PMP® EXAM PREP

PMI Authorized Training Partner

BOOTCAMP

Session 2
Part 2

Class will resume at 2:30pm EST

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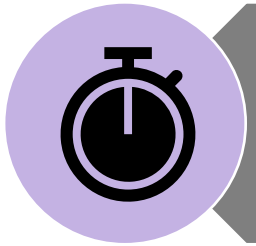
PMP® Exam Prep

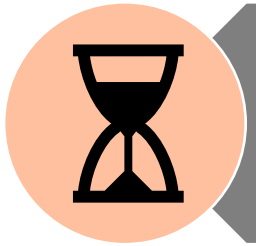
This course will assist learners in preparing for PMI's PMP Exam (2021 Update)

Activity Duration Estimates



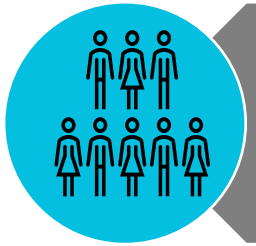
Activity duration estimate

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

Estimate Activity Durations

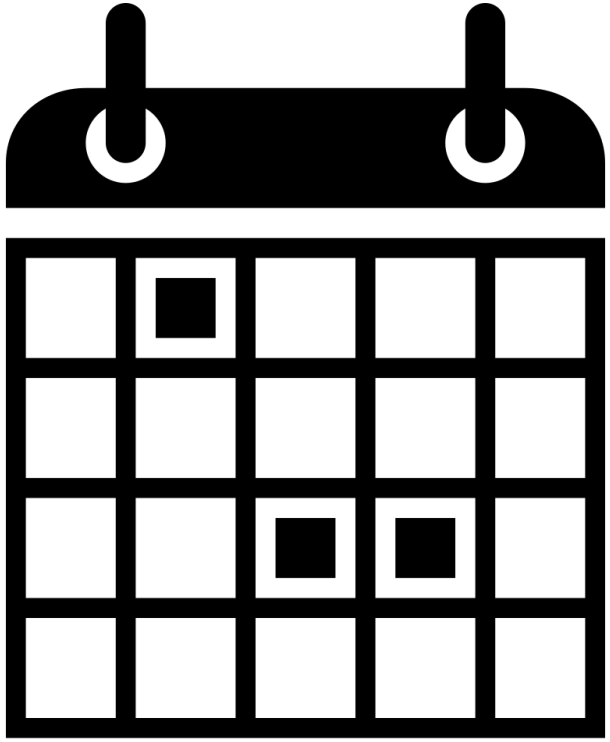
- Involve the work package owners or those familiar with the work of the activity.
- Consult lessons learned and historical information.
- Review the schedule management plan.
- Determine how you want to quantify the work that needs to be done.
- Consider resource requirements and capabilities.
- Review 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.

Plan and Manage Schedule, LESSON 2, TOPIC C

Schedule Presentation Formats

Select the type of schedule to suit your project.

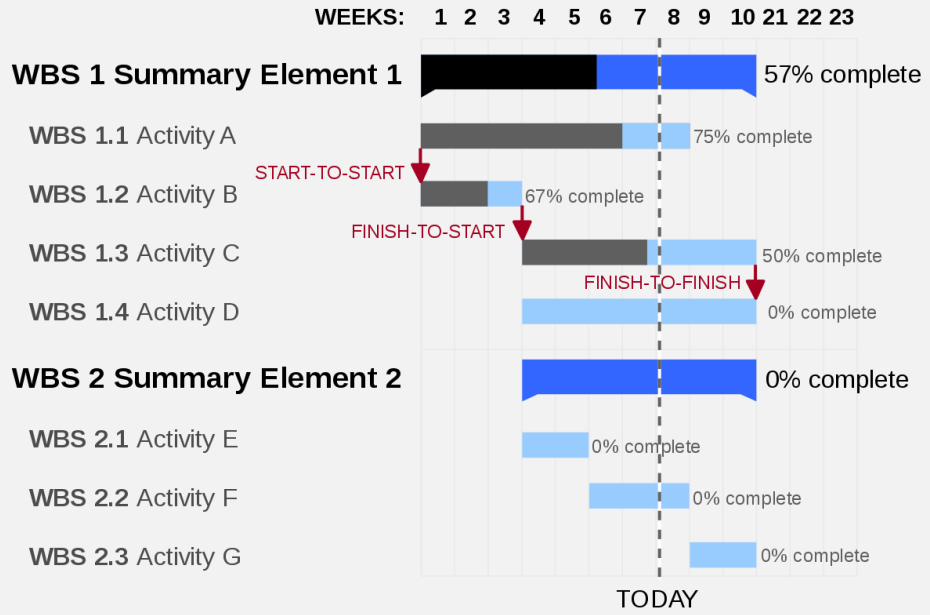
- ✓ Gantt Chart
- ✓ Milestone Chart
- ✓ Project Schedule Network Diagram with Dates
- ✓ Roadmap
- ✓ Task board
- ✓ Kanban board
- ✓ Burndown chart



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



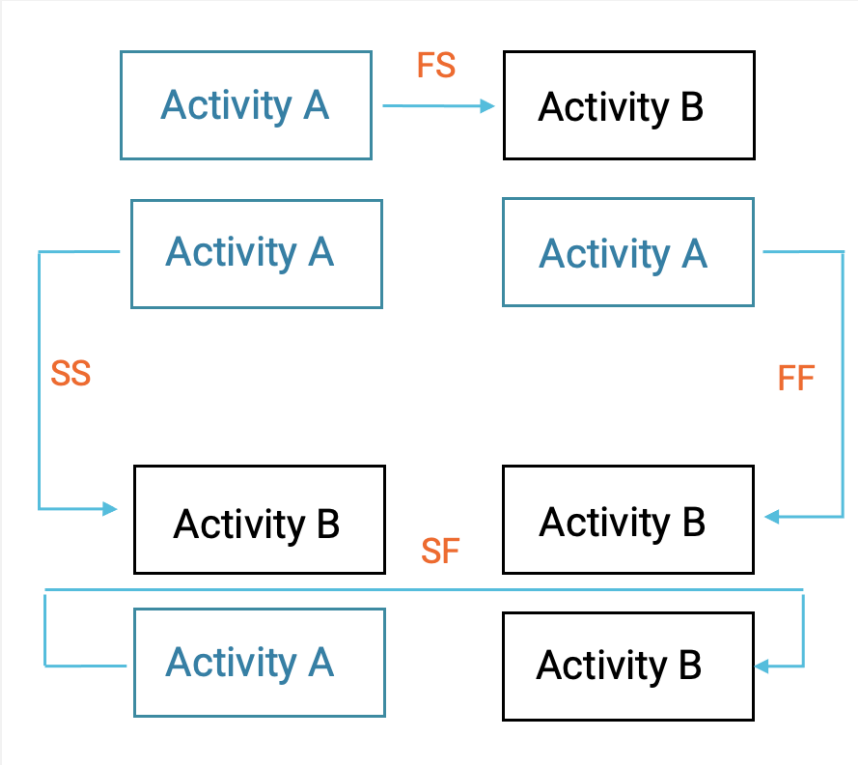
Project Schedule Network Diagram with Dates and Dependencies

