



# **PMP® EXAM PREP**

## PMI Authorized Training Partner

# **BOOTCAMP**

## **Session 3**

**Attendance Alert**

**Percipio Users:** Name is based  
on your information in  
**Percipio**

**Using Zoom:** Enter your first  
and last name

## **PMP® Exam Prep**

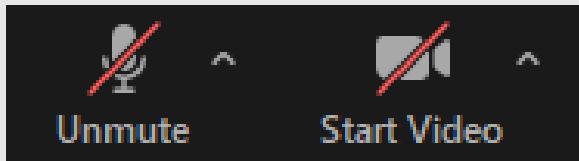
This course will assist learners in preparing  
for PMI's PMP Exam (2021 Update)

# **Logging In with Correct Name for Attendance is Your Responsibility**

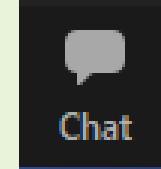
- Your name should be the same as in your Learning Platform (EX: Percipio, Skillport), Zoom account when joining through the Zoom app or client, or the name you input before joining directly using the Zoom link.
- Joining from Learning Portal: Check to make sure your first and last name is correct. If it is not, and you are a Percipio or Skillport user reach out to Skillsoft Support for assistance [support@skillsoft.com](mailto:support@skillsoft.com)
- Joining through Zoom: Please use your first and last name
- If your name does not look correct, the Skillsoft trainers and mentors will reach out to let you know.
- “Test” messages in the Chat or Q&A will not receive a response.

# Ways to Participate in a Webinar

We are saving everyone's bandwidth usage by disabling cameras and microphones



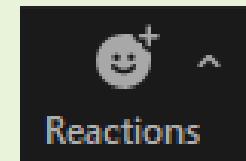
Find the Chat option in your Zoom command bar



Change the To: choice in the blue box to everyone.

To: Everyone ▾

Explore the Reactions option in your Zoom command bar



This is a fun way to provide quick and easy feedback

# Using Zoom: Chat vs. Q&A

Please use the **Chat** to:

- Respond to instructor's questions
- Share examples of tools and techniques discussed
- Ask questions to clarify a concept, term or technique

Please use the **Q&A** for:

- Technical assistance – Begin with: Percipio or Non-Percipio student
- Guidance on how to access course material– Begin with: Percipio or Non- Percipio
- Clarification on lecture points, if not answered by instructor

Note - Questions will stay until answered, unlike the chat which continues to scroll

**Please be very patient, the support team responds to many inquiries per session.**

# IS Live ATTENDANCE REQUIRED?

- YES, if you are taking this training to register for the PMP exam live attendance is required. However, this is the exception rule for the 8 Day Bootcamp – You are allowed to miss up to two sessions if you make up the sessions by watching their replays.
- If you miss more than 15 mins at any time beyond the two sessions allowed, you will need to make it up by attending the live session in a different 8-day cohort\*.

\*Please see the Bootcamp calendar at <http://calendar.skillsoft.com/> for information about upcoming sessions.



# IN CASE OF ABSENCE

You can request a replay for a previous session by asking in the Q&A or for a past/current session by emailing the Mentoring Team 48 hours after the session ends using the email address

[mentoring@skillsoft.com](mailto:mentoring@skillsoft.com)

Please indicate the following in your request:

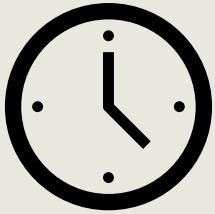
- The Bootcamp Cohort you are attending
- The Session Number
- The Date and Time Attended in New York Time Zone
- Example:

PMP ATP Bootcamp: 8 Day NA Cohort June/July/August 2022 Cohort  
Session 7 Recording  
Aug 2, 2022, 1:00 PM New York Time

## REPLAY LIMIT:

**There is no limit to request a replay for study purposes.**

# Scheduled Breaks



Session

Periodic breaks

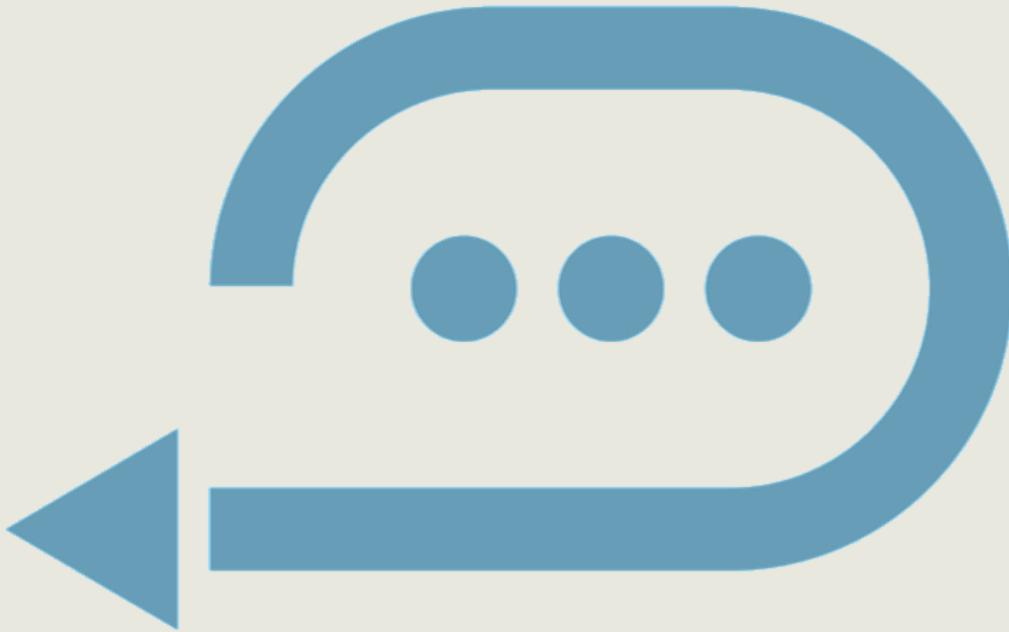
For attendance purposes, please stay logged in during all breaks.



# Today's Session Topics (Mapped to the PMP Student Manual)

Creating a High-Performing Team		Starting the Project	Doing the Work	Keeping the Team on Track	Keeping the Business in Mind
	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Topic A	Build a Team	Determine Appropriate Project Methodology/Methods and Practices	Assess and Manage Risks	Lead a Team	Manage Compliance Requirements
Topic B	Define Team Ground Rules	Plan and Manage Scope	Execute Project to Deliver Business Value	Support Team Performance	Evaluate and Deliver Project Benefits and Value
Topic C	Negotiate Project Agreements	Plan and Manage Schedule	Manage Communications	Address and Remove Impediments, Obstacles, and Blockers	Evaluate and Address Internal and External Business Environment Changes
Topic D	Empower Team Members and Stakeholders	Plan and Manage Budget and Resources	Engage Stakeholders	Manage Conflict	Support Organizational Change
Topic E	Train Team Members and Stakeholders	Plan and Manage Quality of Products and Deliverables	Create Project Artifacts	Collaborate with Stakeholders	Employ Continuous Process Improvement
Topic F	Engage and Support Virtual Teams	Integrate Project Planning Activities	Manage Project Changes	Mentor Relevant Stakeholders	
Topic G	Build Shared Understanding about a Project	Plan and Manage Procurement	Manage Project Issues	Apply Emotional Intelligence to Promote Team Performance	
Topic H		Establish Project Governance Structure	Ensure Knowledge Transfer for Project Continuity		
Topic I		Plan and Manage Project/Phase Closure			

## Recap Session 2





# Plan and Manage Schedule

TOPIC C

# Deliverables and Tools



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

Plan and  
Manage  
Schedule  
LESSON 2  
TOPIC C

# Tools, Activities & Processes



Top-Down Estimating: Expert, Analogous, Parametric

Bottom Up Estimating: Roll up WBS packages

T-Shirt sizing

Estimating using Fibonacci sequences

Story points

Relative estimating

Affinity estimates

PMIS

Process assets

Backlog management

Release planning

Iteration planning

Burndown / Burnup charts

Cumulative flow diagrams

Throughput analysis

Velocity analysis

Retrospectives

Review work produced

Backlog reprioritization

Scaling projects

Meetings

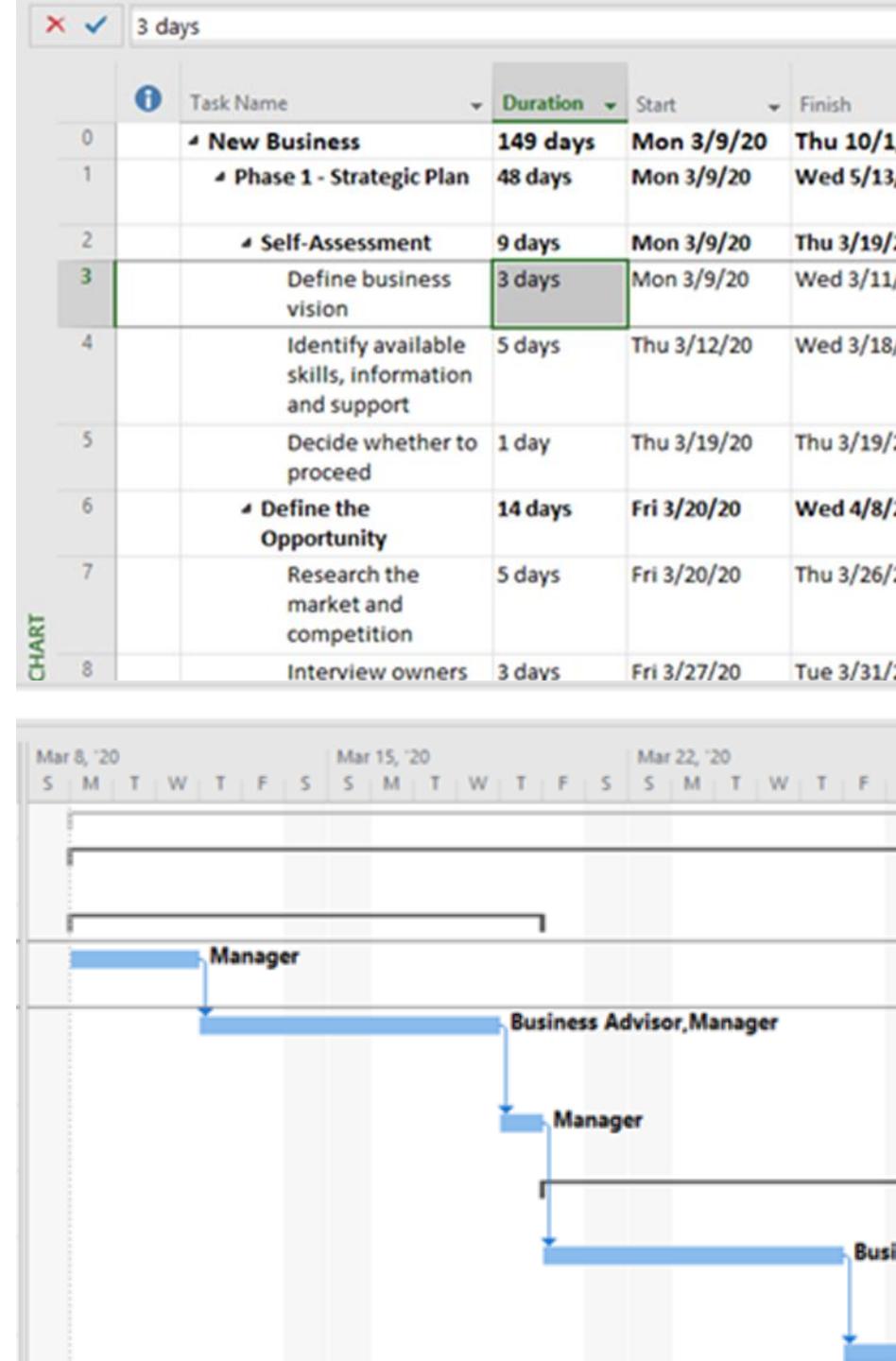
Procurement negotiations

Plan and  
Manage  
Schedule  
LESSON 2  
TOPIC C

# Project Schedule

- ✓ Includes start and finish activities
- ✓ Uses specific dates and in a certain sequence
- ✓ Sets dates for project milestones
- ✓ Coordinates activities to ensure on-time project completion
- ✓ Tracks schedule performance and provides visibility of project status to upper management and project stakeholders

Plan and Manage Schedule  
LESSON 2  
TOPIC C



# Benchmarks and Historical Data

Benchmarking is the comparison of a project schedule to another, similar product/service schedule to **provide a good “starting point” for estimation before detailed analysis.**

