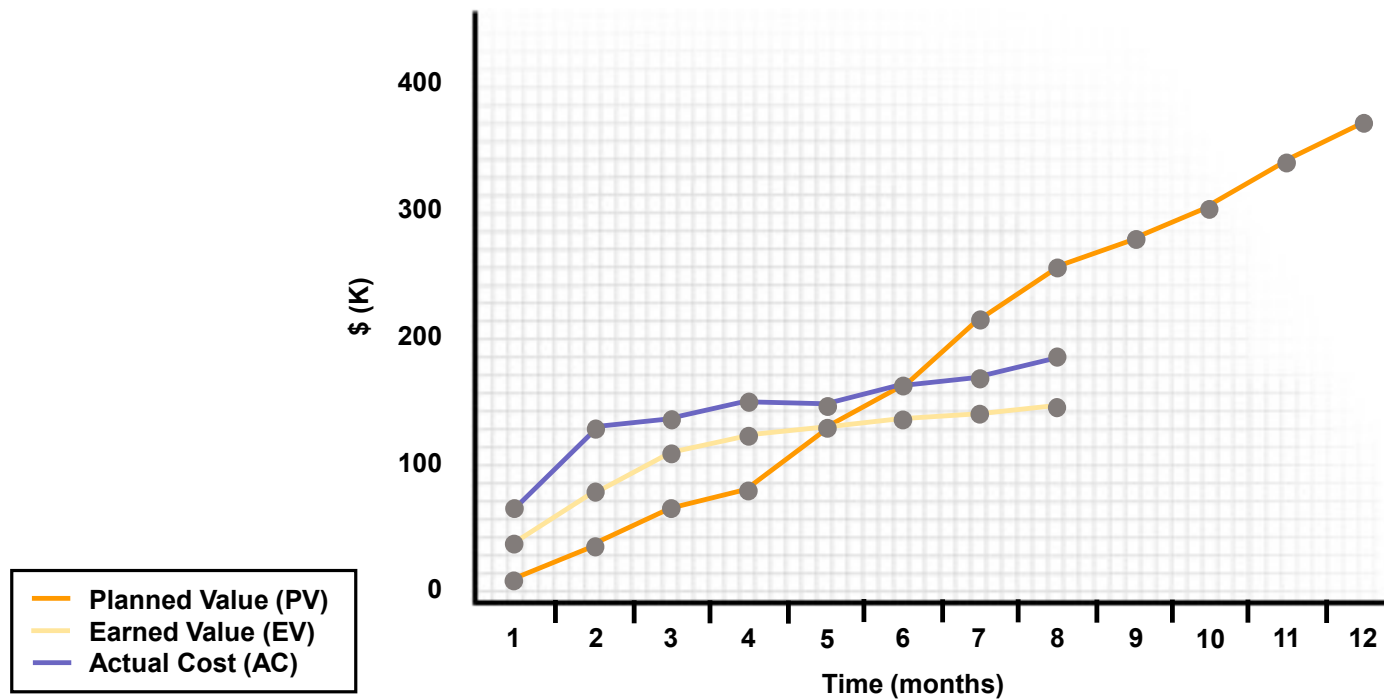
PV* The authorized budget assigned to scheduled work.



Earned Value

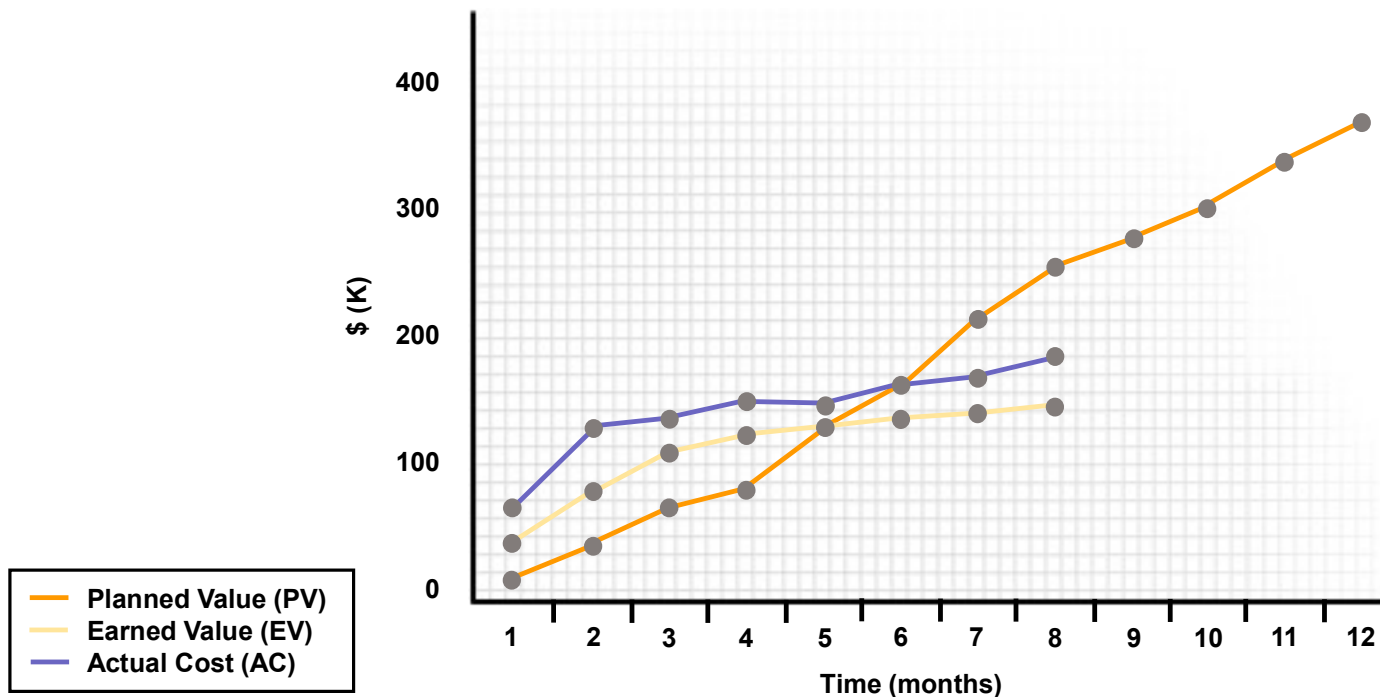
EV* The measure of work performed expressed in terms of the budget authorized for that work.

$$EV = \% \text{ work complete to date} \times \text{budgeted cost}$$



Actual Cost

AC* The realized cost incurred for the work performed on an activity during a specific time period.



EVM Measures for Schedule Control

Schedule Variance* is a measure of schedule performance expressed as the difference between the earned value and the planned value.

(SV = EV - PV)

- A positive SV indicates that the project is ahead of schedule.
- A zero SV indicates that the project is on schedule.
- A negative SV indicates that the project is currently behind schedule.

Schedule Performance Index* is a measure of schedule efficiency expressed as the ratio of earned value to planned value.

(SPI = EV / PV)

- An SPI number greater than 1.0 indicates that the project is ahead of schedule.
- An SPI of 1.0 means the project is on schedule.
- An SPI number less than 1.0 indicates that the project is behind schedule.



EVM Measures for Cost Control

Cost Variance* is the amount of budget deficit or surplus at a given point in time, expressed as the difference between the earned value and the actual cost.

(CV = EV - AC)

- A positive CV indicates that the project is performing under budget.
- A zero CV indicates that the project is on budget.
- A negative CV indicates that the project is performing over budget.

Cost Performance Index* is a measure of the cost efficiency of budgeted resources expressed as the ratio of earned value to actual cost.

(CPI = EV / AC)

- A CPI number greater than 1.0 indicates that the project is under budget.
- A CPI of 1.0 means the project is on budget.
- A CPI number less than 1.0 indicates that the project is over budget.



Estimate at Completion Analysis

EAC: The current projected final cost of the project.

- Based on the current spending efficiency (the CPI).
- Calculated from the following formula, where BAC is the projected budget at completion:

$$EAC = \frac{BAC}{CPI}$$

Estimate to Complete Analysis

ETC: The amount of money needed to complete the project.

- Based on the current spending efficiency of the project.
- Calculated from the following formula:

$$ETC = EAC - AC$$

ACTIVITY: USING EARNED VALUE MANAGEMENT

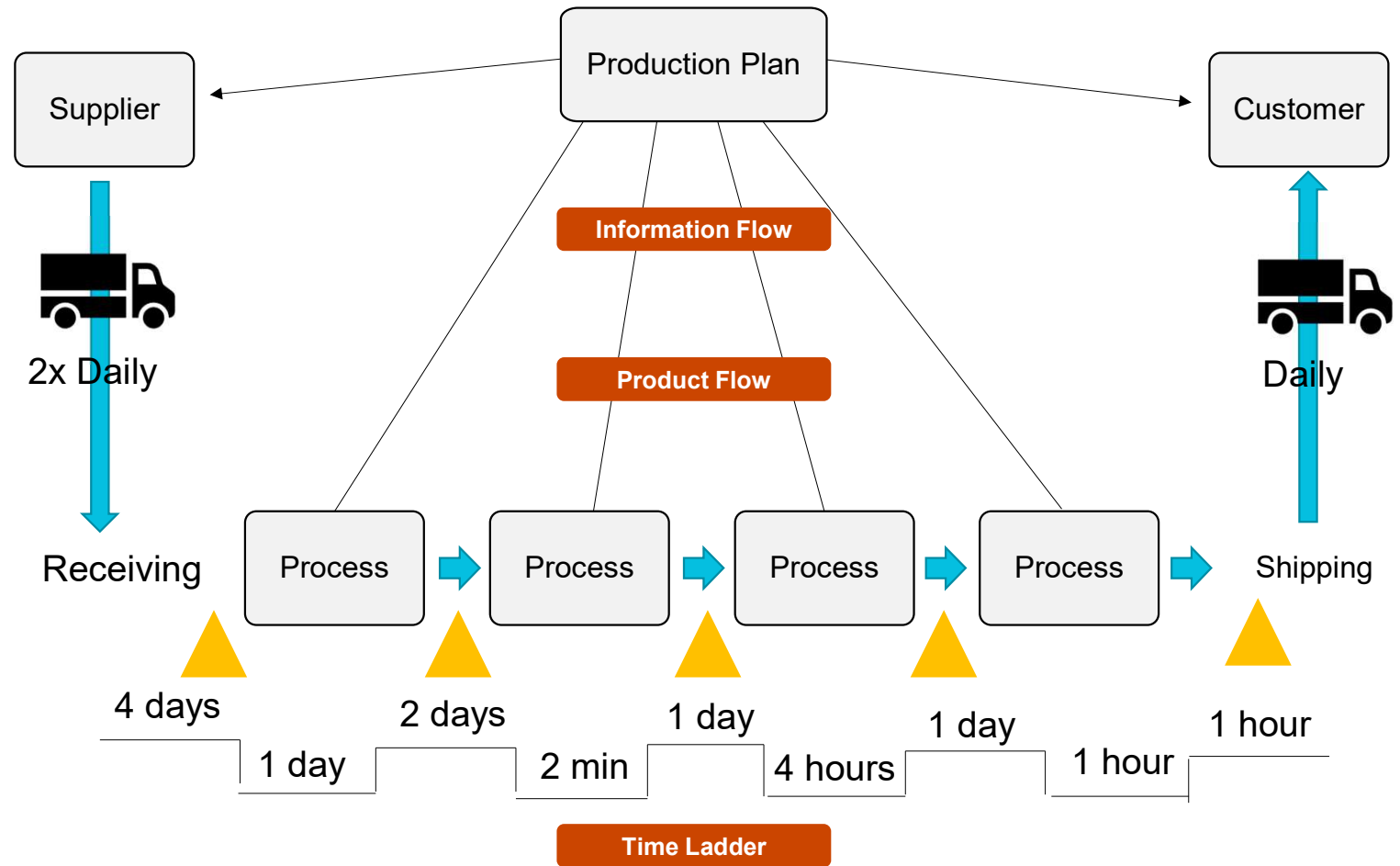
Performance Reports

Type	Description
Information Radiators	Big visual boards to display in high traffic public locations about the project and the advancement of the project. The aim is to radiate information to all about the project work.
Burndown Chart	A graph to show the progress by plotting the burning down of work during an iteration or other time period.
Burnup Chart	A graph to show the progress and gains made by the project team over time.
Earned Value Management Reports	Graphs and values based on the earned value management (EVM) equations.
Variance Analysis Reports	Graphs and their analysis comparing actual results to planned or expected results.
Work performance reports	The physical or electronic representation of work performance information compiled in project documents, intended to generate decisions, actions, or awareness.
Quality Reports	Charts and reports based on the quality metrics collected.
Dashboards	Physical or electronic summaries of the progress, usually with visuals or graphics to represent the larger data set
Task Boards	Physical or electronic depictions of the work that must be done and their current state.

Value Stream Map

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.



This definition is taken from the Glossary of Project Management Institute, *Agile Practice Guide*, Project Management Institute Inc., 2017.

Retrospectives and Lessons Learned

- Retrospectives are an important practice in any agile project.
 - Gather lessons learned from the team on improvements and recognize successes.
 - Encourages the team to review what went well and what could have been better.
- Retrospectives are also about applying lessons learned to the next project.
 - Involve everyone and respect their input.
 - Avoid the blame game and focus on learning and growth opportunities
- The result is an improvement plan for the ensuing iteration and beyond.
 - Stack rank the opportunities by importance and urgency.
 - Incorporate tasks necessary to realize these improvements.
 - Apply ideas to the team environment where appropriate.

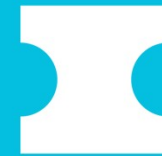
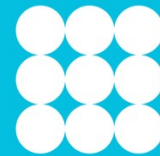
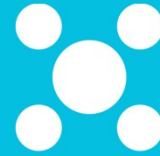
Guidelines for Conducting a Retrospective

Suggested steps to conduct a retrospective and address improvements and change:

1. Prepare mentally or prepare some notes with some ideas or areas of focus in case the team needs some inspiration or ideas.
2. Place two large sheets marked “What Went Well” and “What Could Be Improved” on a board.
3. Ask the attendees to identify items that went well in the iteration and add them to the first sheet.
4. Ask them to identify items that could be improved and add them to the second list.
5. Allow each participant to identify the reason for the improvement.
6. Ask the moderator to look for common items that need improvement and mark them.
7. Narrow the list down to one or two areas to improve upon and bring value in the next Sprint.
8. Get team consensus on the plan improvement.
9. Update these tasks to the Product Backlog after a discussion with the Product Owner.
10. Implement changes.

ACTIVITY: SUPPORTING TEAM PERFORMANCE

TOPIC C:
ADDRESS AND REMOVE
IMPEDIMENTS,
OBSTACLES, AND
BLOCKERS



Enablers

- Determine critical impediments, obstacles, and blockers for the team. (ECO 1.7.1)
- Prioritize critical impediments, obstacles, and blockers for the team. (ECO 1.7.2)
- Implement solutions to remove impediments, obstacles, and blockers for the team. (ECO 1.7.3)
- Re-assess continually to ensure impediments, obstacles, and blockers for the team are being addressed. (ECO 1.7.4)

Deliverables and Tools

Deliverables	Tools
Reprioritize backlog	Daily standup
Updated risk lists	Sprint reviews
Action plans	Risk reviews
Updated impediment task board	Backlog assessment



Impediments, Obstacles, and Blockers

Impediment* An obstacle that prevents the team from achieving its objectives.

- 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.)



Backlog Assessment

- Impediments and obstacles may block work or planned efforts.
- Assess product backlog, scheduled activities, and other lists of work items in reference to the hindrances.
- Evaluate the impediments against the pending work.
- The team and business stakeholders must assess the backlogged work in terms of value and priority.
- Backlog assessment and refinement can explore alternatives to overcome or avoid the risk, such as removing the work item or blockage.

Daily Standup

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*.

- Conducted at the start of working hours.
- Presence of all team members involved in the Sprint is mandatory.
- During the meeting, these questions are answered:
 - What has been done since the last meeting?
 - What needs to be done before the next meeting?
 - What does anyone need help with?



Tracking Impediments

- By tracking impediments as they are raised, addressed, and resolved, communication and proper oversight is increased.
- Methods for tracking impediments might include:
 - Impediment task boards
 - Software applications
- Task boards need to convey the status and efforts associated with the identified impediments.

Risk Reviews / Risk List

- Impediments may be due to, or a result of, project risks or issues.
- Risks raised formally during the daily standup meetings, iteration reviews, or informally, are added to the risk list.
- Newly identified and existing risks are updated based on the current knowledge and situation.

Handling Impediments as Servant Leaders

- Servant leaders aim to clear an unobstructed path for the project team so they may contribute and deliver.
- Project managers want to optimize the workplace to be free of obstacles and other impediments.
 - Physical team space
 - Shielding the team from non-value activities
- Removing distraction, randomization, and other confusion enables the project team to be more effective and efficient.
- Project managers can take on most of the burden of addressing and removing impediments so the team can do their best work on the project to achieve its desired objectives.

Guidelines for Working with External Stakeholders, Other Projects, and Work Demands

- Discuss with the team to assess and evaluate the impediment.
- Review efforts previously attempted or considered.
- Discuss impact and solutions.
- Relay the impediment to the external source.
- Establish a single point of contact (SPOC) within the team, typically the project manager or person with the most subject matter knowledge. Shield the rest of the team as appropriate to focus on other work.
- Create action plan and schedule.
- Follow up and communicate per agreements.
- Document resolution and lessons learned for future reference.

Guidelines to Prioritize Critical Impediments, Obstacles, and Blockers

- Define the prioritization categories appropriate for team, project, and/or organization. Redefine levels as needed.
- Anchor the priority levels with real examples.
- Clarify the new and still open impediments.
- Review the impact or potential impact to the team and to the project objectives.
- Assign a priority to each impediment as a team or a selected subgroup based on connection to the impediment. Use any technique suitable for the team:
 - Fist to five—Participants give a priority level from 0 (fist) to 5 (full hand)
 - T-Shirt sizes—Participants repurpose the t-shirt sizing estimation to the priorities
 - Unique naming—Team designs their own unique naming conventions for scale that works for their needs
 - Planning Poker—Participants repurpose the estimating technique for priorities
- Communicate the priorities in an accessible area, such as an information radiator.
- Begin creating action plans for the highest priority impediments.
- Continually reassess to ensure impediments, obstacles, and blockers for the team are being addressed.

ACTIVITY: ADDRESSING IMPEDIMENTS

Enablers

- Interpret the source and stage of the conflict. (ECO 1.1.1)
- Analyze the context for the conflict. (ECO 1.1.2)
- Evaluate/recommend/reconcile and track effectiveness. (ECO 1.1.3)
- Identify the root cause of the misunderstanding. (ECO 1.10.1)
- Investigate potential misunderstandings. (ECO 1.10.4)

Deliverables and Tools

Deliverables	Tools
Updated working agreement	Conflict management theory
Updated RACI matrix	Change management theory
	Conflict management models
	Conflict resolution strategies
	Emotional Intelligence
	Active listening
	Empathy

The Project Manager's Role

- Managing conflict is a responsibility of all stakeholders.
- The PM heavily influences the direction and handling of conflict.
- Interpersonal and team skills help to ensure positive results when handling conflict.
- In agile projects, the PM facilitates conflict resolution while the team is empowered to resolve conflicts.
- As a servant leader, a PM assists in the removal of impediments or sources of conflict.

Causes of Conflict

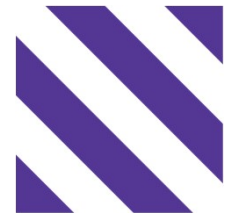
- Competition
- Differences in objectives, values, and perceptions
- Disagreements about role requirements, work activities, and individual approaches
- Communication breakdowns

Conflict Management

- Application of one or more strategies to deal with disagreements
- Effective conflict management leads to improved understanding, performance, and productivity
- Ineffective conflict management leads to:
 - Destructive behavior
 - Animosity
 - Poor performance
 - Reduced productivity
- Use various conflict resolution methods

Change Management Theory

- Refer to useful organizational change management models:
 - Lewin's McKinsey 7-S Model
 - Kotter's Theory
- Managing changes in project and organizations requires different strategies depending on circumstances, people involved, and timing.
- Important to have a robust theory and approach to change management to support the business goals and needs.
- Embracing change as a strategy helps organizations balance investment and risk, be more flexible, and ensure maximum ROI.
- Change management is an essential capability and a significant professional practice in its own right.