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.

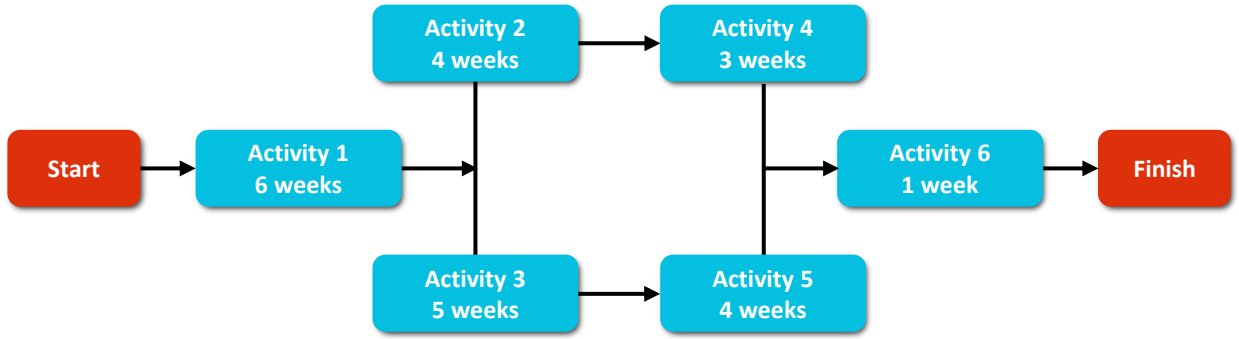
Further benefits:

- ✓ **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 weeks

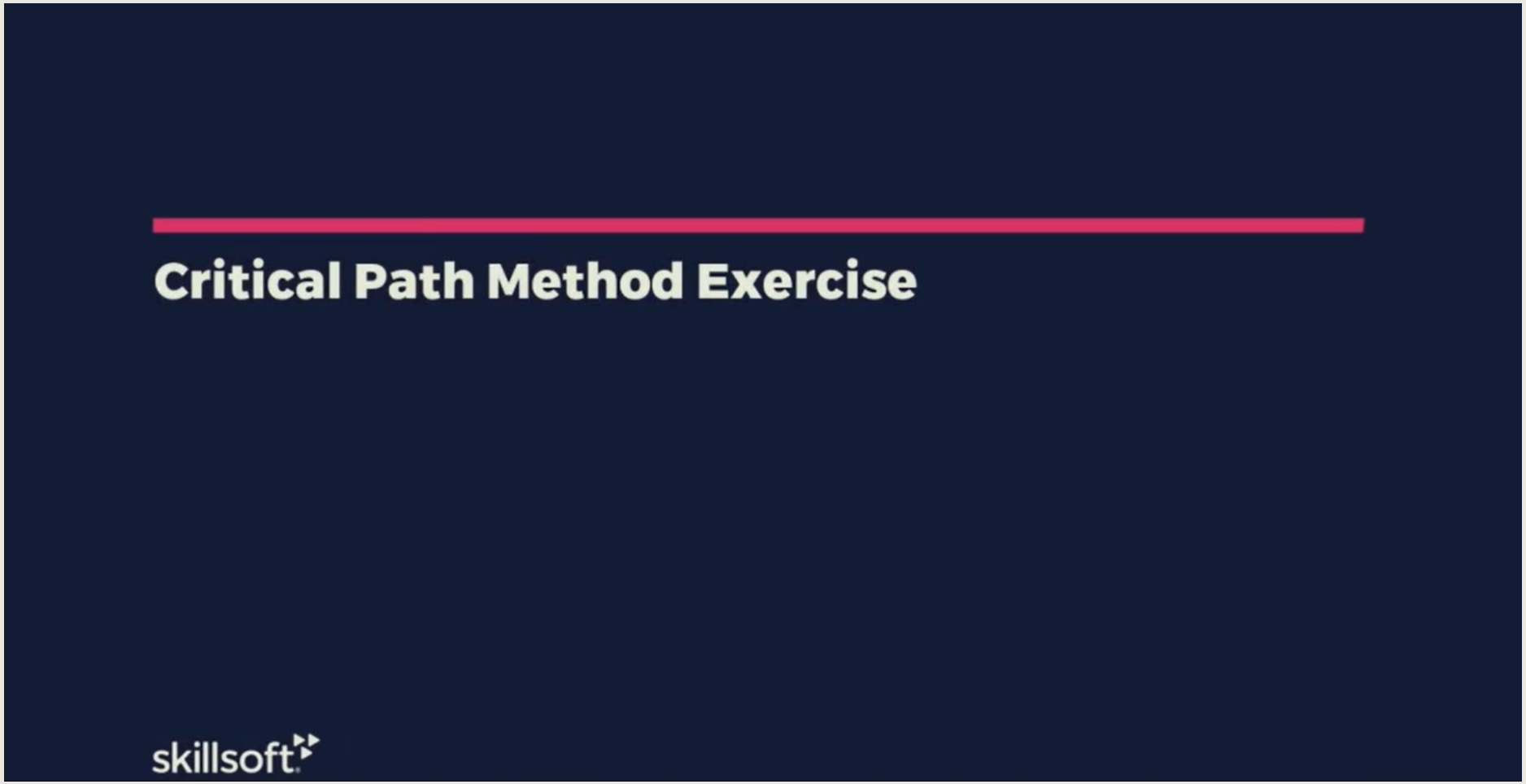
1[6w] + 3[5w] + 5[4w] + 6[1w] = 16 weeks Critical Path

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



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.