**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.

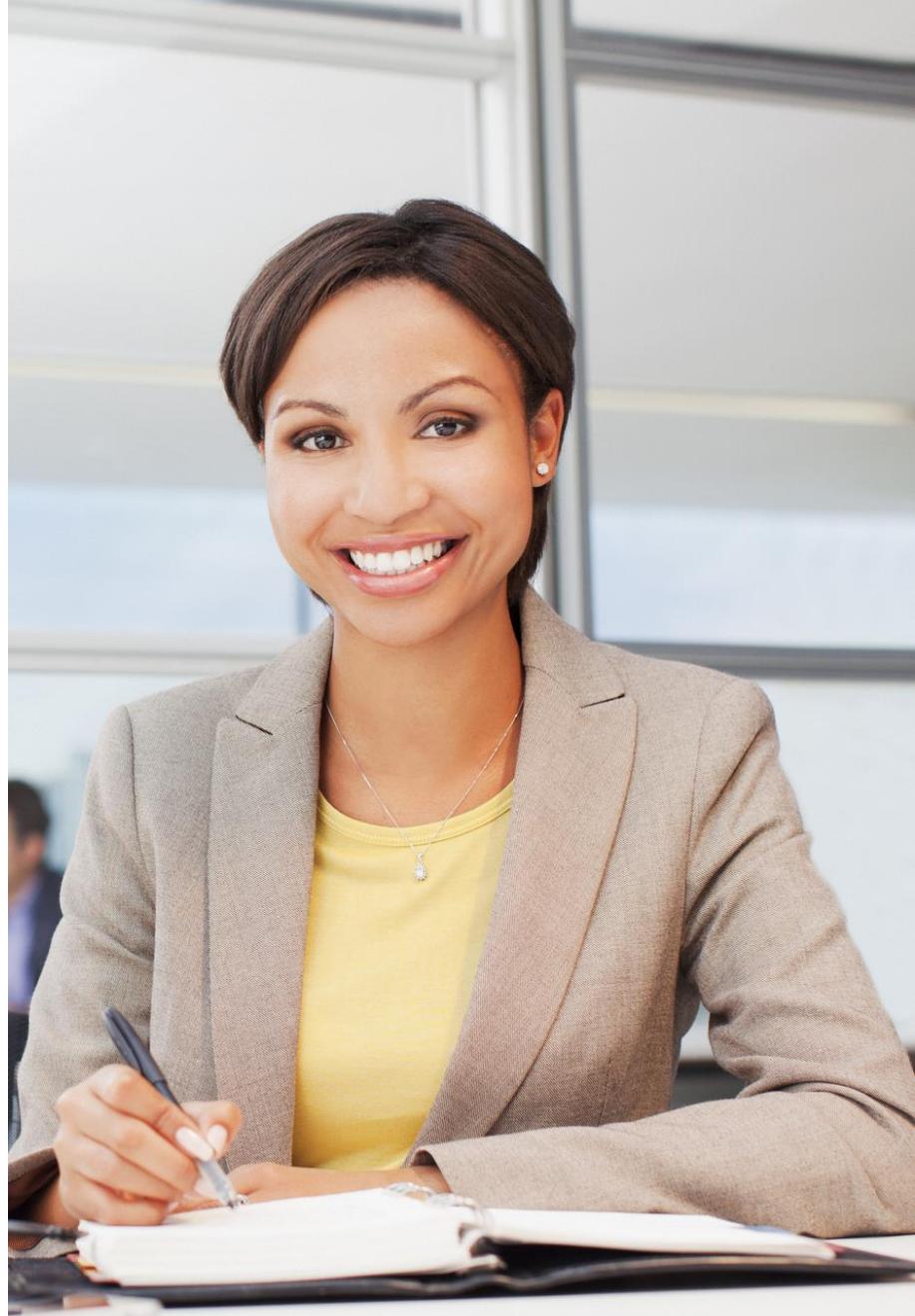


# Schedule Management Plan

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.



# Components of the Schedule Management Plan

Accuracy of activity duration estimates

Project schedule model used

Organizational procedure links used with the WBS

Units of measure to be used

Rules of performance measurements to be used

Process descriptions to explain how schedule management processes are to be documented throughout the project.

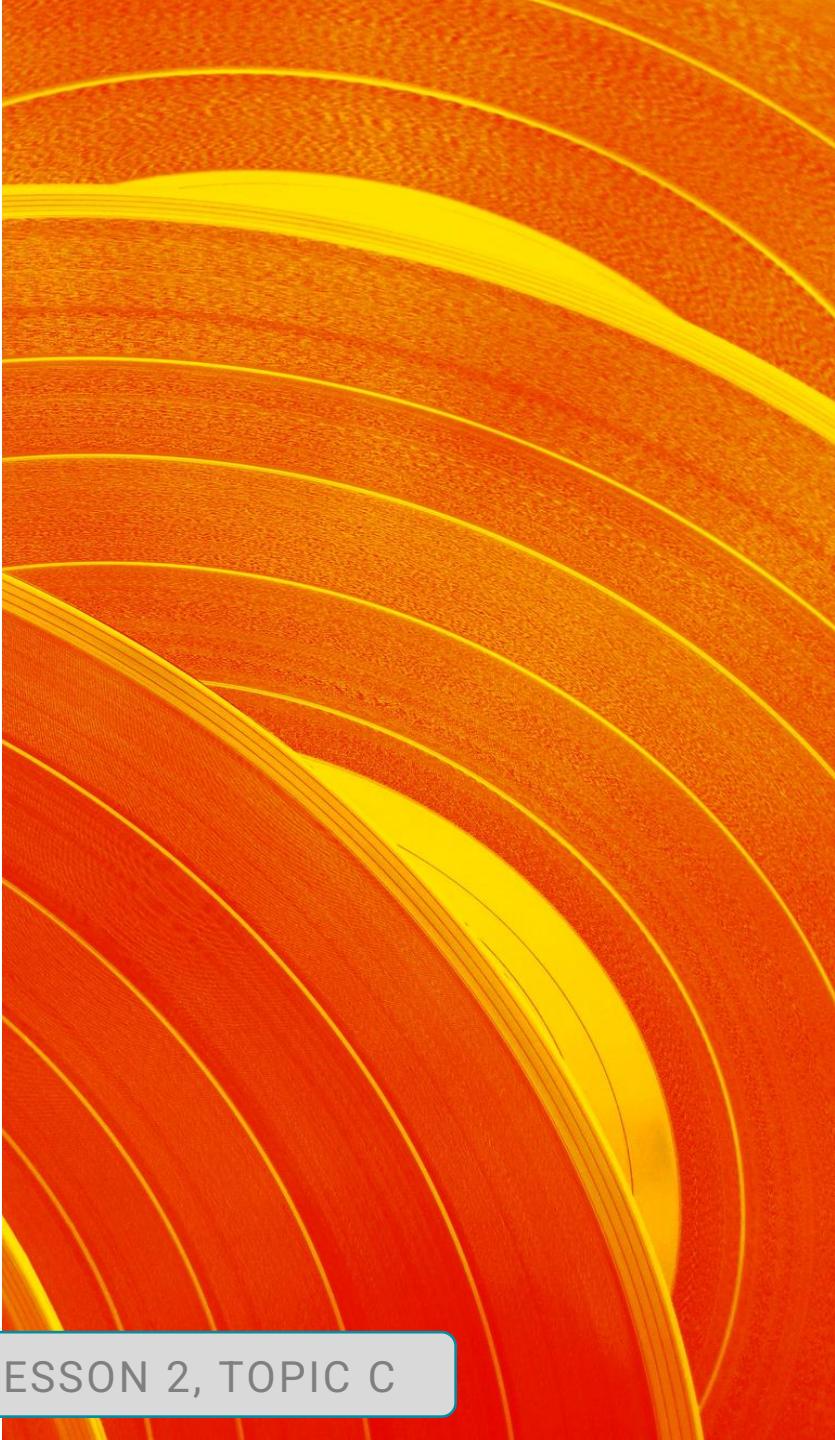
Reporting formats to be used

Control thresholds to be used for monitoring schedule performance

# Schedule Management Considerations for Agile/Adaptive Environments

Consider developing project roadmap.  
Schedule individual activities iteratively.

- Choose an iterative approach:
- ✓ Iterative scheduling with backlog
  - ✓ On-demand scheduling



## GUIDELINES

# Develop a Schedule Management Plan

- Review the following:
  - Project management plan (for information to develop the schedule)
  - Project charter (for a summary, high-level milestone schedule)
  - EEFs
  - 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.

Plan and  
Manage  
Schedule  
LESSON 2  
TOPIC C



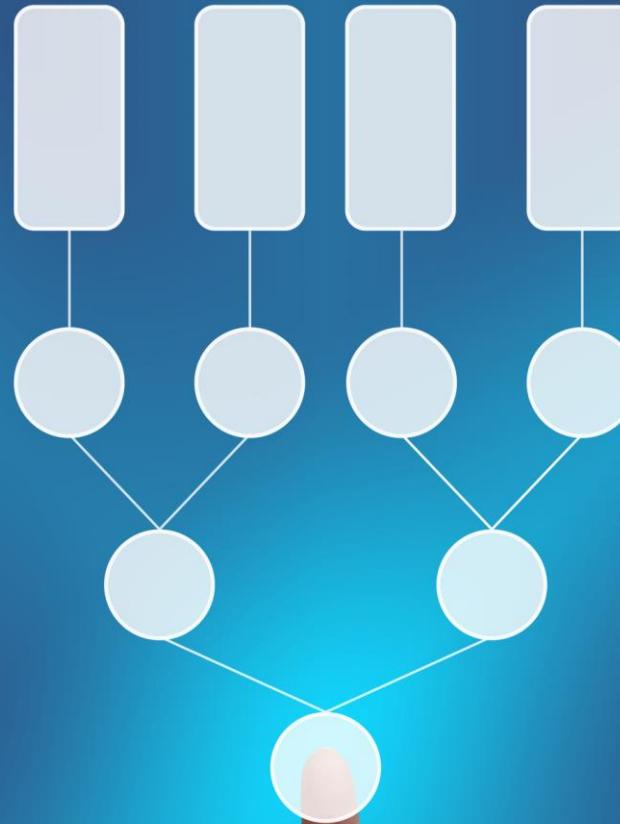
# Project Activities

An **activity** is a component of a decomposed work package.

- Activities are not the same as work packages or 'tasks'.

A **work package** is the lowest level of the WBS.

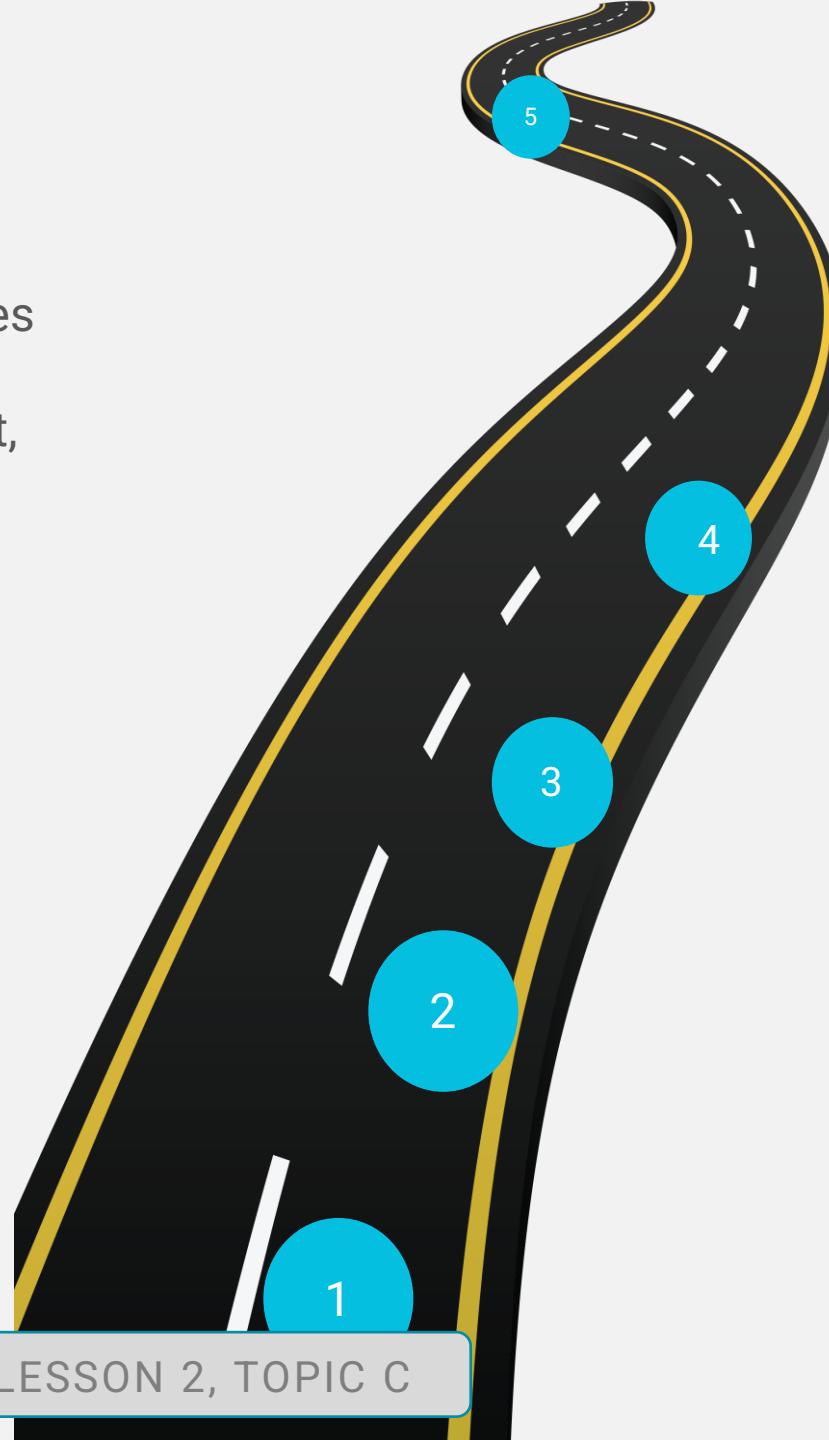
A **task** refers to project management software.