Conflict Management Approaches

Withdraw/Avoid

- Retreat from conflict situation
- Postpone the issue

Smooth/Accommodate

- Emphasize areas of agreement
- Concede position to maintain harmony and relationships

Compromise/Reconcile

- Search for solutions that bring some degree of satisfaction to everyone
- Temporarily or partially resolve the conflict through compromise

Force/Direct

- Pursue your viewpoint at the expense of others
- Offer only win/lose solutions

Collaborate/Problem Solve

- Incorporate multiple viewpoints
- Enable cooperative attitudes and open dialog to reach consensus and commitment

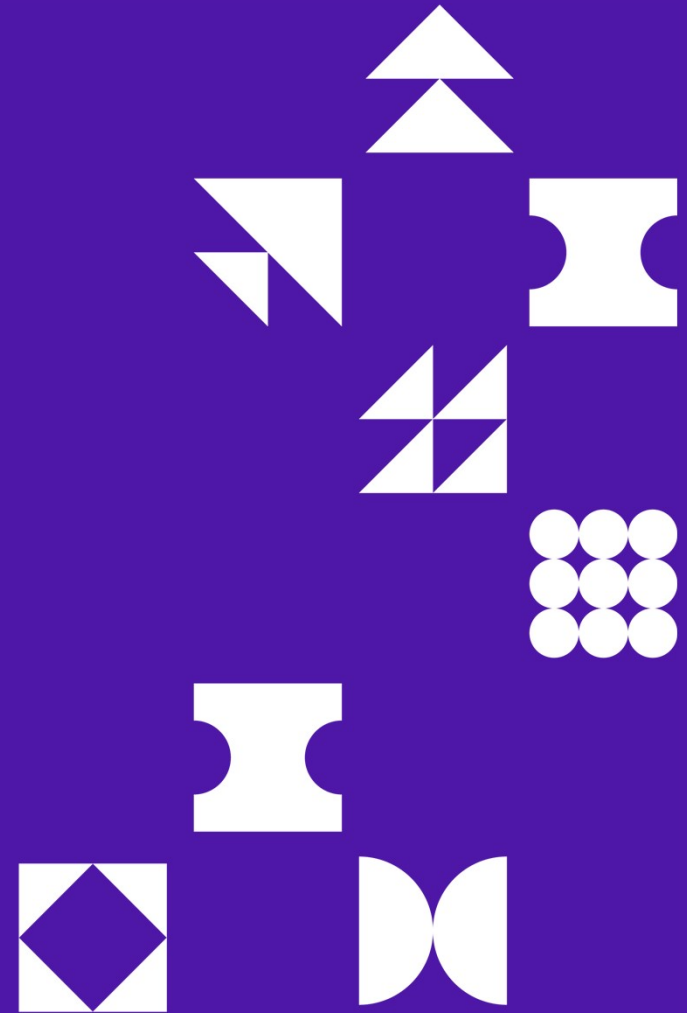
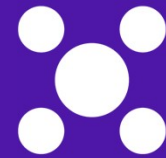
Team Charter

Team Charter* A document that records the team values, agreements, and operating guidelines as well as establishing clear expectations regarding acceptable behavior by project team members.



ACTIVITY: MANAGING CONFLICT

TOPIC E: COLLABORATE WITH STAKEHOLDERS



Enablers

- Evaluate engagement needs for stakeholders. (ECO 1.9.1)
- Optimize alignment between stakeholder needs, expectations, and project objectives. (ECO 1.9.2)
- Build trust and influence stakeholders to accomplish project objectives. (ECO 1.9.3)

Deliverables and Tools

Deliverables	Tools
Stakeholder Registers	No specific tools
Stakeholder Engagement Plan	

Collaboration

- Effective collaboration builds trust between all parties.
- Open dialog and meaningful communication optimizes understanding of aims and expectations.
- Everyone's involvement and engagement levels may fluctuate during project.
- Keep discussions transparent to ensure stakeholders are knowledgeable and expectations are set.
- Leverage communication and interpersonal skills, feedback, and meeting management to maximize feedback loop and engagement between stakeholders.



Project Stakeholders



Stakeholder Identification

- Analyze and document relevant information regarding stakeholder interest, involvement, interdependencies, influence, and potential impact on project success.
- Available tools and techniques that can be used:
 - Expert judgment
 - Data gathering
 - Questionnaires and surveys
 - Brainstorming
 - Data analysis
 - Stakeholder analysis
 - Document analysis
 - Stakeholder mapping
 - Two-dimensional grids
 - Power/interest grid
 - Power/influence grid
 - Impact/influence grid
 - Stakeholder cube
 - Directions of influence
 - Meetings

Stakeholder Register

Stakeholder register* A project document including the identification, assessment, and classification of project stakeholders.

STAKEHOLDER REGISTER

Name	Organization	Project Role	Major Requirements	Expectations	Influence	Areas of Interest	Internal/External	Supporter?
Linda Michaels	CEO	Sponsor	Budget, schedule, quality	Community involvement	Major	Community	Internal	Yes
Ron Gordon		Mortgage lenders		Growth	Major	Development	External	Yes
	Community		Neighborhood improvements		Minor	House	External	Yes
Andrews family		Homeowners		Engage family and friends				Yes
	Lumber warehouse	Vendor			Major	Locally sourced supplies		
		Project Manager		Project goes as planned	Major	All	Internal	Yes

Collaboration Activities

- Stakeholders collaborate daily in a project.
- Frequency of engagement is based on mutual needs and expectation.
- Nearly constant engagement is common.
- Activities that encourage regular collaboration include:
 - Daily stand up meetings
 - Co-locating teams for face-to-face communication
 - Scheduled sessions, such as milestone reviews, backlog grooming sessions, and project update meetings
- Determining and optimizing collaboration activities is an ongoing team effort spearheaded by the project manager.



Guidelines for Facilitating a Meeting

- Ensure meetings are appropriate to the stakeholder's engagement in the project.
- Set and distribute an agenda prior to the meeting start.
- Start meetings promptly to support a sense of urgency.
- Review the agenda set prior to the meeting and change as stakeholders deem necessary.
- Allow others to speak and share as appropriate.
- Take notes or record the meeting, with permission.
- Keep the meeting discussions on topic. Save off-topic discussions for another time.
- Recap the meeting and any action items to follow the meeting.
- Thank everyone for attending.
- Adjourn the meeting per the scheduled time or earlier.
- Distribute the meeting notes or recording as agreed.

Stakeholder Engagement Plan

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.

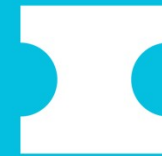
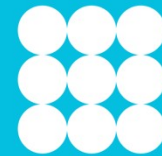
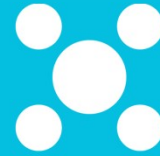


Guidelines to Develop a Stakeholder Engagement Plan

- Review the project management plan for information such as life cycle selected for the project, how work will be executed, how resource requirements will be met, how changes will be monitored and controlled, and the need and techniques for communication among stakeholders.
- Review the stakeholder register for information needed to appropriately engage stakeholders.
- Review the organizational culture, structure, and political climate to determine best options to support an adaptive process for engaging stakeholders.
- Review the lessons-learned database and historical information for insight on previous stakeholder engagement plans and their effectiveness.
- Use expert judgment to decide on the level of engagement required from each stakeholder at project stages.
- Hold meetings with experts and the project team to define the required engagement levels of all stakeholders.
- Use analytical techniques to classify the level of engagement for stakeholders.
- Document the stakeholder engagement plan.

ACTIVITY: COLLABORATING WITH STAKEHOLDERS

TOPIC F: MENTOR RELEVANT STAKEHOLDERS



Enablers

- Allocate the time for ongoing mentoring. (ECO 1.13.1)
- Recognize and act on mentoring opportunities. (ECO 1.13.2)
- Determine appropriate feedback for effectiveness. (ECO 1.3.3)

Deliverables and Tools

Deliverables	Tools
Training and mentoring plan	Group coaching
Effective assessment	Teaching and training
Training schedule	Facilitation
	Transformation skills

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

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

Determining Relevant Stakeholders

- When refining the backlog, mentoring the product owner on grooming best practices.
- When onboarding a new project team member, guiding her on the processes used by the team.
- When a team member must purchase material for the project, showing them the procurement best practices and process for the organization.

Individual Mentoring and Coaching

Process or Task One-on-One Mentoring	Sharing Explicit Knowledge with an Individual while Performing a Task
Encouraging others to take lead on activities	Encouraging self-organization and initiative
Facilitating meetings and sessions	Facilitating opportunities for others to practice project management tasks
Practice taking on new roles	Coaching individuals on how to contribute in other project roles
Informal opportunities	Coaching an individual with tacit knowledge
Formal opportunities	Leading formal training sessions
Transferring skills	Passing on and practicing skills
Modeling behaviors	Demonstrating desired skills and best practices every day
Teammates assisting each other	Self-organizing teams that coach and mentor each other every day in their work

Mentoring and Coaching as a Group

- Mentoring and coaching also occurs in whole team settings.
- When project managers demonstrate the best way to complete a project management task, all involved in the activity are learning.
- Project managers can call out and explain what is happening and why.
- Others in the group can contribute and guide the practice.
- The entire team learns and grows as a unit.
- All on the team are relevant stakeholders.

Training and Sharing Plans

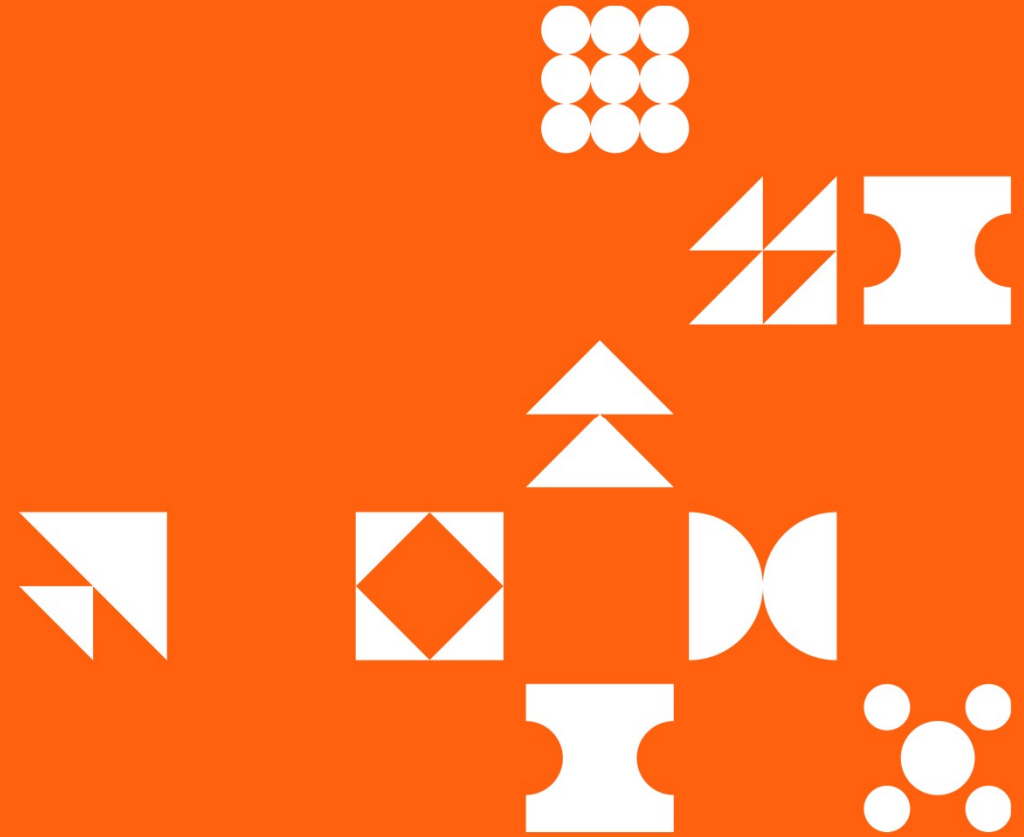
- Setting aside time for sharing and learning can increase the opportunities to capitalize on mentoring.
- Formal or informal plans can be established for training and sharing.
- Retrospectives and lessons learned sessions can be leveraged to call out successes and failures in the management and operation of the project.
- Scheduling training sessions formalizes the mentoring and coaching.
- These sessions can be facilitated by anyone.