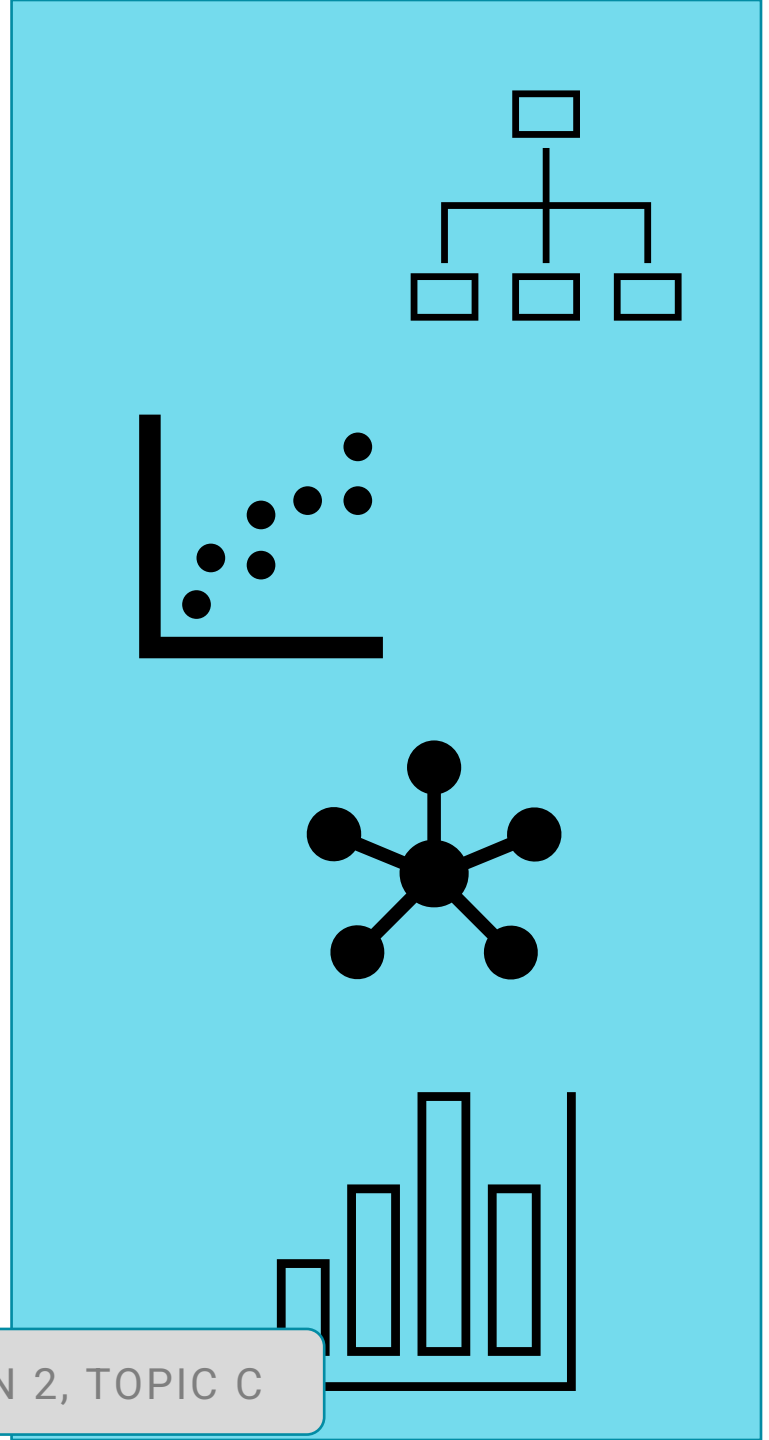
Ongoing Progress Based on Methodology

Traditional - Measure project progress according to schedule by:

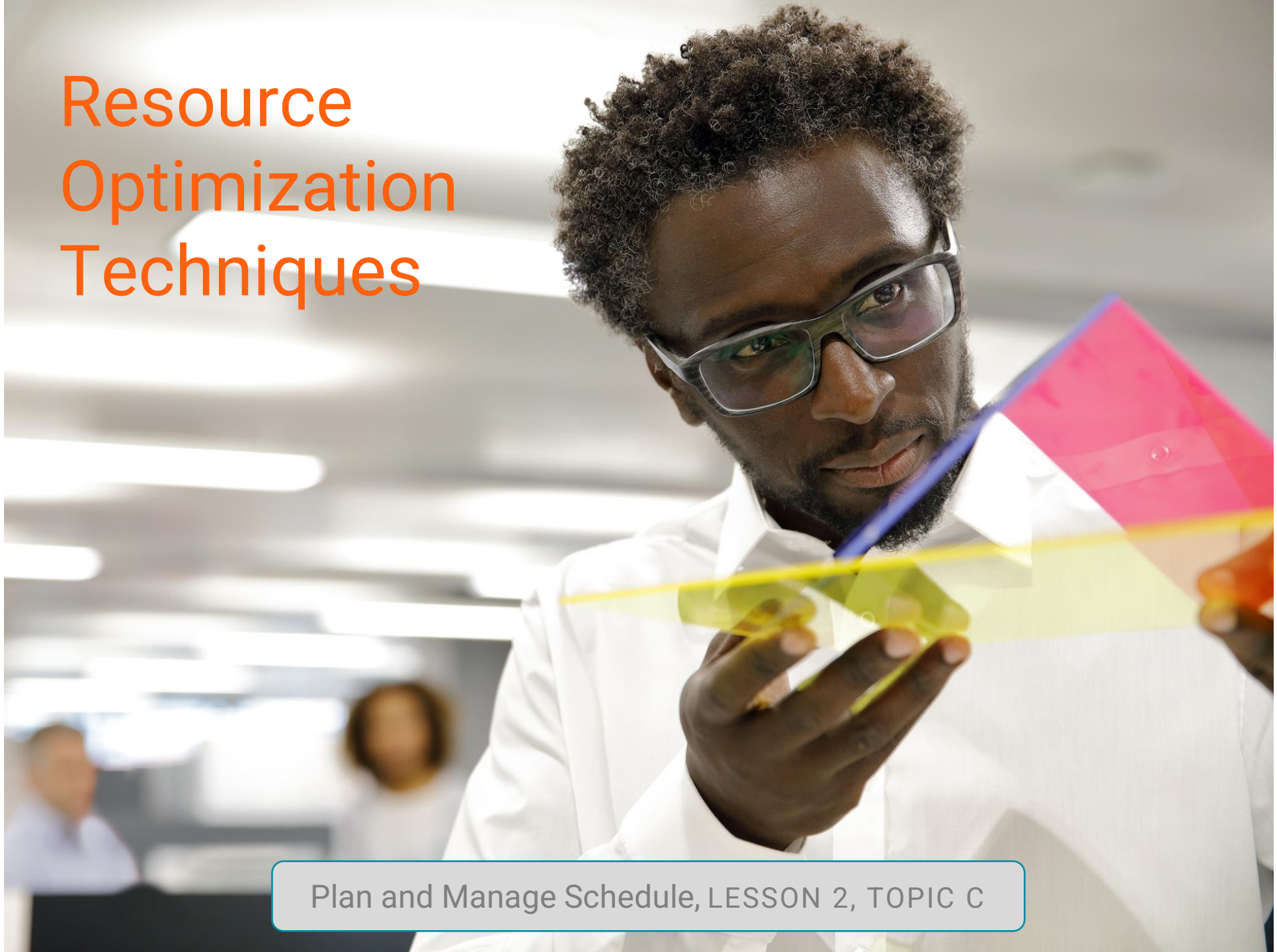
- ✓ Monitoring project status to update the schedule.
- ✓ Managing changes to schedule baseline.