# Milestones

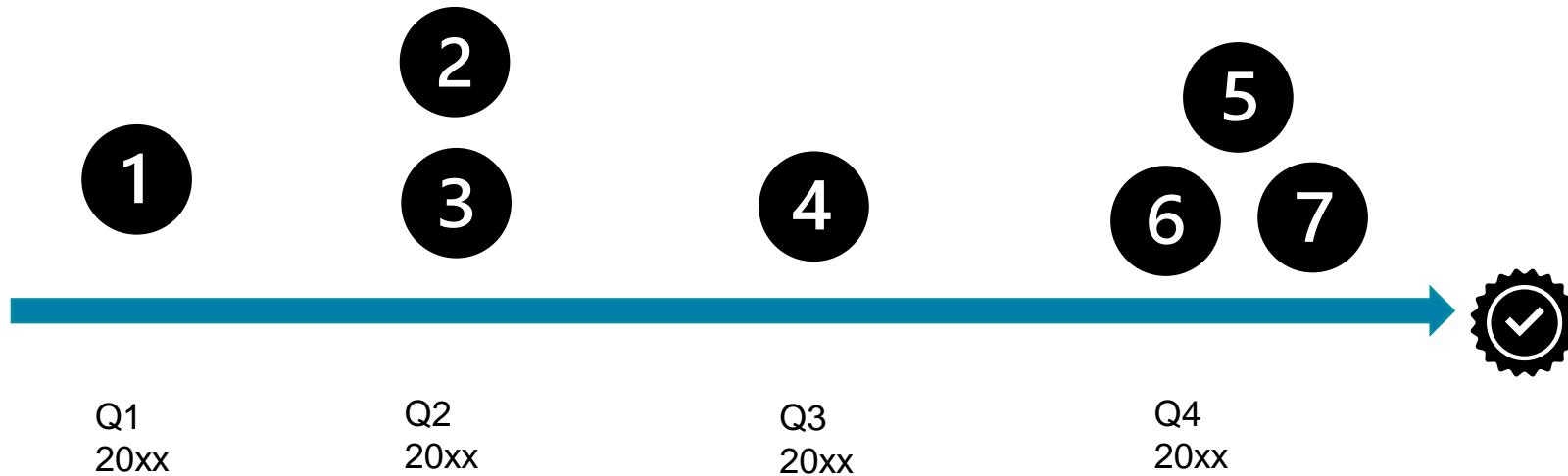
A **milestone list** identifies all project milestones and indicates whether the milestone is mandatory, such as those required by contract, or optional, such as those based on historical information.

Milestones have zero duration because they represent a significant point or event.



# Milestone Chart

- ✓ Provides the summary level view of a project's milestones.
- ✓ Uses icons or symbols.
- ✓ Useful for upper management who only require an overview.



## GUIDELINES

# Estimating Project Activities

- Review:
  - Schedule management plan
  - Scope baseline for WBS, deliverables, assumptions, and constraints
  - EEFs
  - 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.
- After decomposing each work package into activities, evaluate the activity list.

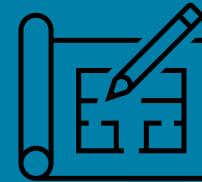


# Activity Dependency

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 activity: Designing Room Layouts



- Architect needs to assess the functionality of a 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 relationships express a logical dependency in precedence diagramming methods.

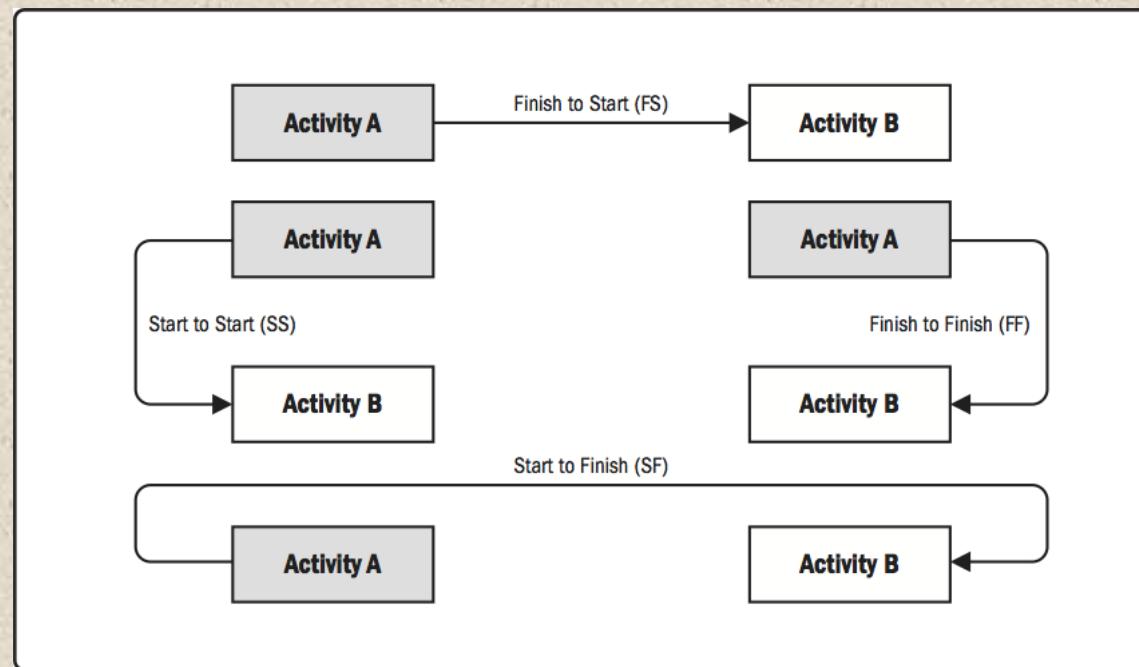
It is a logical relationship between activities that describes what the activity sequence should look like.

Precedence relationships are always assigned to activities based on the dependencies of each activity:

- ✓ Predecessor activity drives the relationship; most often, it occurs first.
- ✓ Successor activity is driven by the relationship.



# Types of Precedence Relationships



**More  
about...**

Course: Deep Dive into the Project Schedule (2021 Update)  
Video: Activity Relationships and Dependencies (8:08 run time)

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## **Activity Relationships and Dependencies**



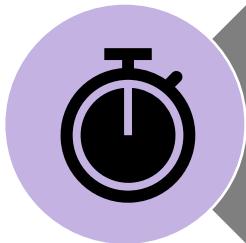
## GUIDELINES

# Sequence Project Activities

- Review:
  - Schedule management plan (for information on the scheduling method and tool, and information on how activities may be sequenced)
  - Activity list for all project schedule activities
  - Activity attributes for each activity
  - Milestone list for the dates for specific schedule milestone events
  - Project scope statement
  - EEFs
  - OPAs
- Use tools and techniques such as the precedence diagramming method (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.

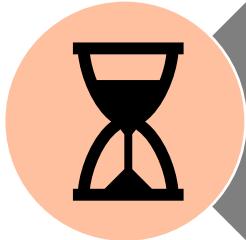


# Activity Duration Estimates



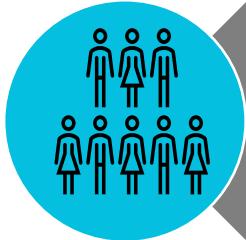
## Activity duration estimate

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.

Plan and  
Manage  
Schedule  
LESSON 2  
TOPIC C

## GUIDELINES

# Estimate Activity Durations

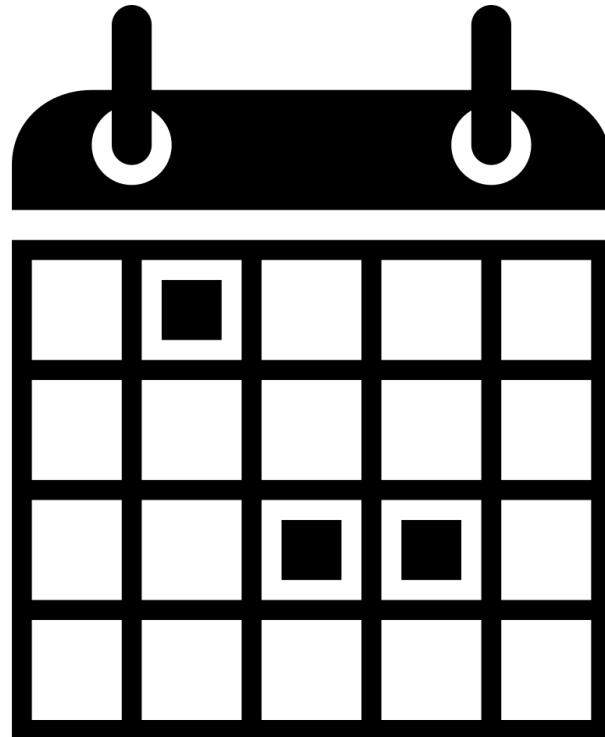
- Involve the work package owners or those familiar with the work of the activity.
- Consult lessons learned and historical information.
- Review the schedule management plan.
- Determine how you want to quantify the work that needs to be done.
- Consider resource requirements and capabilities.
- Review the resource requirements for each activity.
- Check the resource calendars for resource availability.
- Consider interactions with other projects or operations.
- Review the project scope statement for assumptions and constraints.
- Review the risk register for risks that may affect resource estimation.
- Review the resource breakdown structure.
- Document the activity duration estimates.



# Schedule Presentation Formats

Select the type of schedule to suit your project.

- ✓ Gantt Chart
- ✓ Milestone Chart
- ✓ Project Schedule Network Diagram with Dates
- ✓ Roadmap
- ✓ Task board
- ✓ Kanban board
- ✓ Burndown chart

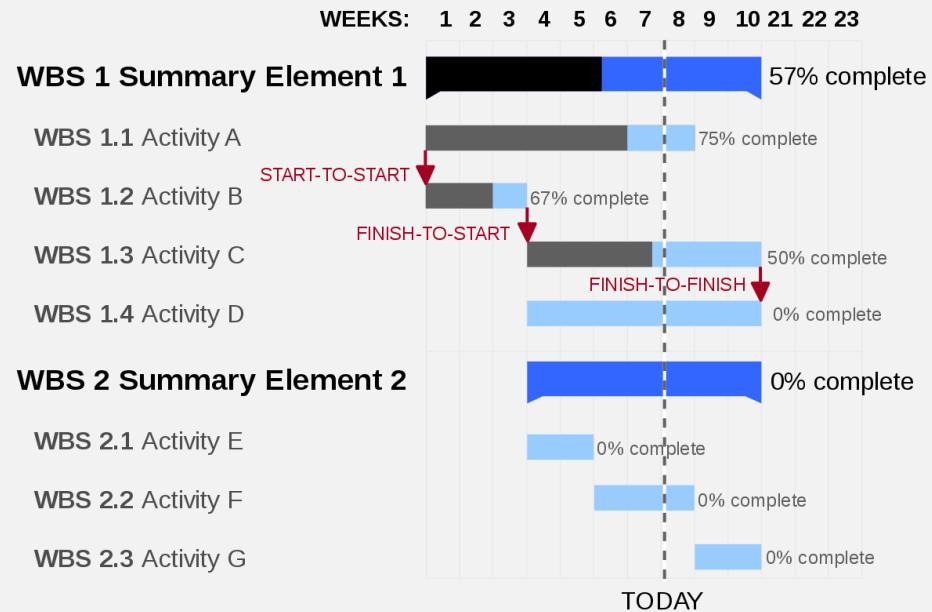


Plan and  
Manage  
Schedule  
LESSON 2  
TOPIC C

# Gantt Chart

Useful for:

- ✓ Start and end dates, duration, and order
- ✓ Precedence relationships
- ✓ Percentage completion and actual progress
- ✓ Presentation of project status to the team and management



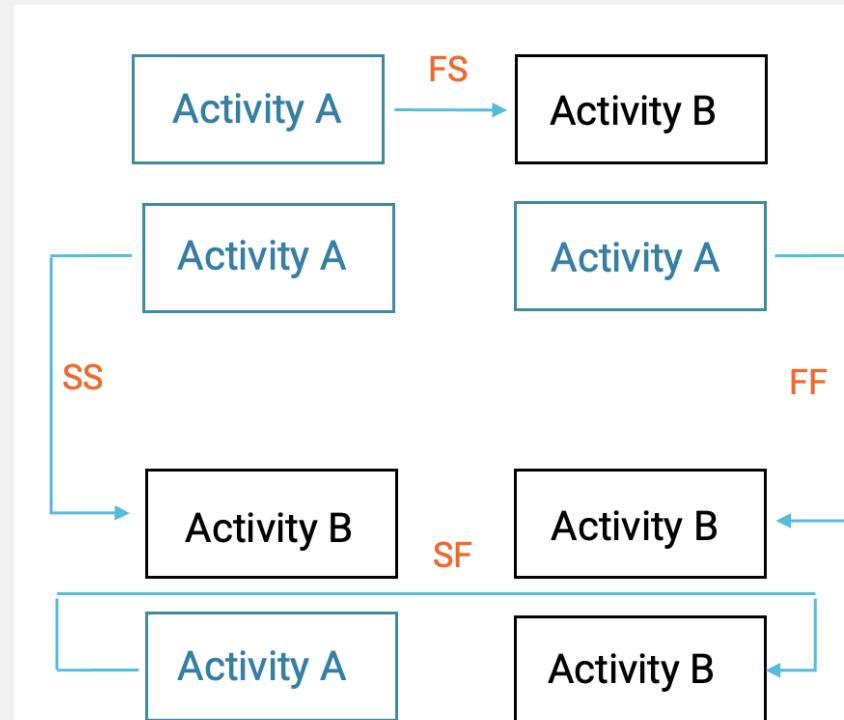
# Project Schedule Network Diagram with Dates and Dependencies

Project schedule can be shown with or without dependencies.