Facilitation

- Project managers generally take the lead when it comes to facilitating project management activities.
- Modeling good project facilitation skills is observed and internalized by all.
- Encouraging participation from stakeholders in the activities builds their knowledge and comprehension.
- Guiding and offering advice provides relevant feedback and confidence in what they are doing.
- Increasing the abilities of all project stakeholders increases the shared understanding and efficiency of project tasks and practices.
- When all contribute, all gain.

ACTIVITY: MENTORING STAKEHOLDERS

TOPIC G:
APPLY EMOTIONAL
INTELLIGENCE TO
PROMOTE TEAM
PERFORMANCE



Enablers

- Support and recognize team member growth and development. (ECO 1.3.2)
- Assess behavior through the use of personality indicators. (ECO 1.14.1)
- Analyze personality indicators and adjust to needs of key stakeholders. (ECO 1.14.2)

Deliverables and Tools

Deliverables	Tools
Personality Profile Assessments	Emotional Intelligence
Communications plans	Empathy
Motivation triggers	Listening skills
Performance reports	Transparency
Risk lists	Problem solving
	Motivational models

Emotional Intelligence

Personal Skills

- Self-awareness
- Self-regulation
- Motivation

Interpersonal Skills

- Social skills
- Empathy

Self-Awareness Elements

Element	Description
Emotional awareness	<ul style="list-style-type: none">• Knowing feelings.• Perceiving connections between feelings and behavior.• Recognizing how emotions affect performance.• Being conscious of values, goals.
Accurate self-assessment	<ul style="list-style-type: none">• Perceiving strengths and weaknesses.• Becoming aware of blind spots.• Knowing emotional triggers.
Self-confidence	<ul style="list-style-type: none">• Expressing potentially unpopular opinions.• Taking risks.• Displaying poise, self-assurance.• Having knowledge of self-esteem, proficiencies.• Being decisive.

Self-Regulation Elements

Element	Description
Self-control	<ul style="list-style-type: none">• Remaining cool under pressure.• Staying focused in a stressful environment.• Controlling rash, destructive emotions.
Trustworthiness	<ul style="list-style-type: none">• Acknowledging errors, challenging others' immoral conduct.• Establishing confidence via reputation for honesty, credibility.• Standing by principles.• Behaving in morally correct way, above suspicion.
Conscientiousness	<ul style="list-style-type: none">• Having well-ordered, meticulous approach to work.• Being accountable for fulfilling goals.• Satisfying obligations, delivering on promises.
Adaptability	<ul style="list-style-type: none">• Adapting to changing events.• Interpreting events in a flexible way.• Handling numerous demands and changing priorities.
Innovation	<ul style="list-style-type: none">• Producing fresh ideas.• Considering innovative answers to problems.• Embracing new approaches and possibilities.• Looking for novel ideas.

Motivation Elements

Element	Description
Achievement drive	<ul style="list-style-type: none">• Setting tough goals, taking chances.• Driving hard to get results.• Discovering how to upgrade capabilities.• Striving to minimize uncertainty.
Commitment	<ul style="list-style-type: none">• Making decisions based on team's core principles.• Realizing benefit in comprehensive quest.• Sacrificing to fulfill company goal.• Searching for opportunities to achieve team's mission.
Initiative	<ul style="list-style-type: none">• Working above-and-beyond toward goals.• Inspiring others through extraordinary feats.• Cutting through rules to finish job.• Grabbing opportunities.
Optimism	<ul style="list-style-type: none">• Hoping to succeed instead of fearing failure.• Seeing reversals as caused by controllable factors.• Working toward goals regardless of barriers.

Empathy Elements

Element	Description
Understanding others	<ul style="list-style-type: none"> • Serving others based on needs. • Observing emotional cues and listening carefully. • Displaying tact and appreciating others' points of view.
Service orientation	<ul style="list-style-type: none"> • Happily providing proper help. • Understanding customers' point of view. • Seeking strategies to increase consumers' satisfaction. • Recognizing consumers' needs.
Developing others	<ul style="list-style-type: none"> • Recognizing, rewarding associates' achievements. • Providing helpful criticism. • Coaching and mentoring.
Leveraging diversity	<ul style="list-style-type: none"> • Appreciating various ideologies. • Creating conditions where different types of groups can thrive. • Showing consideration for diverse groups. • Objecting to discrimination and bigotry.
Political awareness	<ul style="list-style-type: none"> • Understanding political truths and realities of companies. • Grasping influences that set opinions of clients, consumers, rivals. • Recognizing critical social systems. • Correctly interpreting power connections.

Social Skills Elements (Slide 1 of 2)

Element	Description
Communication	<ul style="list-style-type: none">• Managing tough problems directly.• Effectively exchanging information.• Cultivating clear communication.• Achieving a mutual awareness.
Building bonds	<ul style="list-style-type: none">• Building connections with colleagues.• Establishing large, casual networks.• Keeping others informed.• Searching for mutually rewarding relationships.
Collaboration and cooperation	<ul style="list-style-type: none">• Fostering a collaborative environment.• Cultivating options for cooperation.• Balancing job duties and professional relationships.• Working together; sharing strategies, knowledge, assets.
Change catalyst	<ul style="list-style-type: none">• Challenging current situation to appeal for change.• Advocating for change.• Appreciating importance of change.• Exhibiting change anticipated of others.

Social Skills Elements (Slide 2 of 2)

Element	Description
Conflict management	<ul style="list-style-type: none">• Detecting clashes, moving disputes into the open.• Managing difficult individuals.• Urging open discussion of issues.• Engineering resolution for both sides.
Influence	<ul style="list-style-type: none">• Polishing presentations.• Winning people over.• Coordinating impressive events to sell an idea.• Building solidarity and approval.
Leadership	<ul style="list-style-type: none">• Stimulating interest for collective vision and goal.• Modeling effective leadership.• Taking on leadership role regardless of official title.• Directing others' performance.
Team capabilities	<ul style="list-style-type: none">• Building team character.• Attracting group members.• Displaying team characteristics.• Safeguarding team and its good name.

Interpersonal and Team Skills

- Active listening
- Communications styles assessment
- Emotional intelligence
- Influencing
- Motivation
- Nominal group technique
- Political awareness
- Transparency

Active Listening

Reflecting

- Repeat the gist of the message
- Verify your understanding of the message

Attending

- Lean slightly toward the speaker
- Stay at eye-level
- Maintain eye contact without staring

Following

- Respond with non-verbal gesture or verbal response
- Ask questions
- Allow speaker a moment to collect their thoughts

Personality Profile Assessments

- Theory of Psychological Types by Carl Jung
- Myers-Briggs Type Indicator (MBTI) by Katherine Cook Briggs and Isabel Briggs Myers
- DiSC Assessment Model by William Moulton Marston
- True Colors Methodology by Don Lowry
- Social Style Model by TRACOM
- Whole Brain Thinking by Ned Herrmann

Organizational Theory

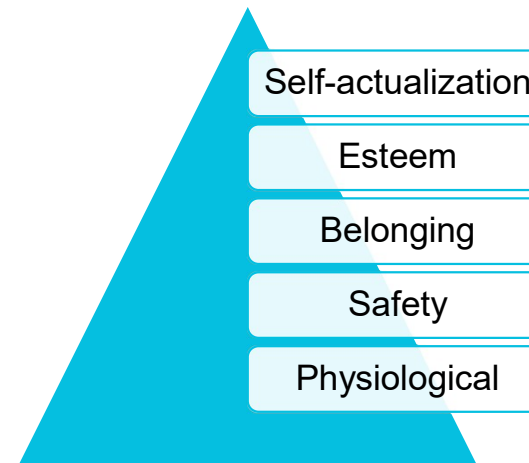
Organizational theory: The study of how people, teams, and organizations behave.

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

Guidelines for Building Emotional Intelligence with Key Stakeholders

- Recognize your own emotions and behaviors.
- Assess how your emotions, attitudes, actions, behaviors control you.
- Observe how your emotions affect those around you.
- Take note of physical nonverbal cues of others, such as a shrug or smile.
- Interpret those cues against the context, situation, and your emotions.
- Remain mindful of the emotions of others.
- Mirror the behaviors of others when suitable to become better connected.
- Practice controlling or changing your emotions to better suit the situation.