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

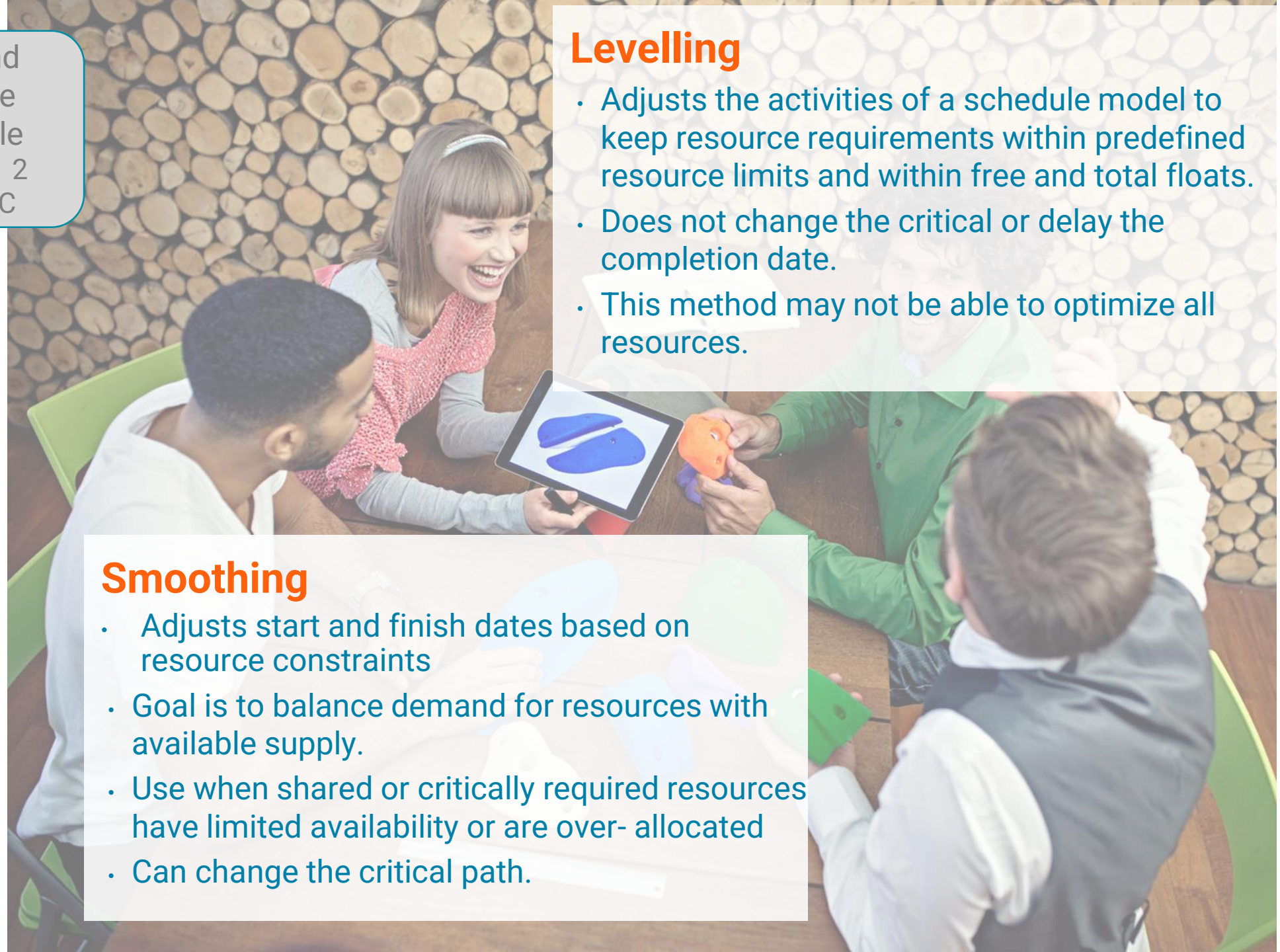
Use Resource Optimization to adjust the start and finish dates of activities.

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.

Plan and Manage Schedule
LESSON 2
TOPIC C



Levelling

- 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 or delay the completion date.
- This method may not be able to optimize all resources.