Network diagrams have clear advantages, they assign start and finish dates to activities and show the interrelationship of activities with arrows.

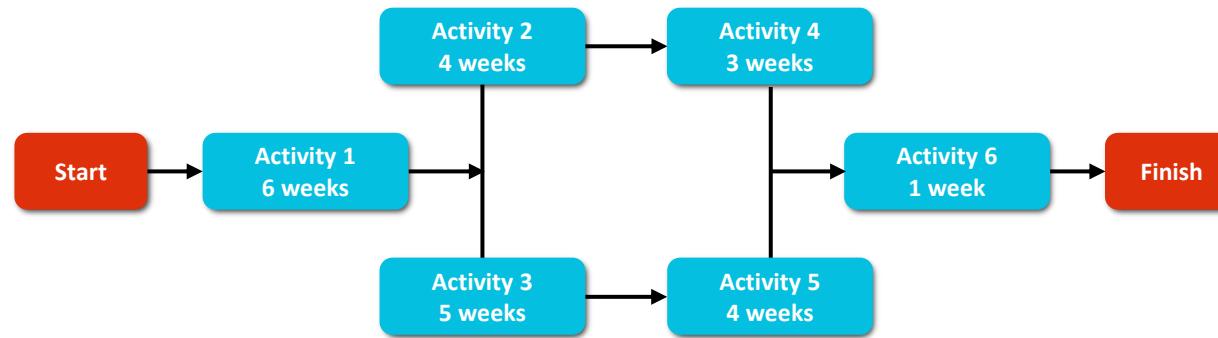
Further benefits:

- ✓ **Clear visual** of project progress, workflow, and interdependencies of activities.
- ✓ **Justification** of time estimate for the project.
- ✓ **Planning** and **organizational** aid.
- ✓ **Schedule compression opportunities** are more easily identifiable.



# Use the Critical Path Method

- Sequence activities to represent the longest path through a project
- Goal is to determine the shortest possible project duration.
- Use early start (ES); early finish (EF); late start (LS); and late finish (LF) dates for all activities.
- Do not factor in resource limitation.



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

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

# **Spotlight: Working with the Critical Path**

**More  
about...**

Course: Deep Dive into the Project Schedule (2021 Update)

Video: Critical Path Method Exercise (5:51 run time)

Watch: Start to 4:20

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## Critical Path Method Exercise



# About Float

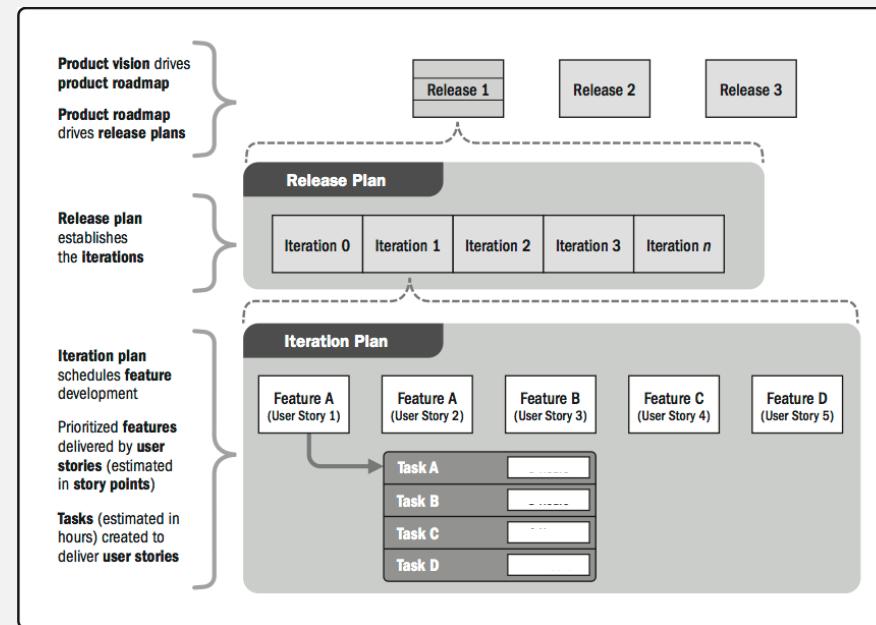
**Float** is the amount of time an activity can be delayed from its early start date without delaying the project finish date or consecutive activities.

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

# Agile Release Planning

- ✓ High-level summary timeline of the release schedule based on product roadmap and vision for the product's evolution.
- ✓ Determines the number of iterations or sprints in the release
- ✓ Allows product owner and team to decide:
  - how much needs to be developed
  - how long it will take to have a releasable product based on business goals, dependencies, and impediments.



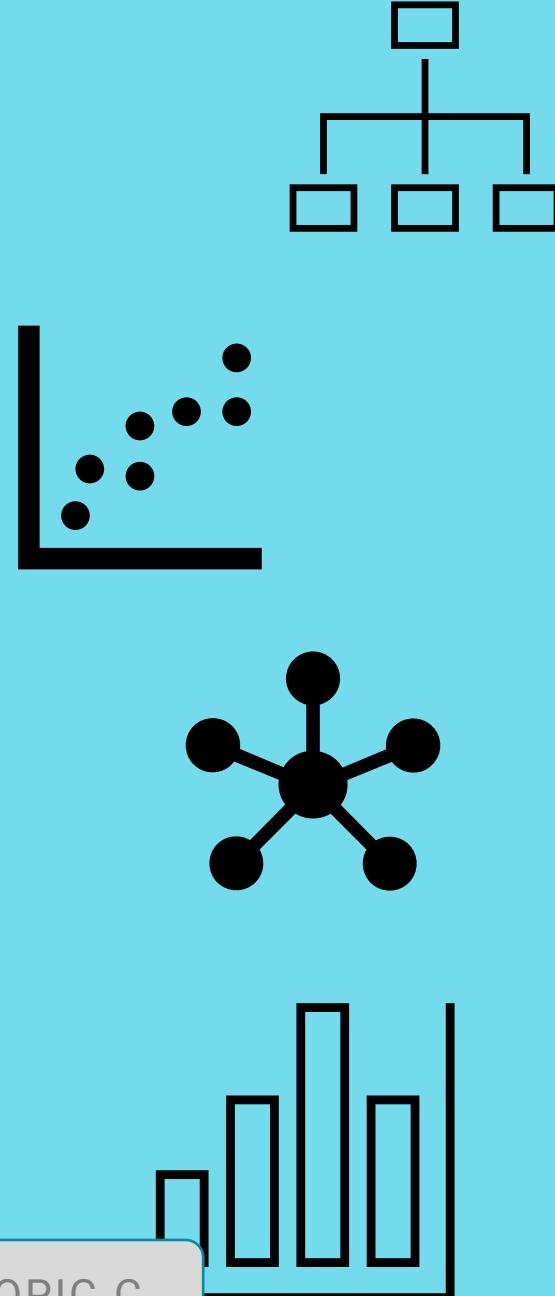
# Ongoing Progress Based on Methodology

**Traditional** - Measure project progress according to schedule by:

- ✓ Monitoring project status to update the schedule.
- ✓ Managing changes to schedule baseline.

**Agile** - Evaluate progress by:

- ✓ Comparing the total amount of work delivered and accepted to the amount estimated for the current time period.
- ✓ Reviewing completed work in regular Sprint demos.
- ✓ Conducting scheduled reviews to record lessons learned (or retrospectives).
- ✓ Determining the rate at which deliverables are produced, validated, and accepted.



# Resource Optimization Techniques



Plan and Manage Schedule, LESSON 2, TOPIC C

# Smoothing and Levelling

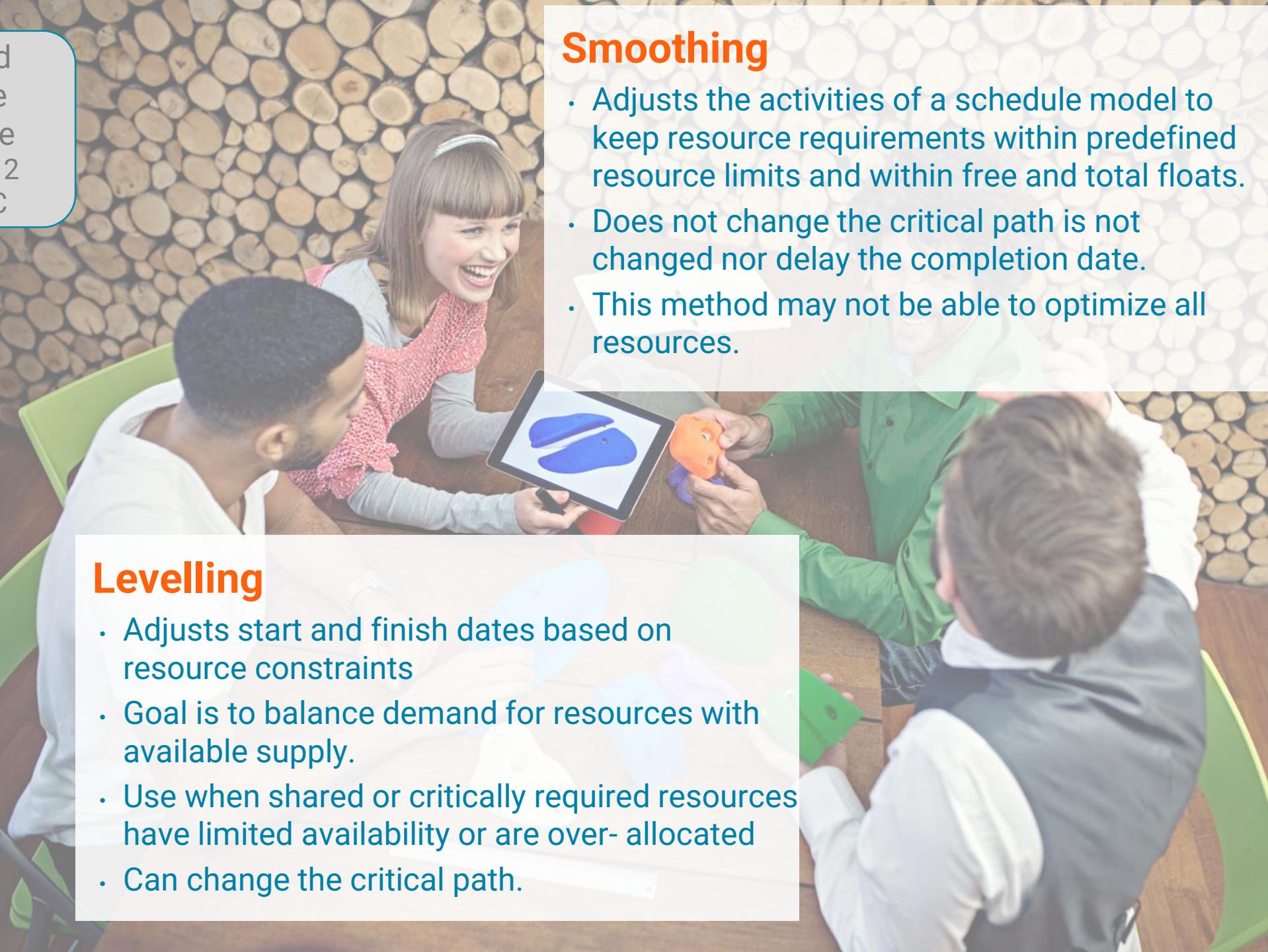
Use Resource Optimization to adjust the start and finish dates of activities.

You need to adjust planned resource use so that it's equal to or less than resource availability.

Adjust the schedule model due to demand and supply of resources.

Use smoothing and levelling techniques.





## Smoothing

- Adjusts the activities of a schedule model to keep resource requirements within predefined resource limits and within free and total floats.
- Does not change the critical path is not changed nor delay the completion date.
- This method may not be able to optimize all resources.