ACTIVITY: APPLYING EMOTIONAL INTELLIGENCE

Learning Goals

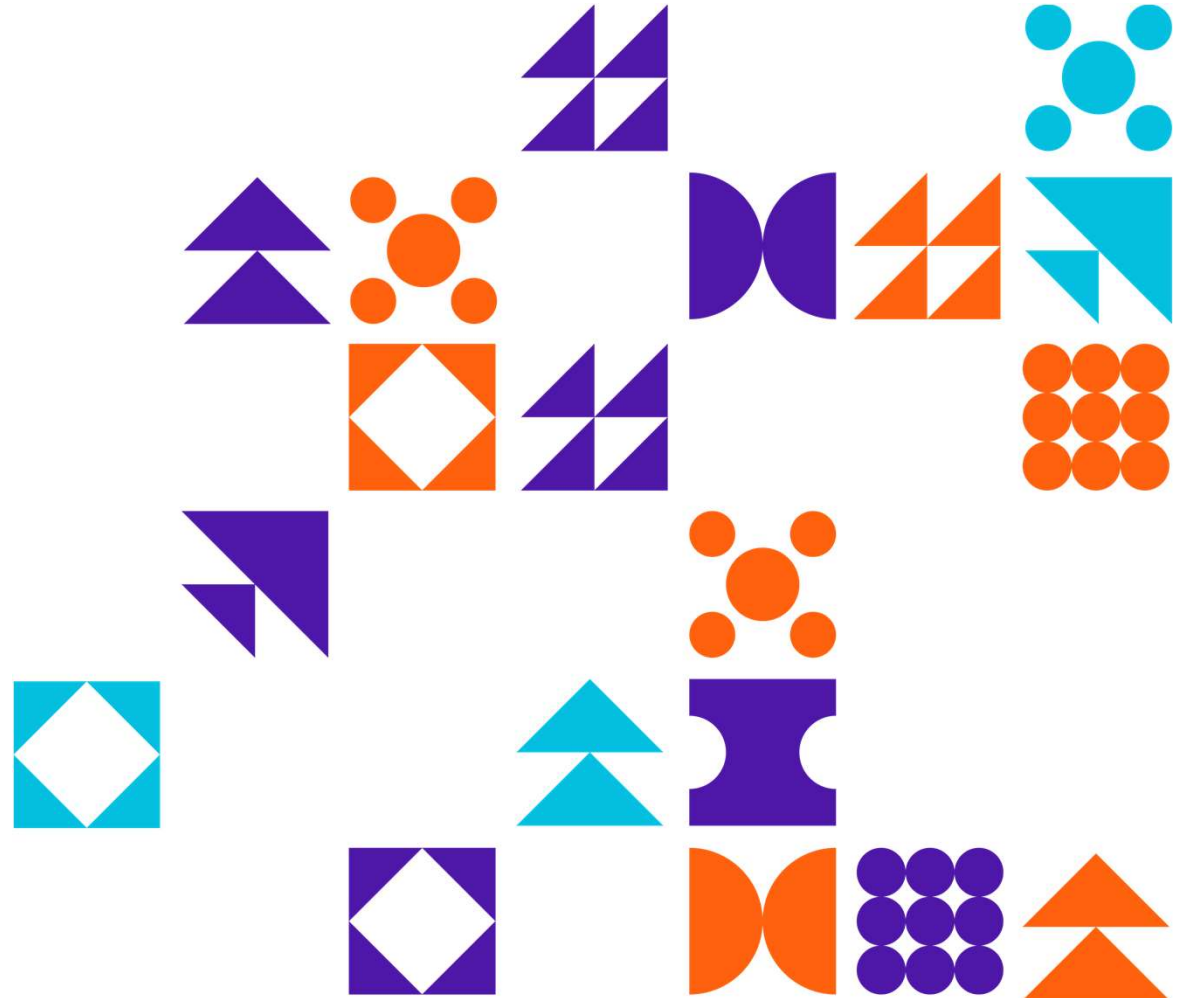
- Inspire, motivate, and influence team members and stakeholders.
- Appraise team performance against key performance indicators.
- Determine, prioritize, and remove impediments, obstacles, and blockers for the team.
- Investigate and interpret the source and stage of a conflict and recommend an appropriate conflict resolution solution.
- Evaluate stakeholder engagement needs and influence stakeholders to accomplish project objectives.
- Recognize mentoring opportunities and mentor relevant stakeholders.
- Promote team performance through the application of emotional intelligence.

Reflective Questions

1. What aspects of managing the project team have you found to be the most challenging? Why?
2. What types of experiences have you had with project stakeholders? And, how did the stakeholders impact the project?

KEEPING THE BUSINESS IN MIND

- Manage Compliance Requirements
- Evaluate and Deliver Project Benefits and Value
- Evaluate and Address Internal and External Business Environment Changes
- Support Organizational Change
- Employ Continuous Process Improvement



Lesson Objectives by Topic

- A. Determine necessary approach and action to address compliance needs. (ECO Task 3.1)
- B. Evaluate delivery options to achieve benefits and value. (ECO Tasks 1.10, 3.2, 3.4)
- C. Continually review internal and external business environment for impacts on project scope/backlog. (ECO Task 3.3)
- D. Evaluate the impact of the project to the organization and determine required actions. (ECO Task 3.4)
- E. Assess the existing continuous improvement framework and execute continuous improvement steps.

Enablers

- Confirm project compliance requirements. (ECO 3.1.1)
- Classify compliance categories. (ECO 3.1.2)
- Determine potential threats to compliance. (ECO 3.1.3)
- Use methods to support compliance. (ECO 3.1.4)
- Analyze the consequences of noncompliance. (ECO 3.1.5)
- Determine necessary actions to address compliance needs. (ECO 3.1.6)
- Measure the extent to which the project is in compliance. (ECO 3.1.7)

Deliverables and Tools

Deliverables	Tools
Risk Register	Risk Register
Configuration Management System	Risk Response Plan
Execution reports	Variance analysis
Nonfunctional requirements	Configuration Management System
Signoffs / Approvals	Tolerances
QA Outputs	Escalation procedures
Quality Management Plan	Audits
	Sampling
	QA tools



Compliance Requirements

- Most projects have aspects of their solutions that are subject to legal or regulatory constraints.
- The requirements for compliance must be identified, tracked, and managed throughout the project.
- Might include requirements for specific practices, privacy laws, handling of sensitive information, and many other areas.

Risk Register

- Used to track and manage risks during the project
- Compliance-related risks might include:
 - The identified risk
 - Risk owner
 - Impact of a realized risk
 - Risk responses
- Create testing and validation plans to ensure project deliverables meet compliance requirements
- Recommended to perform a summary check of compliance *before* the end of the project
- When possible, legal and regulatory compliance for deliverables should be validated on an ongoing basis during the project.

Configuration Management System

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

Risk Responses

Avoidance

- Customer determines that risk is too high relative to the value.

Transfer/Sharing

- For financial risks, customer might consider sharing the risk with a third party.

Mitigation

- Responding to risks to reduce likelihood, impact of a realized risk, or the potential vulnerability.

Acceptance

- After risk responses are implemented, the remaining residual risk is accepted and managed.

Compliance Categories Classification

- Types of compliance categories vary based on industry and solution scope.
- The appropriate categories will vary for each project based on your unique legal and regulatory exposure.

Environmental
Risk

Workplace
Health and
Safety

Corrupt
Practices

Social
Responsibility

Quality

Process Risks

Execution Reports

- Project manager regularly creates execution reports.
- These include information about:
 - Project activities
 - Deliverable status
 - Overall progress
- Important to include status of risks, including compliance-related risks
 - Actions to be taken to manage the risks
 - Testing and validation activities
 - Audits
 - Any other actions to verify deliverable compliance

Variance Analysis

- Project managers create regular reports on project variances and any actions taken to control the project to keep it on track.
- Variances related to compliance are critical because of potential impact on usability of the deliverable.
- 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

Potential Threats to Compliance

- Identification of new vulnerabilities.
- Changes in legal or regulatory requirements.
- Errors in testing and validation to confirm compliance.
- Errors or bugs in deliverables.
- Lack of awareness of compliance requirements.

Nonfunctional Requirements

Type	Considerations
Availability	<ul style="list-style-type: none">• How and when is the service available?• If the service were to become unavailable, how quickly can it be restored to working?
Capacity	<ul style="list-style-type: none">• What level of service performance, speed, and throughput is required?• Given the number of stakeholders using the service, is there enough supply to meet demand?
Continuity	<ul style="list-style-type: none">• If there were a disaster of some kind, how quickly could the service be recovered to support operations.
Security	<ul style="list-style-type: none">• How well is the service and its information protected from security risks and threats?• How do you guarantee the confidentiality, integrity, and availability of the information?

Sign-offs and Approvals

- Identify the necessary stakeholders authorized to sign-off and approve on deliverables.
- The solution and its deliverables must meet compliance requirements.
- Sign-off and approval can happen throughout the project or at completion.
- After testing and validating deliverables, a compliance sign-off provides the following benefits:
 - Early warning of potential threats to compliance.
 - The ability to capture variances and determine a course of action.
- Remediate issues to avoid:
 - Negative impact on the project timeline
 - Cost overruns
 - Increased project risks

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

Guidelines to Analyze the Consequences of Noncompliance

To identify and manage legal, regulatory, and other compliance requirements, the project manager needs to:

- Define the legal, regulatory, and other constraints, and define the business rules that constrain the project solution and improve the likelihood of compliance.
- Define parts of the potential solution subject to compliance requirements, the scope of the compliance requirement, and the stakeholders responsible for reviewing, approving, and signing-off on the component's compliance.
- Track and manage the review and approval activities related to compliance requirements.
- Track and manage the risks and risk responses related to compliance requirements.

Quality Assurance Outputs

- As the project team produces deliverables, QA will:
 - Review the deliverable.
 - Verify that it meets both functional and nonfunctional requirements.
 - Possibly, identify and suggest potential improvements.
- QA validates whether the deliverables align with compliance requirements and provides feedback on any variances identified and potential approaches to cure any defects or other noncompliance.
- As the project continues, monitor the QA reports and recommendations and coordinate with the project team to address defects or noncompliance issues.

Escalation Procedures

- When 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.
- For all compliance requirements, identify the stakeholder responsible for reviewing the noncompliance issue and determine how the team will proceed.
- These procedures should be defined during project and risk planning.

Quality Management Plan

- Describes the resources and activities needed for the project team to achieve the necessary quality objectives.
- Sets the expectations for the project's quality requirements.
- Quality requirements might include:
 - 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.

Audits

- Conducted by a team external to the project, such as an internal audit team or PMO.
- Used to verify compliance with organizational policies, processes, and procedures.
- Possibly used to verify implementation of change requests.
- Designed to accomplish the following:
 - Identify that all good and best practices are being used.
 - Identify any nonconformity, gaps, and shortcomings.
 - Share good practices from other projects in the organization or industry.
 - Proactively offer improvements to improve productivity.
 - Highlight contributions to lessons learned.

Sampling

- It might not be viable for QA to inspect every product or deliverable.
- Substituting a sampling of different outputs of the processes and procedures for review might be appropriate.
- Sampling approach can provide similar results in identifying quality issues and reducing the cost of quality.
- Helps to better align the cost of quality assurance with the overall value to the project.