Smoothing

- 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)

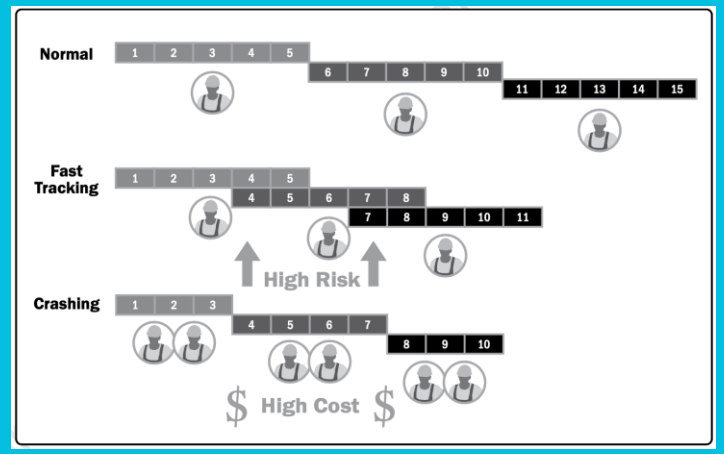
More about...

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

Schedule Compression Techniques

Plan and Manage Schedule, LESSON 2, TOPIC C

Schedule Compression Techniques



Crashing

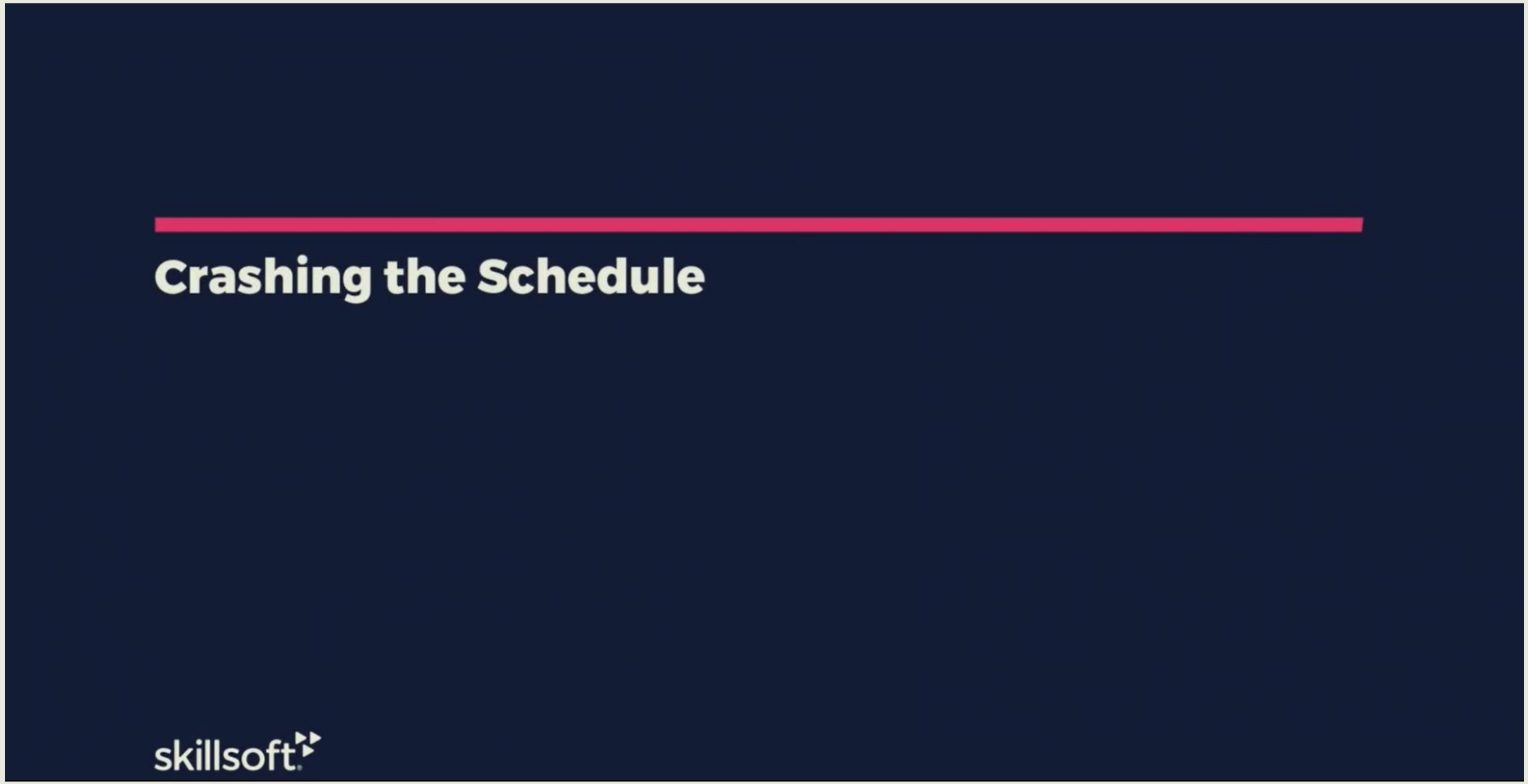
- Shortens schedule duration for the least incremental cost by adding resources e.g. overtime, additional resources
- Works only for activities on the critical path
- Does not always produce a viable alternative and may result in increased risk and/or cost.

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)



More about...

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

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.

Plan and Manage Budget and Resources, LESSON 2, TOPIC D

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.