## Levelling

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

**More  
about...**

**Course: Managing the Project Schedule (2021 Update)**  
**Video: Resource Leveling (5:16 run time)**

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## **Resource Leveling**



**More  
about...**

Course: Managing the Project Schedule (2021 Update)  
Video: Resource Smoothing (5:26 run time)

## Resource Smoothing

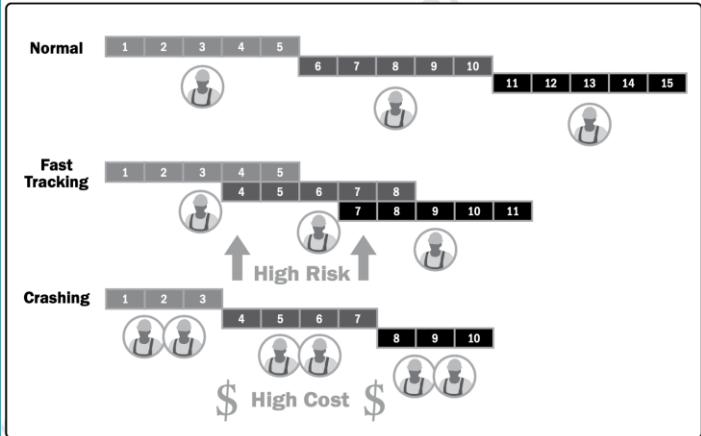


# Schedule Compression Techniques



Plan and Manage Schedule, LESSON 2, TOPIC C

# Schedule Compression Techniques



## Crashing

- Shortens schedule duration for the least incremental cost by adding resources e.g. overtime, additional resources
- Works only for activities on the critical path
- Does not always produce a viable alternative and may result in increased risk and/or cost.

## Fast-tracking

- Perform activities in parallel to reduce time
- May result in rework, increased risk, and increased cost

**More  
about...**

**Course: Managing the Project Schedule (2021 Update)**  
**Video: Crashing the Schedule (4:29 run time)**

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## **Crashing the Schedule**



**More  
about...**

Course: Managing the Project Schedule (2021 Update)  
Video: Fast Tracking (5:10 run time)

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## **Fast Tracking**



# Coordination with Other Projects

- ✓ If the project is part of a program or a portfolio, evaluate the schedule status for effects on other program or portfolio components.
- ✓ A delay (or acceleration) of a project may not necessarily 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.





# Plan and Manage Budget and Resources

TOPIC D

# Deliverables and Tools



- Cost baseline
- Management reserve
- Resource management plan
- Change requests
- Cost forecasts
- Risk analysis



- Estimating techniques: Three Point, Analogous, Parametric, T-Shirt sizing, Planning poker
- Review organization data
- Meetings
- Leverage PMIS
- Understand change control
- Use velocity data and analysis
- Throughput analysis
- Cost Variance, EVM, EAC
- Features accepted vs feature remaining

Plan and  
Manage  
Budget and  
Resources  
LESSON 2  
TOPIC D

# Cost Estimates

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

Use logical estimates to provide a basis for making sound decisions and they establish baselines.

IT  
Labor  
Materials  
Facilities  
Equipment  
Services  
Reserve

# Estimating Techniques – Advantages and Disadvantages

## Analogous Estimating



Can ensure no work is inadvertently omitted from work estimates.



Can sometimes be difficult for lower-level managers to apportion cost estimates.

## Parametric Estimating



Is not time consuming



May be inaccurate, depending on the integrity of the historical information.

## Bottom-up Estimating



Is very accurate and gives lower-level managers more responsibility.



May be very time consuming  
Can be used only after the WBS has been well-defined.

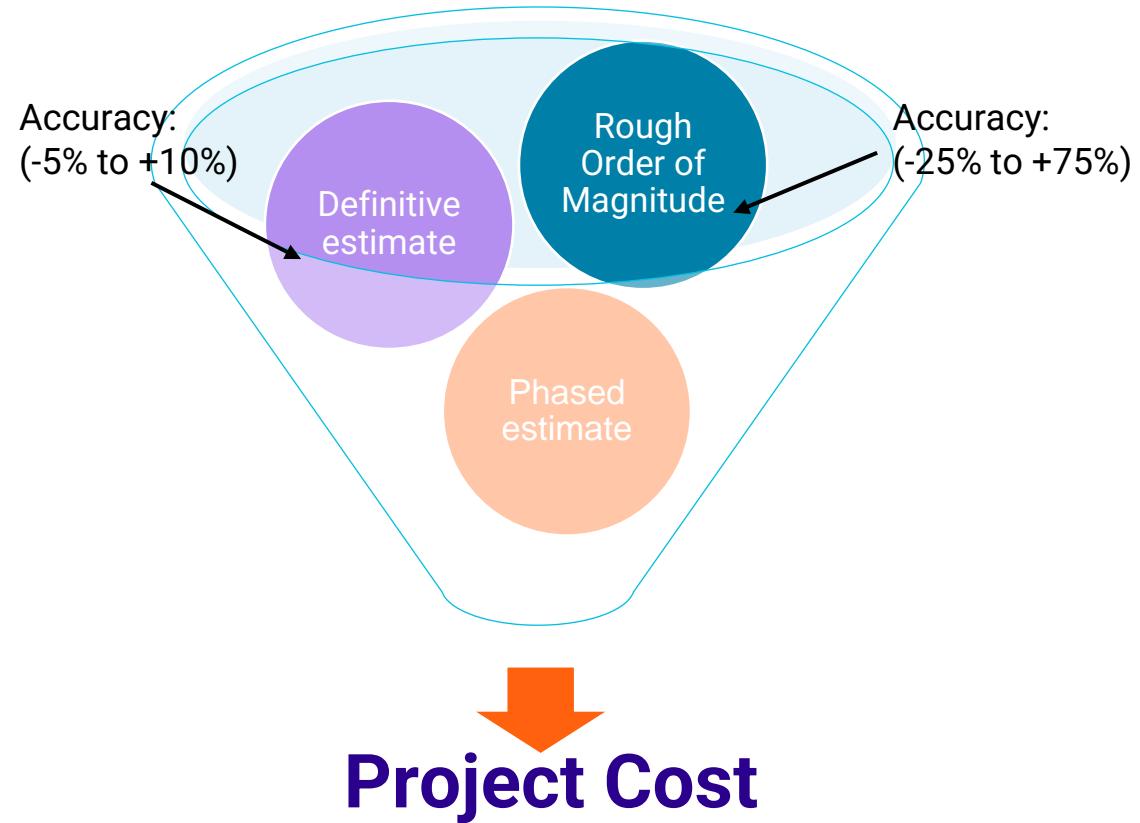
Course: Deep Dive into Project Costs and Estimates (2021 Update)  
Video: Traditional Approach to Cost Estimates (3:35 run time)

More  
about...

## **Traditional Approach to Cost Estimates**



# Common Estimate Types



# Project Governance



- ✓ Budget management is a critical project oversight and within the purview of project governance.
- ✓ Deviations in budget, scope, schedule, resources or quality, will impact the project.
- ✓ Project governance tells you whom these issues would impact and how to deal with them.
- ✓ Tailor cost estimation approach to phases of the project life cycle.

# Compliance

Projects must be compliant with internal and external standards, such as:

- ✓ Appropriate government regulations
- ✓ Corporate policies
- ✓ Product and project quality
- ✓ Project risk

The Project Compliance Plan is a sub-plan of the project management plan.

In this step, you:

- ✓ Classify compliance categories
- ✓ Determine potential threats to compliance
- ✓ Analyze the consequences of noncompliance
- ✓ Determine necessary approach and action to address compliance needs





# Lessons Learned Register

- ✓ Use during and after projects.
- ✓ Start with budgets from previous, similar projects.
- ✓ They contain valuable cost-estimating information - both successes and shortcomings.

## GUIDELINES

# Estimate Costs

- Gather estimates for individual work packages.
- Check with the resource supplier to validate assumptions.
- Choose a suitable estimating technique according to context.
- Look for alternative costing options.
- Determine which units of measure to use.
- Consider impact of risks on cost.
- Ensure that cost estimates are assigned to the right account.
- Ensure estimates include resource costs, level of estimate, and a list of assumptions.

Plan and  
Manage  
Budget and  
Resources  
LESSON 2  
TOPIC D



## GUIDELINES

# Estimate Budget

- Aggregate the estimated costs of individual activities or work packages to establish an authorized cost baseline.
- Ensure budget contains funding needed to complete the project as defined in the scope baseline and the project schedule.
- Measure project cost performance against this cost baseline

Plan and  
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Resources  
LESSON 2  
TOPIC D



# Cost Baseline

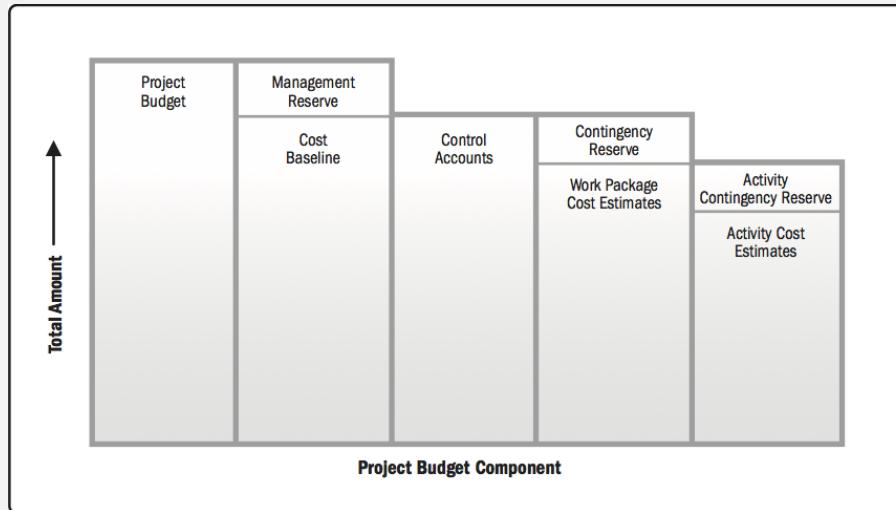
Can be changed only through formal change control procedures and is the basis for comparison to actual results.

Cost baseline:

- ✓ Monitors and measures cost performance
- ✓ Includes a budget contingency
- ✓ Is tailored for each project

Other components of the project budget are depicted at right.

## Project Budget



control accounts  
activity management reserve  
activity contingency reserve  
control accounts  
activity cost estimate  
contingency reserve  
work package estimates

## GUIDELINES

# Estimate Cost Baseline

- Gather inputs to establish the baseline e.g. WBS, project schedule, cost estimates, and risk management plan.
- Assign work to dates on project schedule and allocate funds for each activity or work package for assigned time period.
- Consider a contingency reserve to cover expenses associated with risks.
- Total the costs for each time period, then plot these on a chart to create an S-curve of the baseline.
- Publish and distribute the cost baseline to the appropriate project stakeholders.

Plan and  
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Budget and  
Resources  
LESSON 2  
TOPIC D





# Budget Challenges

- ✓ Ideally, budget is set during project planning and does not change.
- ✓ However, the following changes can pose a challenge:
  - New/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.



# Response to Budget Challenges

When changes or challenges occur, you must tailor:

- ✓ Budget or funding
- ✓ Cost
- ✓ Schedule
- ✓ Scope

If the budget remains fixed and additional funds are not available, then the project must change.

# Funding Limit Reconciliation

Keep in mind:

- ✓ 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

# 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.

Plan and  
Manage  
Budget and  
Resources  
LESSON 2  
TOPIC D



## GUIDELINES

# Determine a Budget

- Review:
  - Cost management plan
  - Human resource management plan
  - Scope baseline for project scope statement, WBS, and WBS dictionary
  - Risk register to consider any risks that may impact cost estimation
  - EEFs and OPAs
- Check the project schedule for type, quantity, and duration of resources.
- 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.