QA Tools

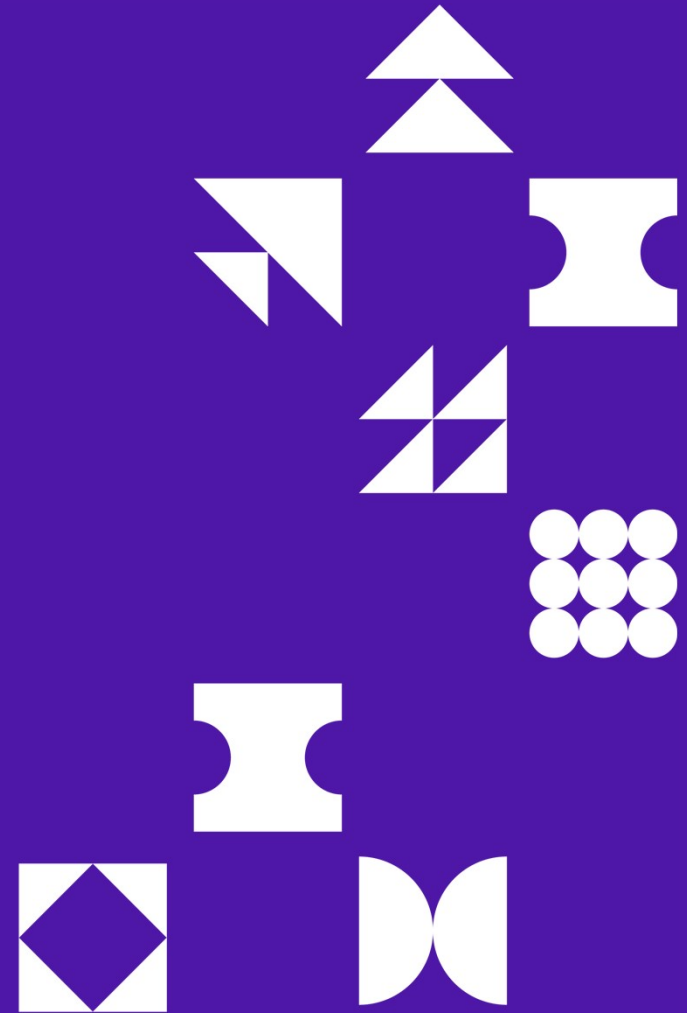
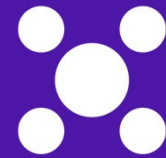
- Data gathering: Checklists and other lists of acceptance criteria
- Data analysis: Alternatives analysis, document analysis, process analysis, or formal root cause analysis
- Decision making techniques
- Data representations: Affinity diagrams, cause and effect diagrams, flowcharts, histograms, matrix diagrams, and scatter diagrams
- Audit reports
- Design for X: Focuses on a particular value X and its impact on design quality
- Problem solving techniques
- Quality management methods: Six Sigma, Plan-Do-Check-Act

Guidelines to Measure the Compliance of a Project

- Use QA outputs to confirm deliverable and process compliance and identify the needs for corrective actions.
- Establish project tolerances and enable the project manager to either initiate corrective actions or to quickly escalate noncompliance outside of the tolerances.
- Establish a clear Quality Management Plan and execute it on an ongoing basis to identify any noncompliance issues as early as possible.
- Establish where external audit teams can confirm and validate use of appropriate processes and procedures and how audit results can enable the team to identify improvements.
- Leverage effective QA tools and techniques to assess quality deliverables and identify improvements, corrective actions, or defect repairs required.

ACTIVITY: MANAGING PROJECT COMPLIANCE

TOPIC B: EVALUATE AND DELIVER PROJECT BENEFITS AND VALUE



Enablers

- Build shared understanding of project and value.
- Investigate that benefits are identified. (ECO 3.2.1)
- Document agreement on ownership for ongoing benefit realization. (ECO 3.2.2)
- Verify measurement system is in place to track benefits. (ECO 3.2.3)
- Evaluate delivery options to achieve benefits. (ECO 3.2.4)
- Inform stakeholders of value being delivered. (ECO 3.2.5)
- Evaluate impact to the organization and determine required actions. (ECO 3.4.3)

Deliverables and Tools

Deliverables	Tools
Benefits Management Plan	Value Analysis
EVM, ETC analysis	Cost Analysis
ROI, NPV, IRR	
Benefit Cost Analysis	
Decision Trees, EMV	
Monte Carlo	
Net Promoter Score	
A/B Testing	

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.
- The goal is to cost-effectively improve the components to increase the overall business value.

Benefits Management Plan

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

Component	Description
Target benefits	The expected tangible and intangible business value to be realized from the project.
Strategic alignment	How the benefits align with the business strategies of the organization.
Timeframe	When the benefits (short-term and long-term) will be realized, usually by project phase
Benefits owner	The person or group that monitors, records, and reports the benefits.
Metrics	The direct and indirect measurements of the realized benefits.
Risks	The risks associated with achieving the targeted benefits.

Sprint Reviews/Demos

- At the end of each iteration or sprint, the team conducts a sprint review or demo.
- Purpose is to focus on completing whole user stories in each sprint and verify that the capability is "potentially shippable."
- In the early stages, obtaining the product owner's acceptance of the story and any feedback enables the team to make the necessary changes to optimize business value.

Release Management

- Agile projects have the ability to convert high-value capabilities into delivered solutions early.
- The Product Owner defines the initial capabilities that make up the Minimum Business Increment (MBI).
- In traditional projects, release occurs at the end when everything is done, but you are never completely done.
- The MBI offers enough of the high-value aspects of a solution to start using it and benefit from it.
- Define an approach for subsequent releases driven by the following:
 - Availability of a set of features or capabilities.
 - Organizational tolerance for changes.
 - A time cadence for subsequent releases.

Benefit Cost Analysis

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

- Also called cost-benefit analysis.
- Frequently used to compare potential projects to determine which one to authorize.
- Goal is to select the alternative whose benefits outweigh costs by the largest amount.
- Alternative should not be chosen when costs exceed benefits.
- The accuracy of the estimates of cost and benefit determines the value of the benefit cost analysis.

Return on Investment (ROI)

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

- Sometimes called the rate of return
- Usually expressed as a percentage.
- A positive ROI is interpreted as a good investment, and a negative ROI is a bad investment.

Present Value (PV)

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

- The PV formula is:

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

- If you need \$3,000 in three years and can invest your money at 8 percent interest, the present value of your initial investment is calculated:

$$\$2,381.50 = \frac{\$3,000.00}{(1 + 0.08)^3}$$

Net Present Value (NPV)

Net Present Value: The present value of all cash outflows minus the present value of all cash inflows.

- NPV is a financial tool that is used in capital budgeting.
- NPV compares the value of a dollar today to the value of the same dollar in the future after taking inflation and discount rate into account.

Internal Rate of Return (IRR)

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

- IRR is also a financial tool often used in capital budgeting.

Net Promoter Score (NPS)

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.

$$\text{NPS} = \% \text{ of Promoters} - \% \text{ of Detractors}$$

- Higher score indicates customer delight and willingness to recommend the solution
- Assign a number 0 to 10 for customer's self-reported satisfaction
- Customer categories are as follows:
 - Detractors (0-6)
 - Passives (7-8)
 - Promoters (9-10)

AB Testing

- When different approaches are available, project teams might ask users for their preferences.
- Used in marketing, AB testing is a method for determining user preferences.
- Different sets of users are shown similar services with one difference known as the independent variable.
- Based on the results of the AB testing experiment, you can optimize the solution you provide to users.

Monte Carlo Simulation

Monte Carlo simulation* An analysis technique where a computer model is iterated many times, with the input values chosen at random for each iteration driven by the input data, including probability distributions and probabilistic branches.

- Outputs are generated to represent the range of possible outcomes for the project.
- Monte Carlo refers to not one single analysis method but to a wide class of techniques, mostly making use of sophisticated computers and inputs of random numbers, probabilities, and algorithms.



Simulation

Simulation* An analytical technique that models the combined effect of uncertainties to evaluate their potential impact on objectives.

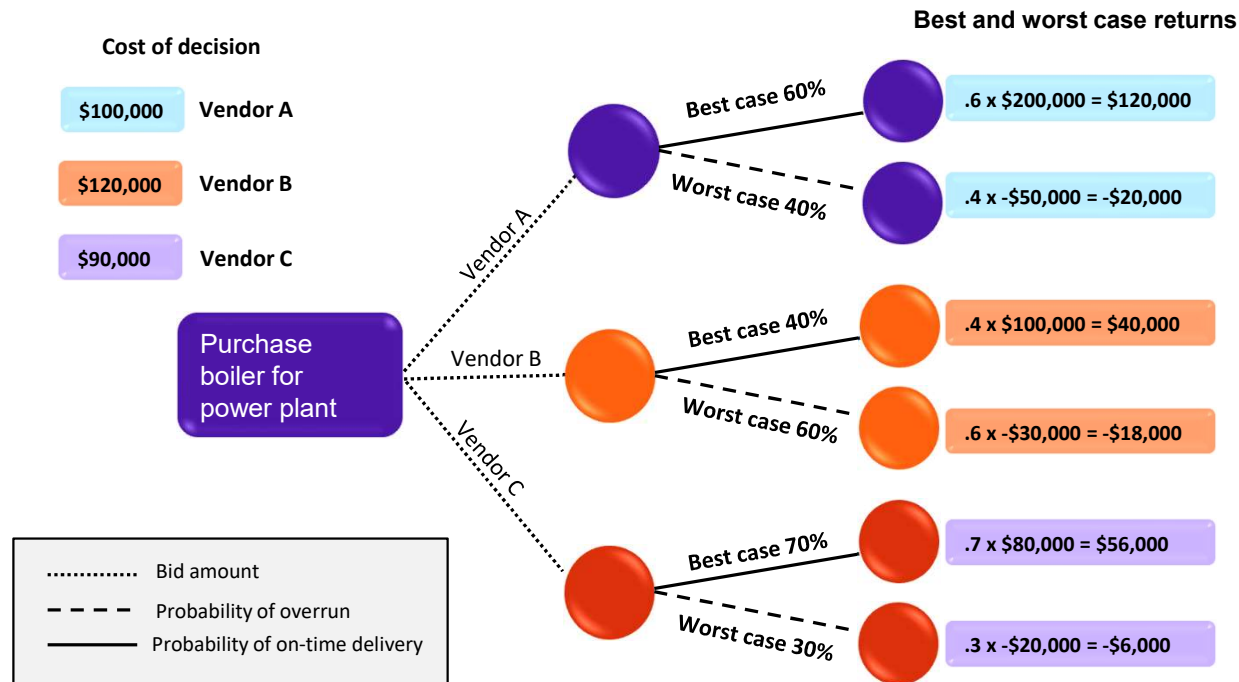
- Uses computer models and estimates of risk.
- Translates uncertainties into potential impact.
- Involves calculating multiple project durations using varying sets of assumptions.

Example: The project team for the multimedia campaign decides which printing contractor to use and chooses between two vendors.