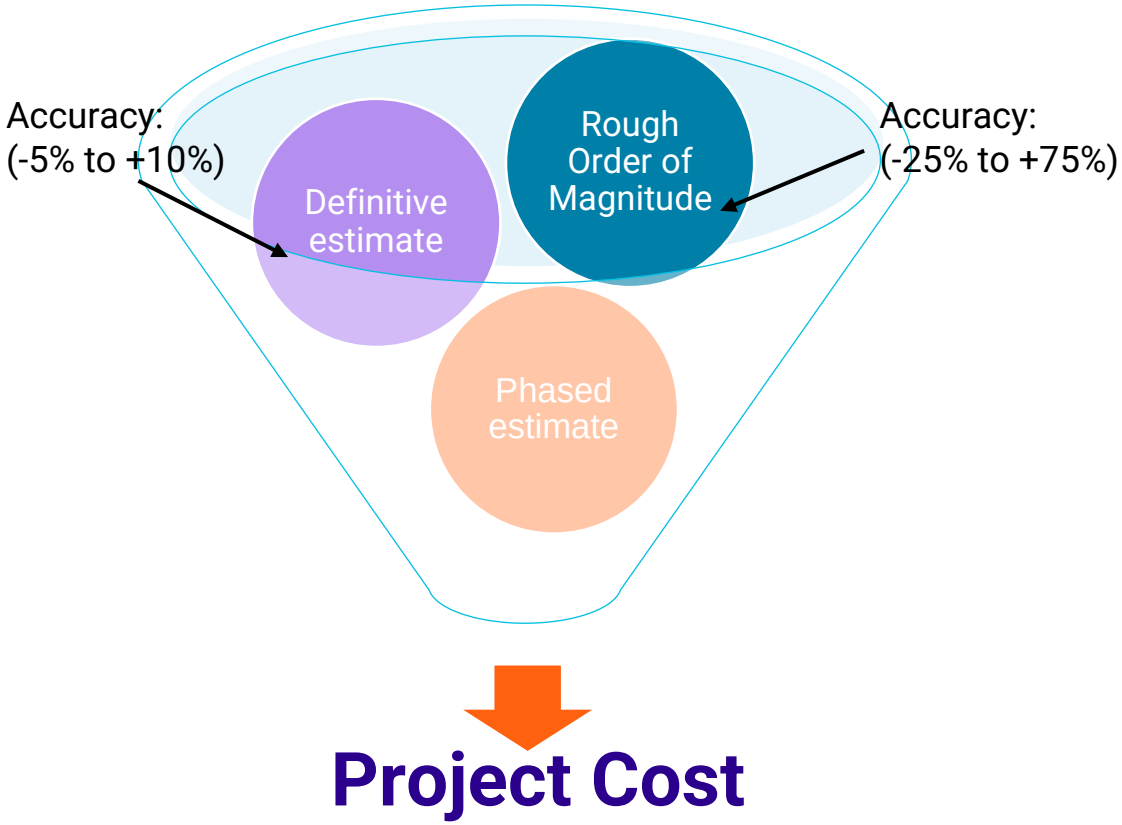
May be very time consuming

Can be used only after the WBS has been well-defined.

More about...

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

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

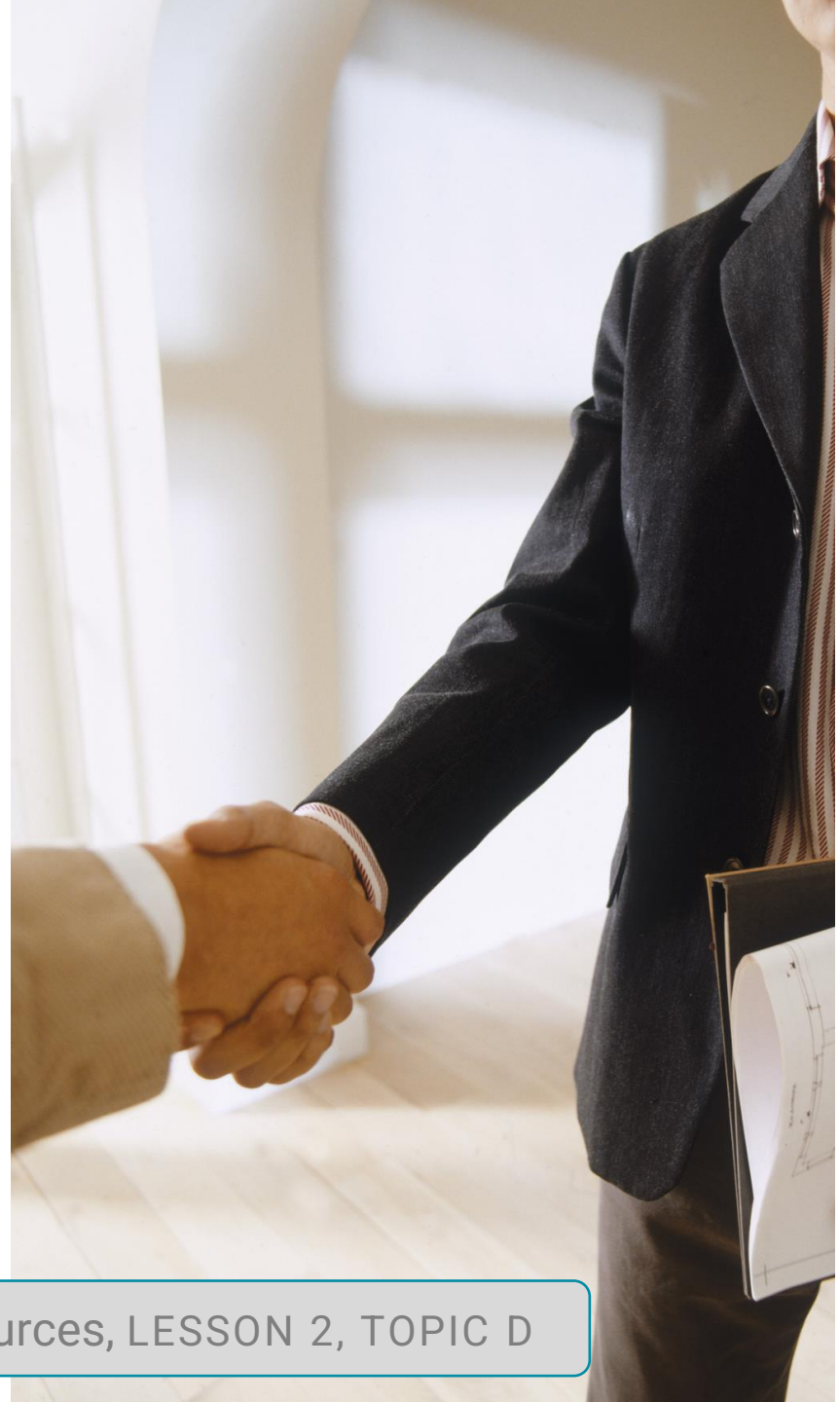
Projects must be compliant with internal and external standards, such as:

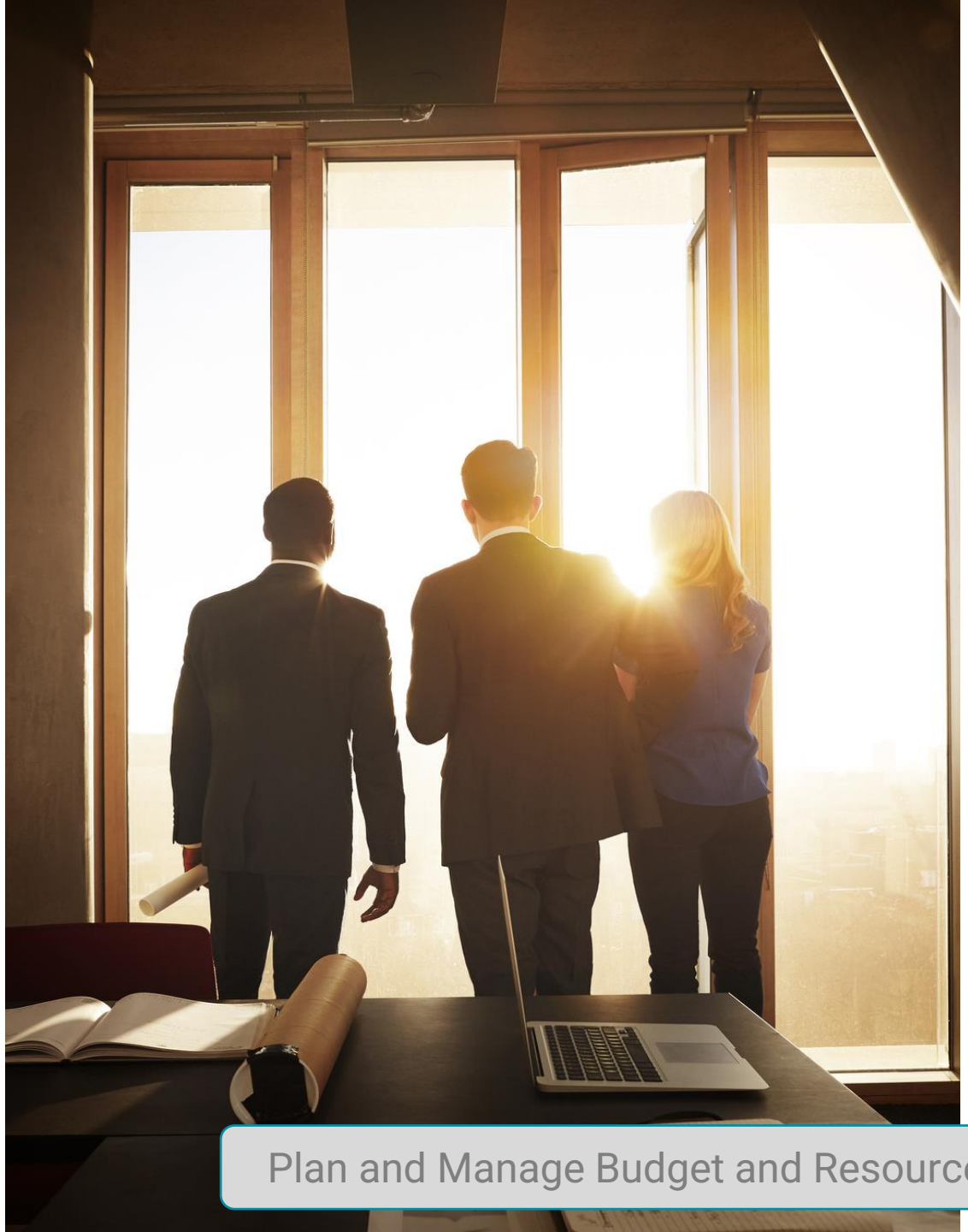
- ✓ Appropriate government regulations
- ✓ Corporate policies
- ✓ Product and project quality
- ✓ Project risk

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.

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 Manage Budget and Resources
LESSON 2
TOPIC D

Cost Baseline

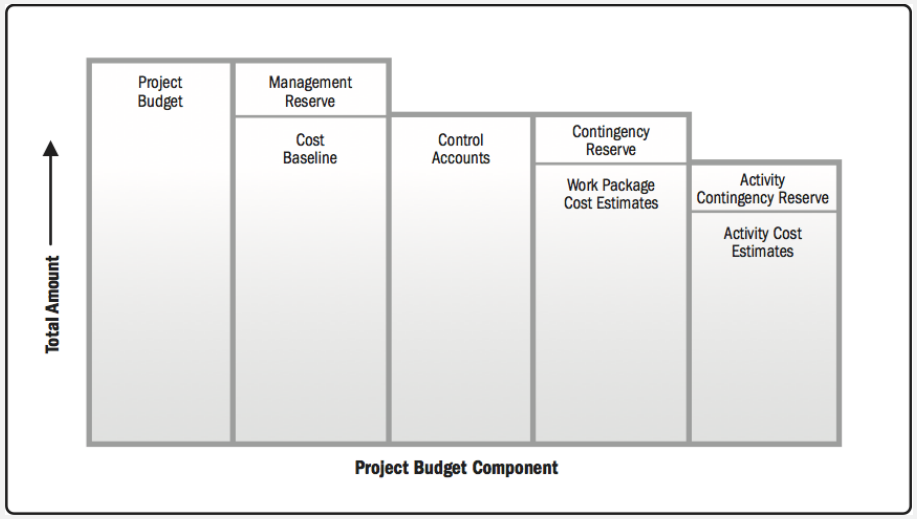
Can be changed only through formal change control procedures and is the basis for comparison to actual results.

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
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.

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.