# Plan and Manage Quality of Deliverables

TOPIC E

# Deliverables and Tools



Quality Management Plan

Quality Metrics

Quality Assurance

Quality Control



Cost benefits analysis

Cost of Quality

Benchmarking

Quality audit

Process analysis

Measure quality

Verify deliverables

Quality measurement tools

Plan and  
Manage  
Quality of  
Deliverables  
LESSON 2  
TOPIC E

# Quality Standards and Regulations

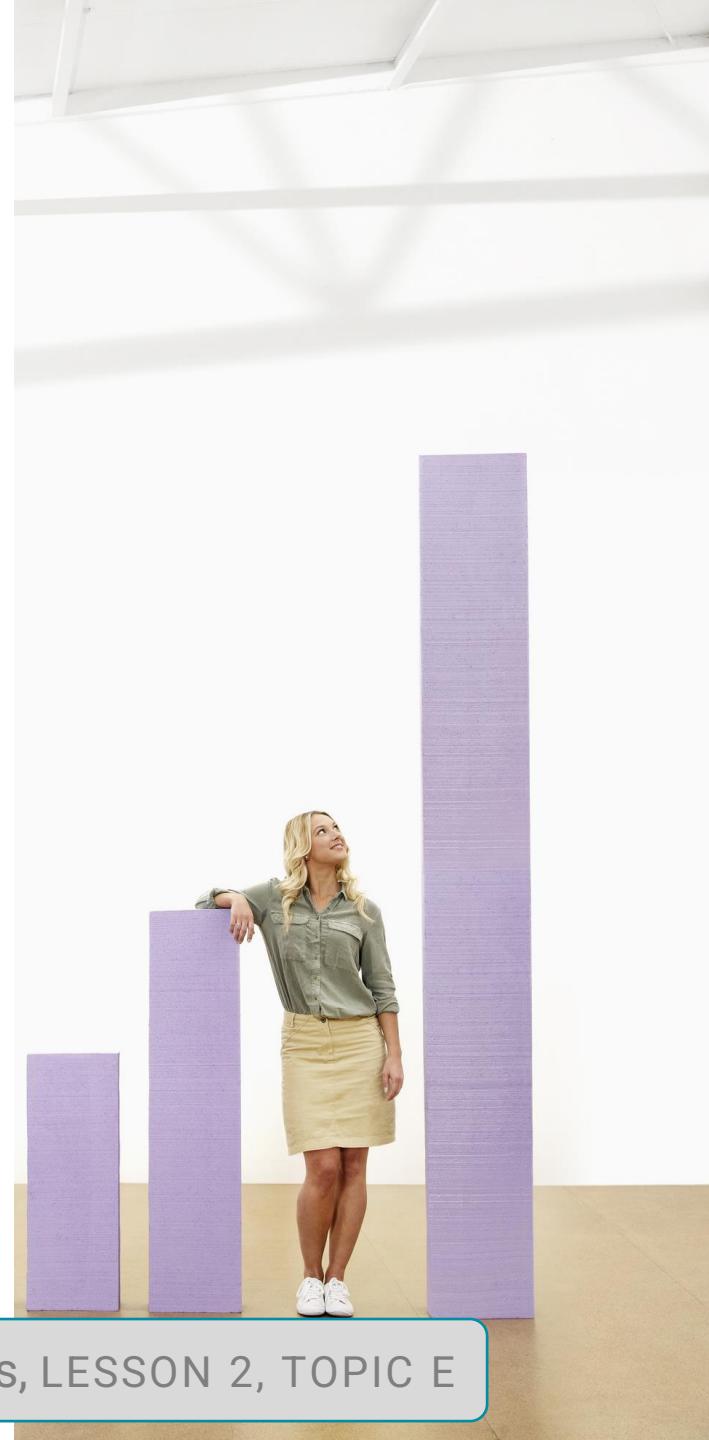
**Standards** - Documents established as a model by an authority, custom, or by general consent.

**Regulations** - 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.



# Verified Deliverables

- ✓ Project team **verifies** deliverables based on quality standards and requirements
- ✓ The verified deliverables are **presented to and accepted** (or validated) by the customer – resulting in accepted deliverables.
- ✓ **Measure** products and outputs against the project's quality standards.
- ✓ **Implement** corrections and controls when quality standards are neither met nor within acceptable ranges.



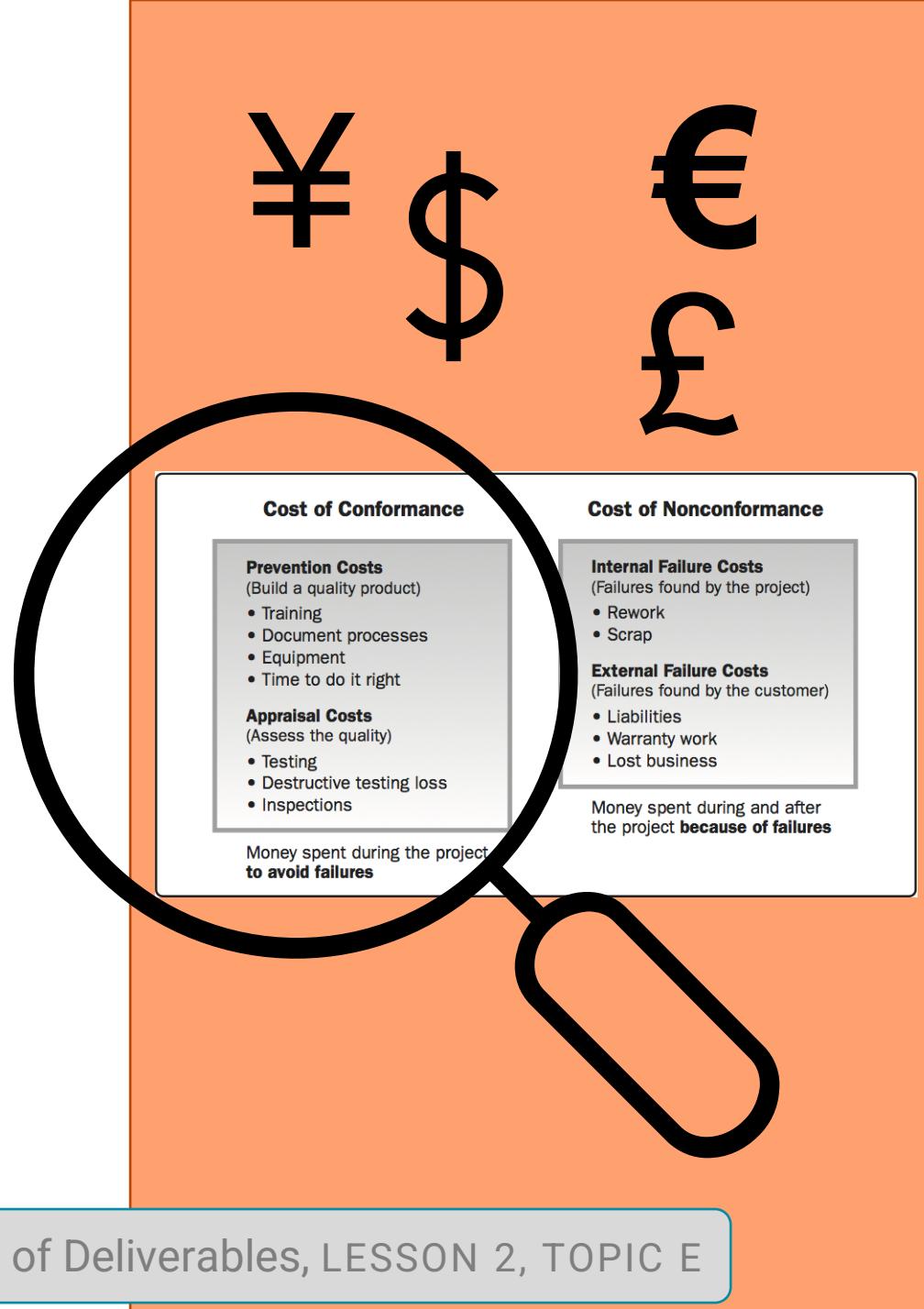
# Quality Management Plan

- ✓ Describes the **activities and resources** necessary for the project management team to achieve the quality objectives.
- ✓ May be formal or informal, detailed, or broadly framed. **Style and detail** are determined by project requirements.
- ✓ **Review** the quality management plan early in the project.
- ✓ Benefits:
  - Decisions based on accurate information
  - Sharper focus on the project's value proposition
  - Cost reductions
  - Mitigate schedule overruns from rework



# Cost of Quality (CoQ)

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



# Quality Metrics

**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 Audit

- ✓ 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



# More about...

Course: Deep Dive into Project Quality (2021 Update)

Video: Cost of Quality (16:13 run time)

Watch: Start to 4:13

## Cost of Quality

Barbara Waters



## GUIDELINES

# 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.

Plan and  
Manage  
Quality of  
Deliverables  
LESSON 2  
TOPIC E



# Control Quality Tools

## Data Gathering



- Checklists/Check Sheets
- Statistical Sampling
- Questionnaires and Surveys

## Data Analysis



- Performance Reviews
- Root Cause Analysis

## Data Representation



- Cause-and-Effect Diagram
- Control Charts
- Histograms
- Scatter Diagrams

# Data Gathering



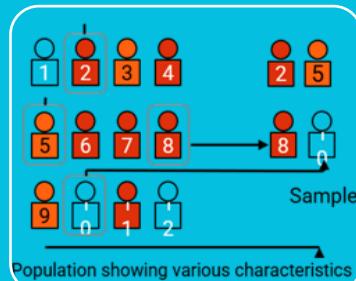
## Questionnaires and Surveys

- Written set of questions, quickly accumulates information from a large number of respondents.
- Useful for varied audiences, for quick turnaround, or geographical dispersion of respondents



## Checklists

- Check Sheets  
A structured tool, usually component-specific
- Verifies performance of required steps or completion of requirements
- Used to organize facts to facilitate data collection about a potential quality problem
- Useful for gathering attribute data while performing inspections for defects.



## Statistical sampling

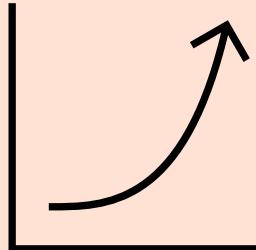
- Choosing part of a population of interest for inspection.
- Determine characteristics of an entire population based on measurement of representative sample.

# Data Analysis

## Performance Reviews

Technique that is used to measure, compare, and analyze actual performance of work in progress on the project against the baseline.

- Critical chain method
- Earned value management
- Trend analysis
- Critical path method



## Root Cause Analysis

Analytical technique used to determine the basic underlying reason that causes a variance, defect, or a risk.

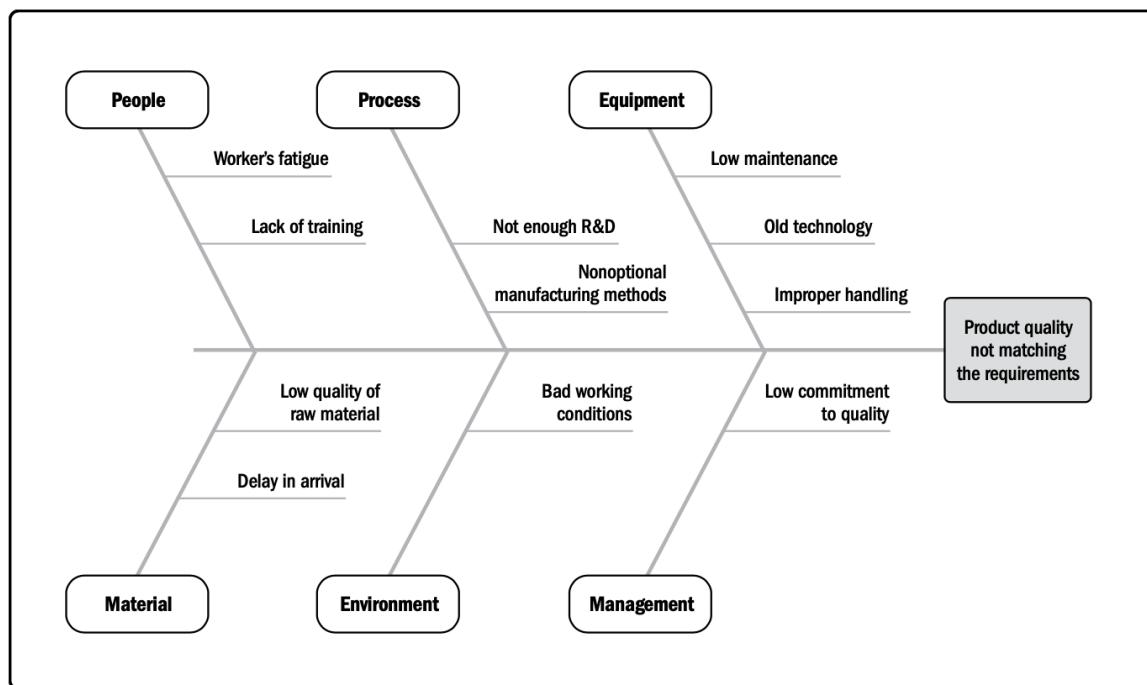
- Using gathered data, identify the cause of the problem.
- Goal is to pinpoint the exact cause.
- Follow issue back to the initial trigger.
- Use RCA tools - Failure Modes and Effects Analysis (FMEA), a fishbone diagram, a Pareto chart, a scatter diagram

# Data Representation (1 of 4)

## Cause and Effect Diagram

Fishbone diagrams, why-why diagrams, or Ishikawa diagrams

Breaks down the causes of the problem statement identified into discrete branches, helping to identify the main or root cause of the problem.



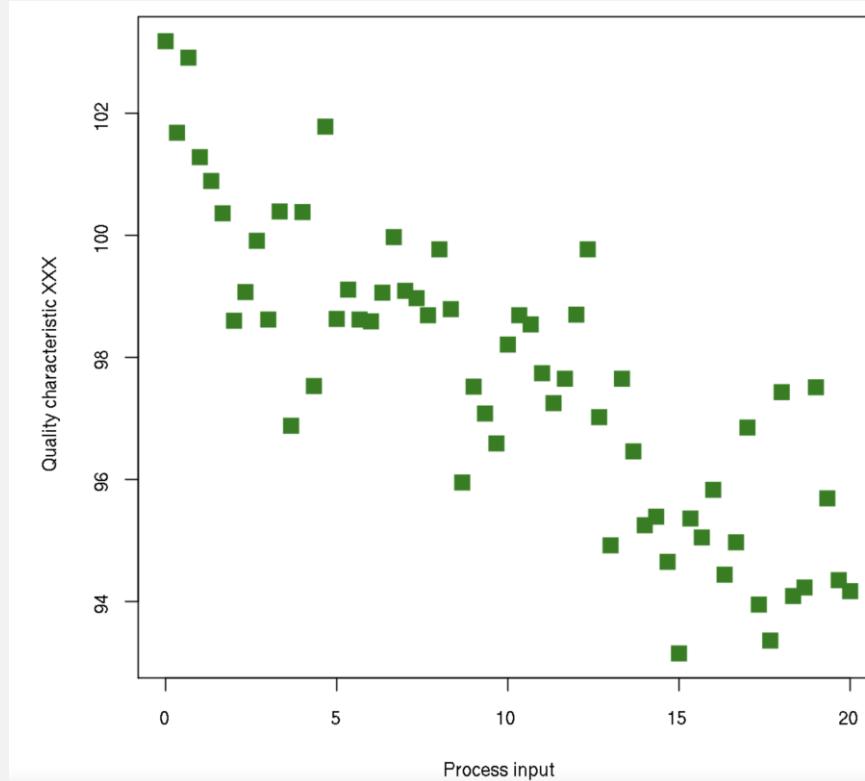
Example  
fishbone  
diagram

Plan and  
Manage  
Quality of  
Deliverables  
LESSON 2  
TOPIC E

# Data Representation (2 of 4)

## Scatter Diagram

- ✓ A graph that shows the relationship between two variables.
- ✓ Demonstrates a relationship between any element of a process, environment, or activity on one axis and a quality defect on the other axis.