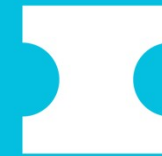
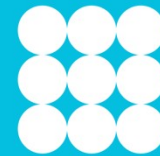
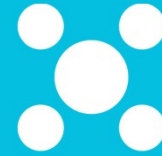
Decision Tree Analysis

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



ACTIVITY: USING DECISION TREE ANALYSIS

TOPIC C:
EVALUATE AND
ADDRESS INTERNAL
AND EXTERNAL
BUSINESS
ENVIRONMENT
CHANGES



Enablers

- Survey changes to internal and external business environment. (ECO 3.3.1)
- Assess impact on scope/backlog based on changes in business environment. (ECO 3.3.2)
- Recommend options for changes (e.g., schedule, cost changes). (ECO 3.3.3)
- Reprioritize work/actions.
- Review business environment for impacts on scope/backlog. (ECO 3.3.4)

Deliverables and Tools

Deliverables	Tools
Update Baselines	Change Control Boards
Configuration Management System	Backlog Reprioritization
Reprioritize Backlog	Product Owner Duties
Updated Roadmaps	Release Planning
	Governance

Internal Business Environment

- Organizational changes can dramatically impact the scope of a project.
- Project manager and project sponsor need to have visibility into business plans, reorganizations, process changes, and other internal activities.
- 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.



Update Baselines

- In traditional project plans, the completed initial plan is the baseline.
- As changes occur in the project, the baseline should be updated to reflect any new requirements.

Change Control Boards

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

- A Change Control Board (CCB) is designed to manage project change requests.
- The CCB represents key stakeholders and assesses change in terms of cost, risk, and value impact.
- Recommend approval of the change request.
- Depending on the scope of the change and established tolerance thresholds, either the project manager or project sponsor can then approve the change.



Configuration Management System

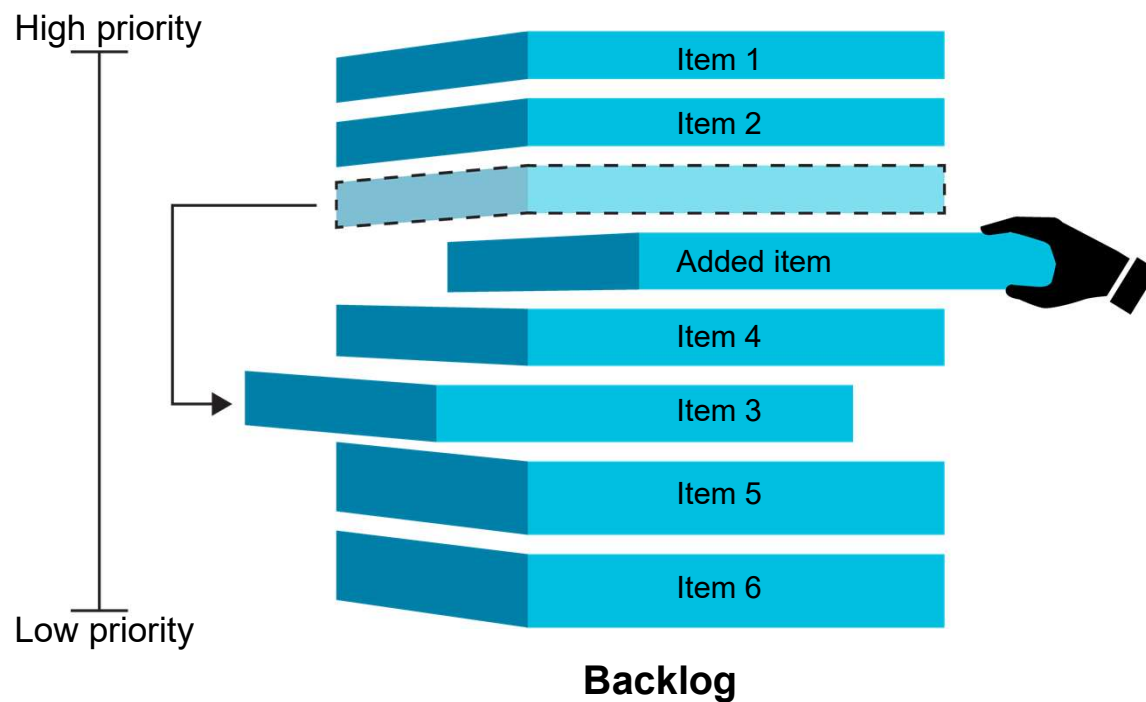
Configuration Management System* A collection of procedures used to track project artifacts and monitor and control changes to these artifacts.

- Changes to a project necessitate updates to the CMS.
- The CMS maintains the change history of all components to effectively control the versions of the components.



Backlog Reprioritization

- Product owner re-prioritizes the backlog as stories or requirements change.
- The business value determines the priority of the changes.



Product Owner Duties

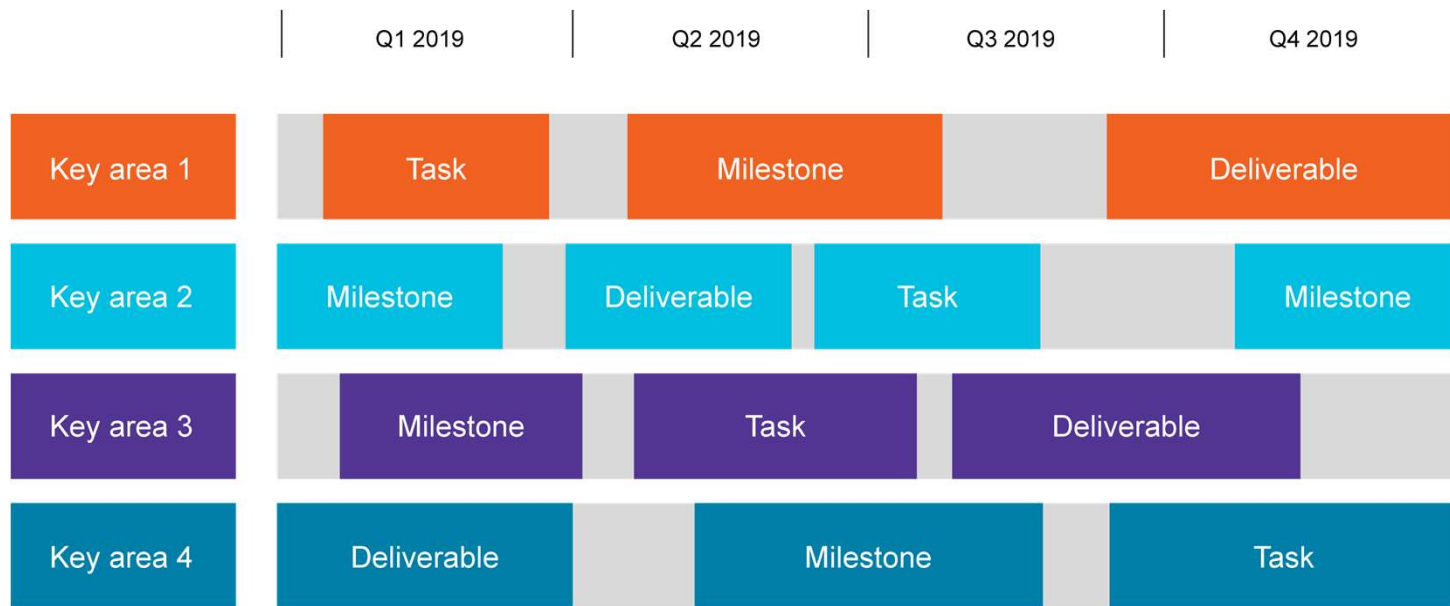
- Role is to help the project team prioritize work based on the value that the capability will provide to the business.
- Accountable for the ultimate business value of the solution produced by the project team.
- Creates and socialize the product vision.
- Coordinates different business needs from different stakeholders together into the product backlog.
- Responsible for defining and prioritizing the user stories with the help of the team.
- Answers team questions about the needed solution.
- Provides timely feedback to the team.

Recommended Options for Changes

- When change is proposed, the product owners focus should be on the intended business value of the change.
- User stories follow this general pattern:
 - *As a name of role, I want to do something so that I get a result I want.*
- User story approach focuses on the stakeholder, the need, and the desired outcome and not on the solution approach.
- Give project team discretion to consider the change and identify potential solution options.

Updated Roadmaps

- Swimlane roadmaps provide high-level visibility to the overall project tasks, deliverables, and milestones.
- Roadmap should reflect changes made to the backlog.



Release Planning

- Traditional projects have a single release at the end of the project.
- Agile projects might have multiple releases of different aspects of the solution as they are ready.
- Establish a Minimum Business Increment to:
 - Mitigate project risks
 - Start to gain value from solution early
 - Generate real feedback from users
- After the initial release is executed, the product owner identifies additional releases of the solution.
- Releases may be planned based on accomplishing a certain set of features or at a regular time cadence.
- Release planning driven by the ability to enable business value.

Governance Steering Committee

- The overall governance or steering committee that coordinates the project might be called the Project Board.
- This committee might include the project sponsor, a senior user, and PMO resources.
- Responsibilities include:
 - Clarifying the project charter and objectives
 - Allocating the resources to the project.
- A clear governance structure becomes critical when there are project changes driven by changes in the internal or external business environments.

Guidelines for Assessing the Impact on Project Backlog Based on Business Environment Changes

- Understand the project's organizational context.
- Understand the external factors that may impact your project.
- How is the project work prioritized?
- What is the project governance model?

ACTIVITY:
ADDRESSING
INTERNAL AND
EXTERNAL BUSINESS
ENVIRONMENT
CHANGES

Enablers

- Assess organizational culture. (ECO 3.4.1)
- Evaluate impact of organizational change to determine required actions. (ECO 3.4.2)
- Evaluate impact of the project to the organization and determine required actions. (ECO 3.4.3)
- Recommend, plan and facilitate the changes.

Deliverables and Tools

Deliverables	Tools
Change Management Plan	Project Management Plan updates
Roll Out Plan	EEFs
Training Plan	OPAs
Training Artifacts	Demos
	PM / PMO org structures

Organizational Cultures and Styles



Organizational Structures

- Affects resource availability
- Affects how projects are conducted
- Main structures include functional, projectized, matrix, and composite

Types of Organizational Structures

- Functional
- Projectized
- Matrix
- Composite

Relative Authority in Organizational Structures

- Relative authority is the project manager's authority relative to the functional manager's authority over the project and the project team.

Relationship	Functional	Matrix	Projectized
Team members are loyal to	Functional department	Conflicted loyalty	Project
Team members report to	Functional manager	Both functional manager and project manager	Project manager
Project manager's role is	Part-time	Full-time	Full-time
Team members' role is	Part-time	Part-time	Full-time
Control of project manager over team members is	Low	Medium	High

PMO

Project Management Office (PMO)* A management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.

- Types of PMOs include:
 - Supportive PMOs
 - Controlling PMOs
 - Directive PMOs



OPAs

Organizational Process Assets (OPAs)* Plans, processes, policies, procedures, and knowledge bases that are specific to and used by the performing organization.

- OPA examples include:
 - Guidelines and criteria for aligning project work.
 - Specific organizational standards.
 - Standard templates for project work.
 - Organizational communications requirements.
 - Standardized guidelines, work instructions, proposal evaluation criteria, and performance measurement criteria.
 - Procedures for officially closing a project.
- Corporate knowledge base is a repository for storing project information, including:
 - Project files.
 - Policies, procedures, and guidelines.
 - Human resources documentation.
 - Lessons-learned repository.

EEFs

Enterprise Environmental Factors (EEFs)* Conditions, not under the immediate control of the team, that can influence, constrain, or direct the project, program, or portfolio.

- Can support or limit project management



Change Management Plan

- Organizational culture directly influences how organization manages changes to a project.
- An organization in a highly regulated environment tends to have a formal, rigid culture.



Roll Out Plan

- Once a change is approved and built, the project manager needs to plan for its successful implementation.
- Roll out plans enable the project manager to define the knowledge transfer, training, and readiness activities required to implement the change.
- Depending on the size, scope, and nature of the change, the plan details might include:
 - Project team and the affected customer and user stakeholders
 - Training and support activities

Project Management Plan Updates

- Based on the scope of changes, the project management plan may need substantial updates.
- Updates might include:
 - Scope
 - Timelines
 - Work packages
 - Team member assignments
- In agile projects, lower-value deliverables might be moved out of scope to make room for the adopted change.

Training Plan

- Changes to the project plan will likely impact the training plan.
- Changes might include:
 - Scope of the training and knowledge transfer required
 - Roles and responsibilities of the stakeholders
 - Training timelines

Training Artifacts

Changes to the plan and deliverable set necessitates changes to the training artifacts, including:

- Changes to training courseware
- Changes to lab configurations and exercises
- Changes to knowledge requirements and potentially to credentials if certification of skills is expected
- Training updates for the trainers to gain the necessary knowledge transfer required to deliver the updated training

Demos

- Changes to software solutions may require demonstration of the changed configurations, processes, workflows, and roles and responsibilities.
- Demos should be reviewed by the key customer and user stakeholders for feedback to ensure the changes work as intended and do not otherwise impact the workflow of the solution.
- Early feedback allows for adaptation while the feedback is immediately relevant and should improve the quality of the change while reducing overall cost and risk.

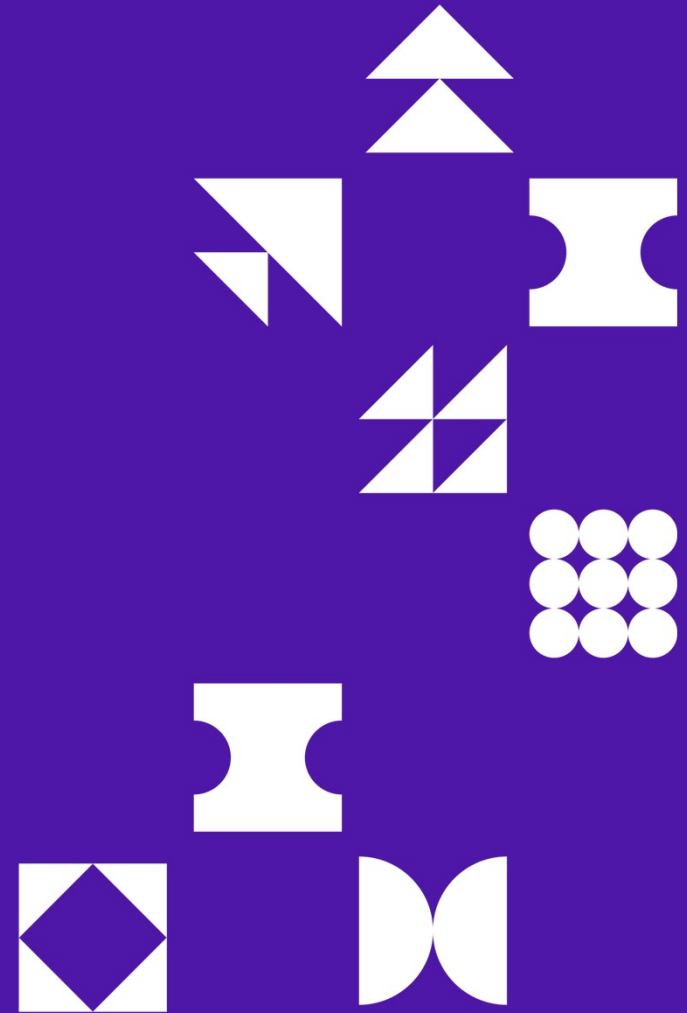
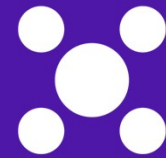
Guidelines to Recommend, Plan, and Facilitate Change

- Establish a single way changes are requested with a description of the proposed change, the business value of the change, any risk and risk mitigation recommendations, and the likely cost of the change.
- Ensure that a CCB can assess the change cost, risk, and value, other potential impacts to the project, and make recommendations.
- The size of the change and the project's tolerances will determine if the project manager can approve the change or is required to escalate the change for review and approval to the project's governing board.
- Follow organizational change management best practices, including build a compelling case for change, get buy-in and commitment of key stakeholders, communicate the change vision, and enable other stakeholders to engage.
- Ensure changes are properly aligned and updates to other project artifacts, such as the project plan, training plans, training artifacts, and software configurations or demonstrations.



ACTIVITY:
DISCUSSING
ORGANIZATIONAL
INFLUENCES ON
PROJECTS

TOPIC E: EMPLOY CONTINUOUS PROCESS IMPROVEMENT



Enablers

- Assess existing organization continuous improvement framework.
- Plan continuous improvement methods, procedures, tools.
- Recommend and execute continuous improvement steps.

Deliverables and Tools

Deliverables	Tools
Update processes and standards	Quality Theory methods
	CI approaches
	Lessons learned
	Retrospectives
	Experiments

Continuous Improvement

Continuous improvement: An ongoing effort to improve products, services, or processes.

- Effort can look for small incremental improvements or large breakthroughs.
- Institute of Quality Assurance definition includes improving business strategy, business results, and customer, employee, and supplier relationships.
- A business strategy that is developed at the organizational level for projects to adopt and use.
- Might be implemented by an organization's PMO.

Culture of Continuous Improvement

- W. Edwards Deming's four concepts
 - Better design of products to improve service.
 - Higher level of uniform product quality.
 - Improvement of product testing in the workplace and in research centers.
 - Greater sales through global markets.
- Deming's philosophy was that improving quality would reduce expenses, increase productivity, and thus increase market share.

Quality Theory Methods

- An approach to improving business results through emphasis on customer satisfaction, employee development, and processes rather than functions.

Theorist	Approach
W. Edwards Deming	The Deming cycle focuses on continuous process improvement in which quality must be continuously improved to meet customer needs.
Joseph M. Juran	The Juran trilogy breaks quality management into quality planning, control, and improvement.
Philip B. Crosby	This method emphasizes four absolutes: conforming to requirements, quality is achieved by prevention, standard of zero defects, and quality is measured by determining the cost of quality.
Genichi Taguchi	The Taguchi method emphasizes that quality should be designed into the product so factors that cause variation can be identified and controlled.
William (Bill) Smith, Jr.	Six Sigma emphasizes responding to customer needs and improving processes by systematically removing defects.

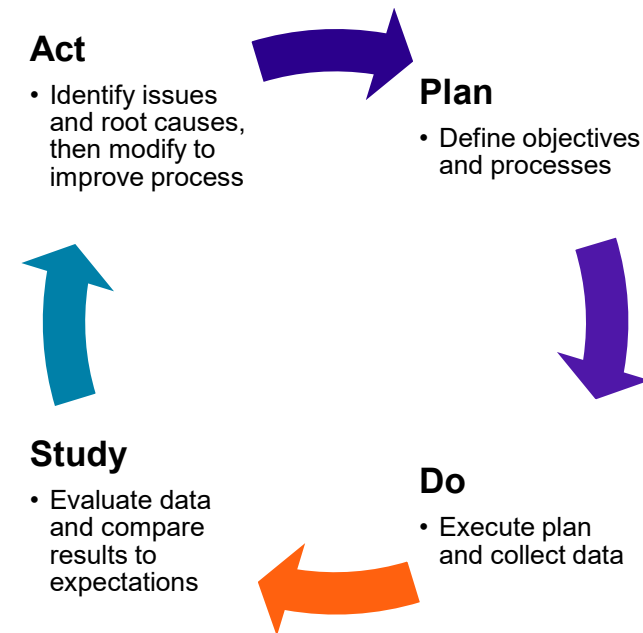
Continuous Improvement Approaches

- Agile project management contains small development cycles that are used to develop the product by feature and receive client feedback on each feature.

Kaizen

- Many small changes or improvements.
- Small changes 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.

Plan Do Study Act



Continuous Improvement Tools

- **Lessons Learned Register** is an important component of each project.
 - Use it as a source of improving the processes in other projects.
 - Avoid filing it away at the end of a project and not referring to it.
- **Retrospectives**
 - Common in agile projects at the end of each iteration.
 - Help the team look back at an iteration and plan improvements for the next one.
- **Experiments** provide a way to improve team efficiency and effectiveness.
 - Some techniques include AB testing and team feedback to identify improvements.
 - Perform experiments one at a time to isolate the results.

Update to Process and Standards

- Lessons learned at the project level can apply to the organization's continuous improvement process, in addition to the project management processes.
- These lessons should be escalated and evaluated for consideration at the organizational level.

Guidelines to Execute Continuous Improvement Steps

- Review the organization's continuous improvement strategy.
- Develop a continuous improvement approach for your project, keeping in mind the project goals and the expectations of the stakeholders.
- Use lessons learned from your project as well as from other projects, as sources of continuous improvement.
- For agile projects, use retrospectives as opportunities to improve the next iteration of the project.
- Use lessons learned at the project level to improve the organization's continuous improvement process.

ACTIVITY: EMPLOYING CONTINUOUS PROCESS IMPROVEMENTS

Learning Goals

- Determine necessary approach and action to address compliance needs.
- Evaluate delivery options to achieve benefits and value.
- Continually review internal and external business environment for impacts on project scope/backlog.
- Evaluate the impact of the project to the organization and determine required actions.
- Assess the existing continuous improvement framework and execute continuous improvement steps.

Reflective Questions

1. Why is it important for a project to conform to an organization's culture?
2. What are some of the challenges you have encountered when employing a continuous improvement process?