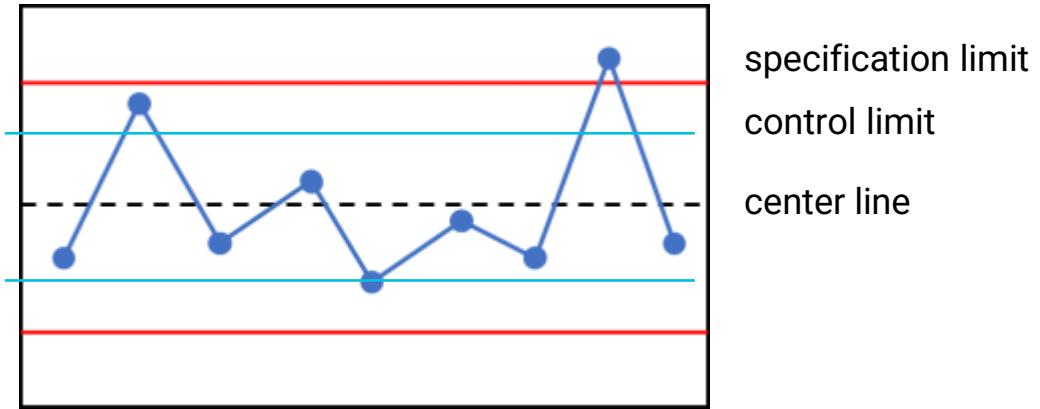


# Data Representation (3 of 4)

## Control Chart

A tool used to determine the predictability, behavior and stability of a process over time.

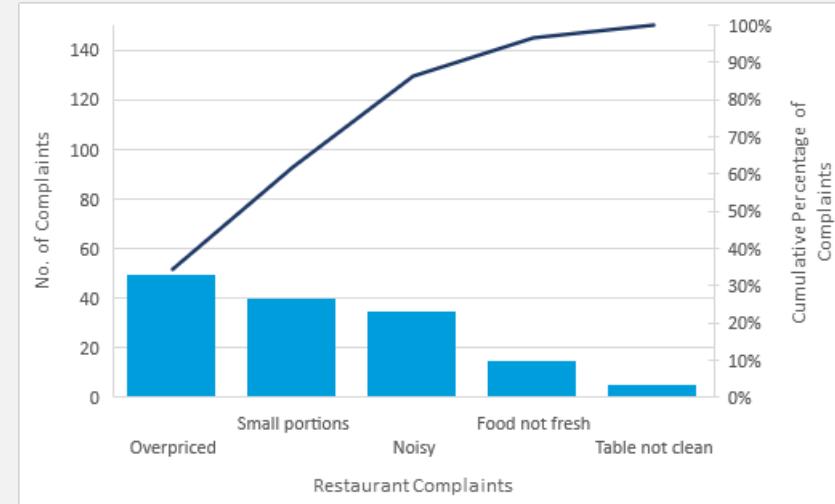
- ✓ A graphic display of project data against established control limits to reflect both the maximum and minimum values.
- ✓ Gives visibility to where corrective actions can prevent further problems.
- ✓ Ideal for repetitive processes with predictable results.



# Data Representation (4 of 4)

## Pareto chart

- ✓ A histogram used to rank causes of problems in a hierarchical format.
- ✓ Use to help determine the most frequent defects, complaints, or other factors that affect quality.
- ✓ Demonstrates the frequency of occurrence
- ✓ Analyzes data sets related to a specific problem or issue.
- ✓ Does not define the root cause of a problem.

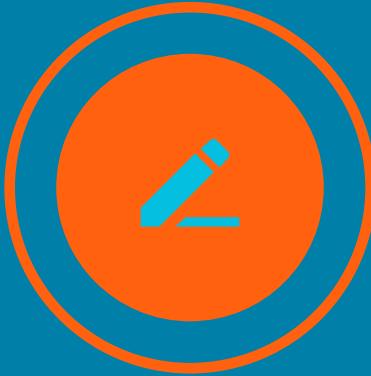


## GUIDELINES

# Control Product Quality

- Conduct inspections to detect quality errors during project work.
- Use Pareto diagrams to focus corrective actions on the problems with the greatest effect on quality.
- 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.
- Continue to monitor, measure, and adjust quality throughout project life cycle.





# Integrate Project Planning Activities

TOPIC F



# Integration Management

- ✓ **Assessment and coordination** of all plans and activities that are built, maintained, and executed throughout a project.
- ✓ 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

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



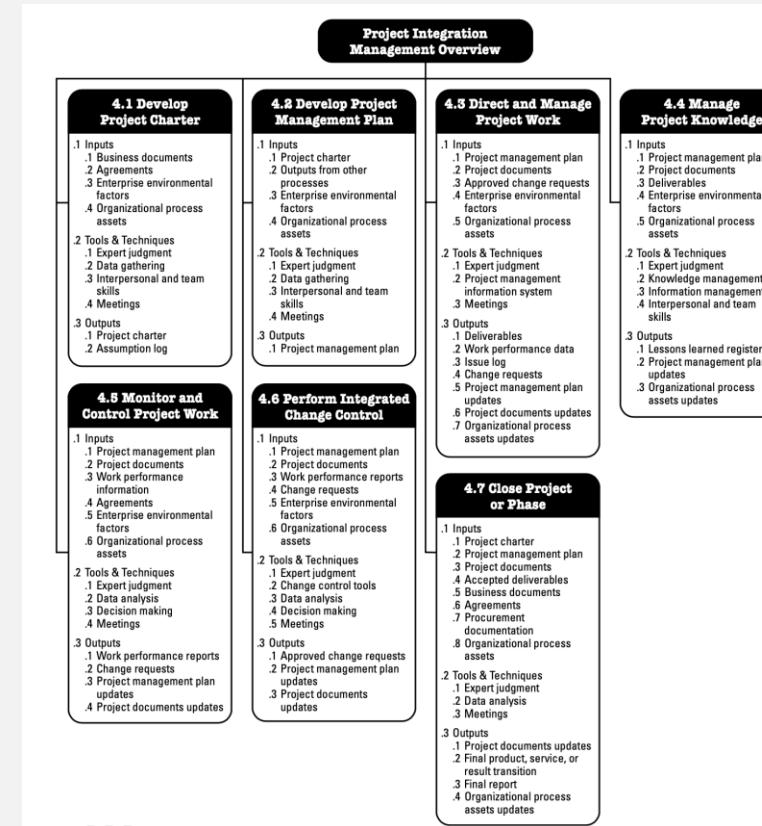
Integrate Project Planning Activities, LESSON 2, TOPIC F

# Project Integration Management Processes

Projects and project management are integrative by nature. This is an overview of the processes that project managers need to know.

Also know that:

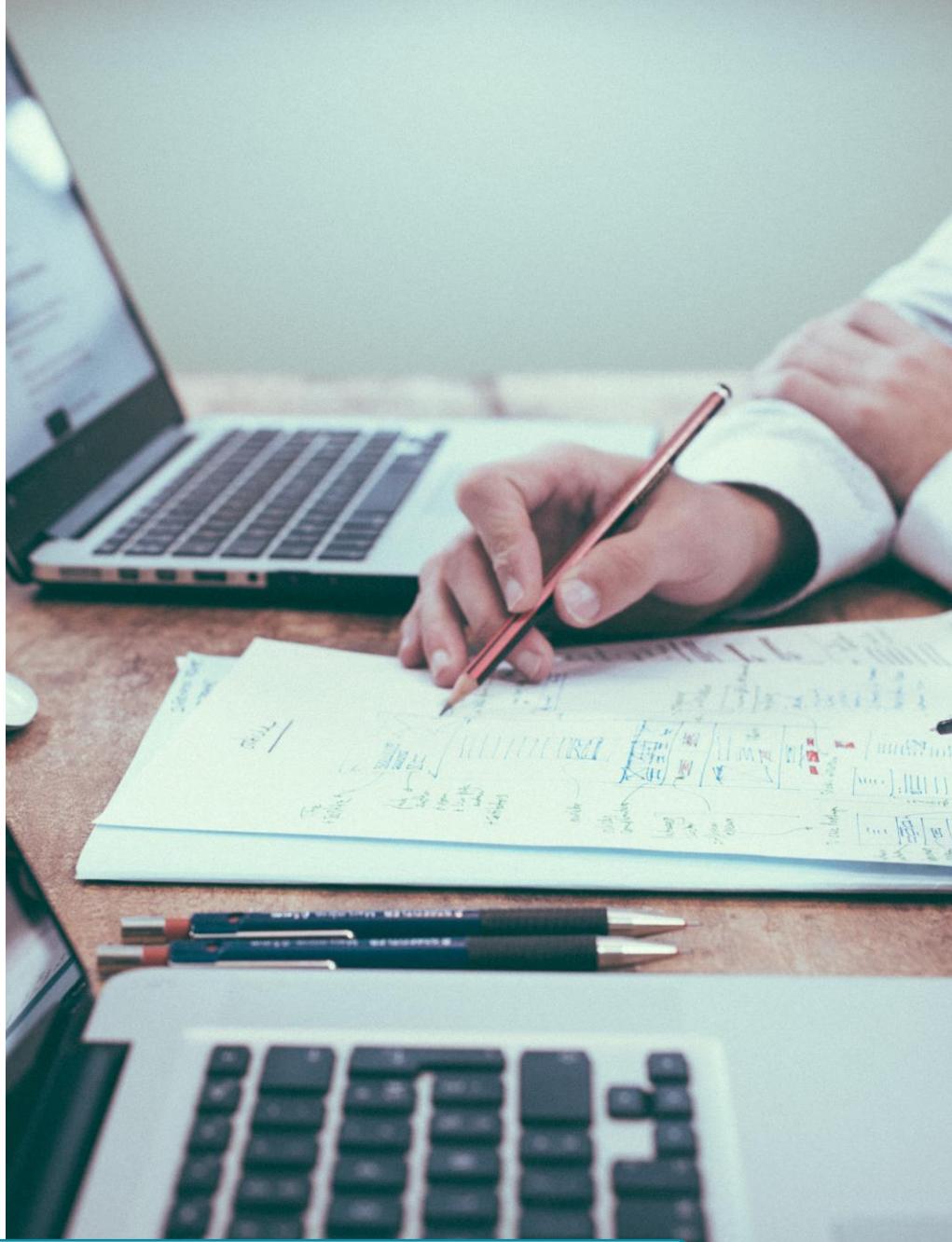
- ✓ These processes overlap and interact with each other.
- ✓ The links among these processes are often iterative.



# Project Management Information System (PMIS)

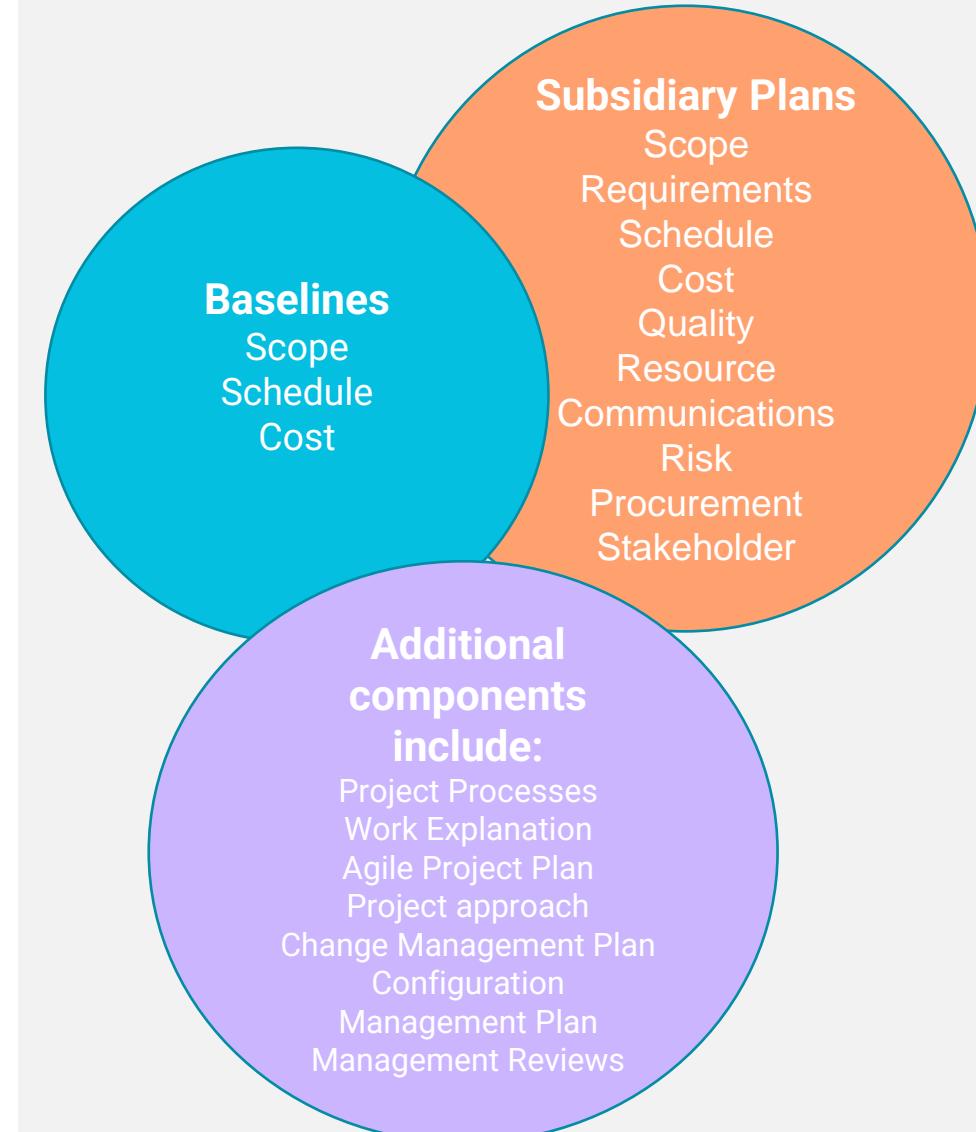
An information system e.g. Microsoft Project consisting of the tools and techniques used to gather, integrate, and disseminate the outputs of project management processes.

The PMIS enables quick and efficient work.



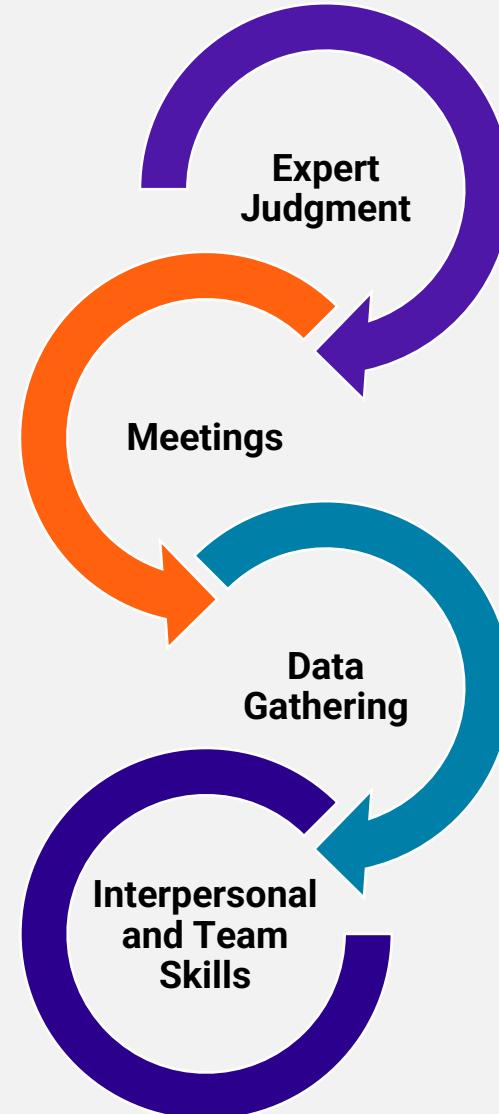
# Project Management Plan Components

- ✓ These are a combination of essential and supporting processes used to run a project.
- ✓ Ensure the essential plans and processes are in place.
- ✓ Adapt and tailor the supporting plans and processes to your project.
- ✓ Consider the needs of the project to determine which components of the project management plan are needed.



# Project Management Plan Tools and Techniques

- ✓ Use **expert judgment** to make critical decisions.
- ✓ Use **meetings** to facilitate communication and understanding.
- ✓ **Gather data** to understand the project
- ✓ Leverage **interpersonal and team skills** to be an effective leader.





# Managing Change

Integrate Project Planning Activities, LESSON 2, TOPIC F

# Configuration Management Plan

Identify and account for project **artifacts under configuration control**, and how to record and report changes to them.

# Change Management Plan

Provides direction for managing the **change control process** and documents the roles and responsibilities of the change control board (CCB).



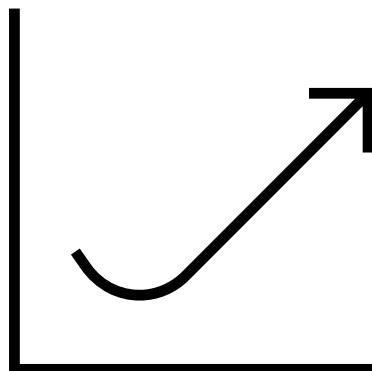
Identification, maintenance, status reporting, and verification of **configurable items**

Identification, impact analysis, documentation, and approving or rejecting of **change requests**.

# Change Management Plan

**Answers the following questions:**

- Who can propose a change?
- What exactly constitutes a change?
- What is the impact of the change on project objectives?
- What are steps to evaluate a change request before approving or rejecting it?
- When a change request is approved, what project documents will record the next steps (actions)?
- How will you monitor these actions to confirm completion and quality?



## GUIDELINES

# Develop a Project Management Plan

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

Integrate Project  
Planning Activities  
LESSON 2  
TOPIC F



# Factoring in Dynamic Change

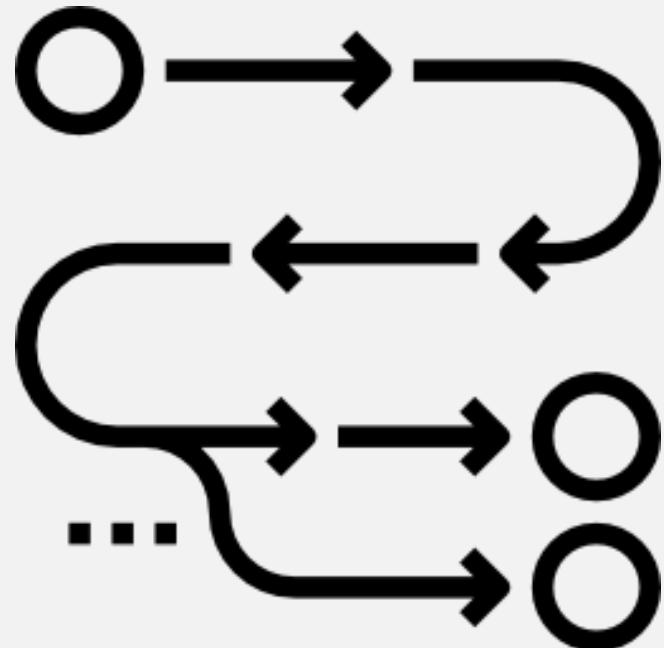
Highly dynamic and complex projects which are very common, require a robust approach to change.

Some Agile approaches for managing change:

**Disciplined Agile (DA)** - a hybrid tool kit that harnesses hundreds of agile practices to devise the best “way of working” (WoW) for your team or organization.

**Scrum of Scrums** - A technique for operation of Scrum at scale for multiple teams working on the same product, coordinating discussions of progress on 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.



# MASTERY BUILDER

What is the process to create a project budget?

- Take the ROM and decompose it into the cost of work packages.
- Combine all individual activity cost estimates and aggregate them for the entire project. Submit this to the sponsor and modify it if necessary. The agreed-upon final cost estimate is the budget.
- Estimate costs necessary to finish project work, including direct costs, labor, materials, equipment, facilities, services, information technology, and contingency reserves.
- Create an S-curve with cost on the Y axis and time on the X axis.

Creating a  
high  
performing  
team



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# MASTERY BUILDER

Which of the following is the correct definition of the critical path?

- The critical path is the fastest path through the network diagram which represents the longest time in which the project can be completed.
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Creating a  
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# MASTERY BUILDER

Your company is designing a game for families. To test whether the game is easy enough for children, the team creates a prototype and then establishes test criteria. Then the team establishes test groups of 200 children, ages 7-10, at 50 different schools in 30 locations. The prototype will then be modified and rolled out across the country. What are they engaging in?

- Benchmarking
- Design of experiments
- Statistical sampling
- Force field analysis

Creating a  
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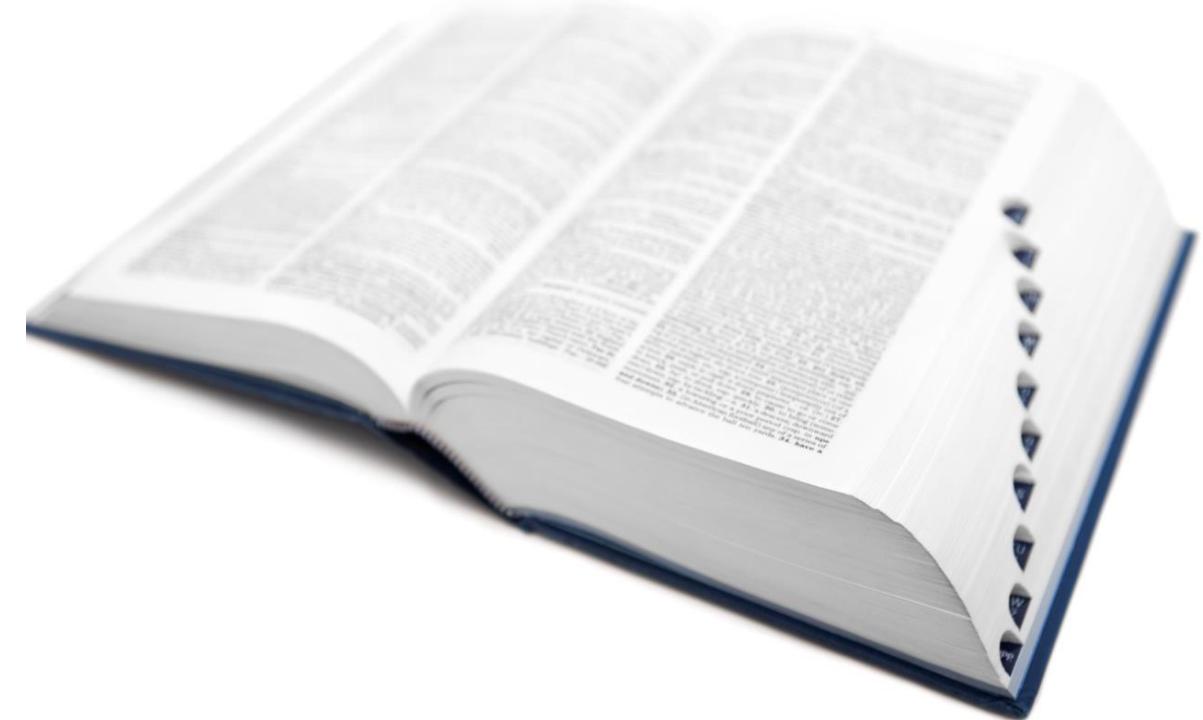
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- Design of experiments
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Creating a  
high  
performing  
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# **VOCABULARY**

## FROM TODAY'S SESSION



# Schedule Management Plan



## DEFINITION

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

# Project Activity



DEFINITION

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

# Milestones



## DEFINITION

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

# Activity Dependency



DEFINITION

A logical relationship that exists between two project activities.

# Gantt Chart



## DEFINITION

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.

# Critical Path Method



## DEFINITION

Estimates the minimum project duration and determines the amount of schedule flexibility on the logical network paths within the schedule model.

# Critical Path Activity



DEFINITION

Any activity on the critical path in a project schedule.

# Cost Baseline



## DEFINITION

The cost baseline is the approved version of the time-phased project budget, excluding any management reserves.

# Funding Limit Reconciliation



## DEFINITION

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.

# Quality



DEFINITION

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

# Quality Management Plan



## DEFINITION

A component of the project management plan that describes how applicable policies, procedures, and guidelines will be implemented to achieve the quality objectives.

# Quality Audit



## DEFINITION

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

# DAILY PMP BOOTCAMP SURVEY



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**Our goal** is to provide the best possible Bootcamp experience for a live streaming webinar, with hundreds of participants.

For each Bootcamp session,

- Let us know **what you liked** about the experience – your comments really matter.
  - Please include a thank you **to the mentor(s)** working off camera.
- If you have **recommendations**, share those too!

**We sincerely value your opinion!**

# Survey Scale

This Scale: 0 not at all likely - 10 extremely likely



On a scale of 0-10, how likely are you to recommend this bootcamp to someone else?

This Scale: 0 not at all likely - 10 extremely likely