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

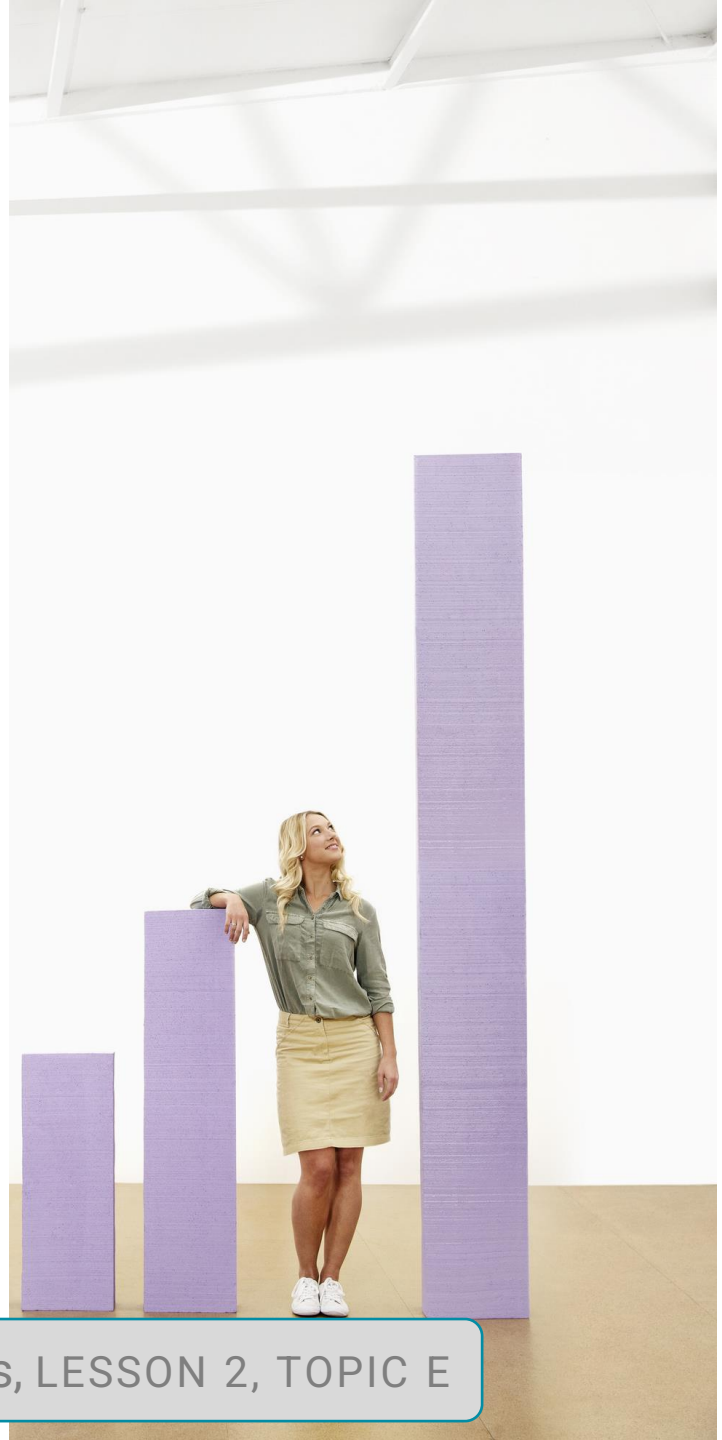
Standards - Documents established as a model by an authority, custom, or by general consent.

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.

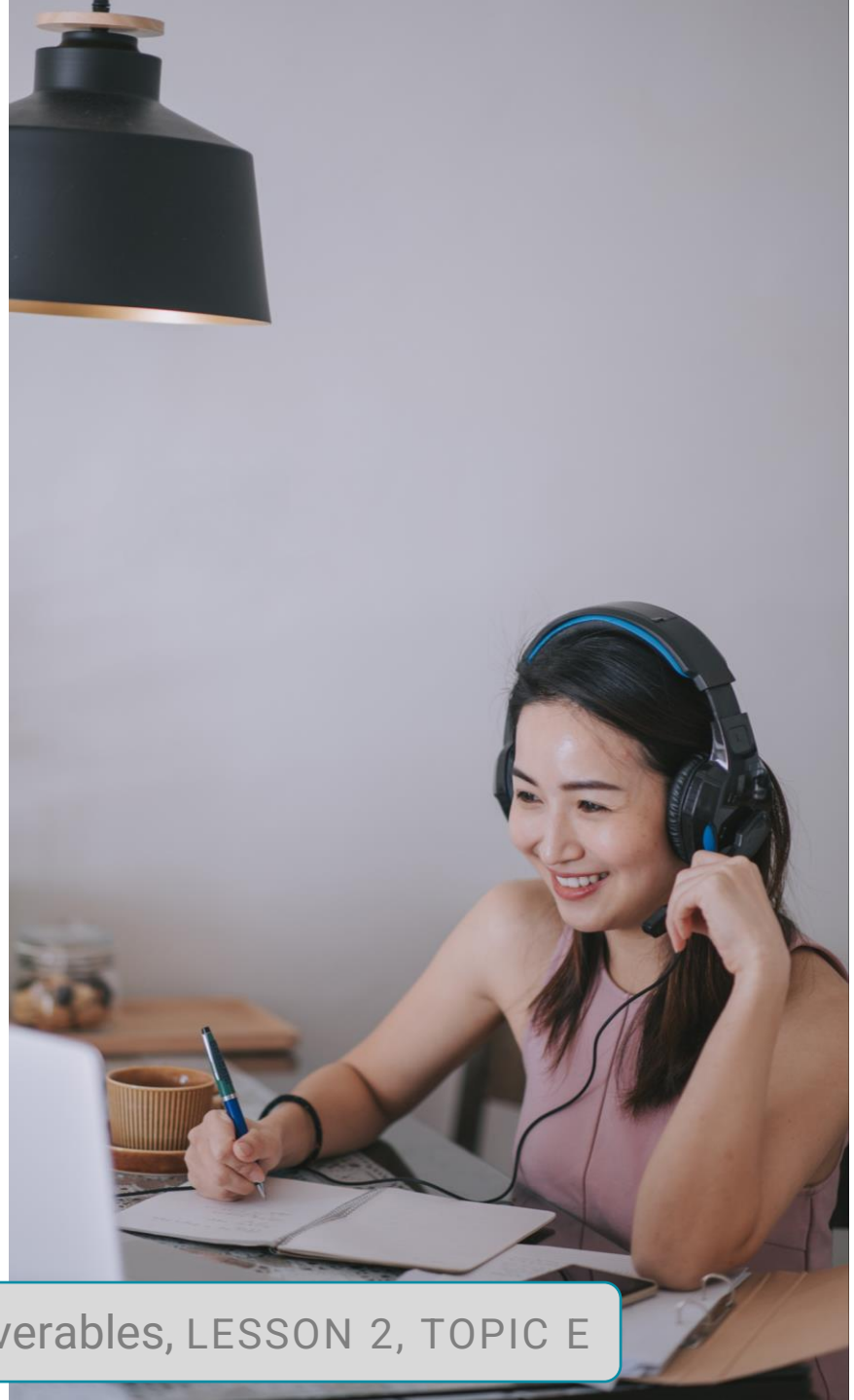


Verified Deliverables

- ✓ 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.
- ✓ I**mplement** corrections and controls when quality standards are neither met nor within acceptable ranges.

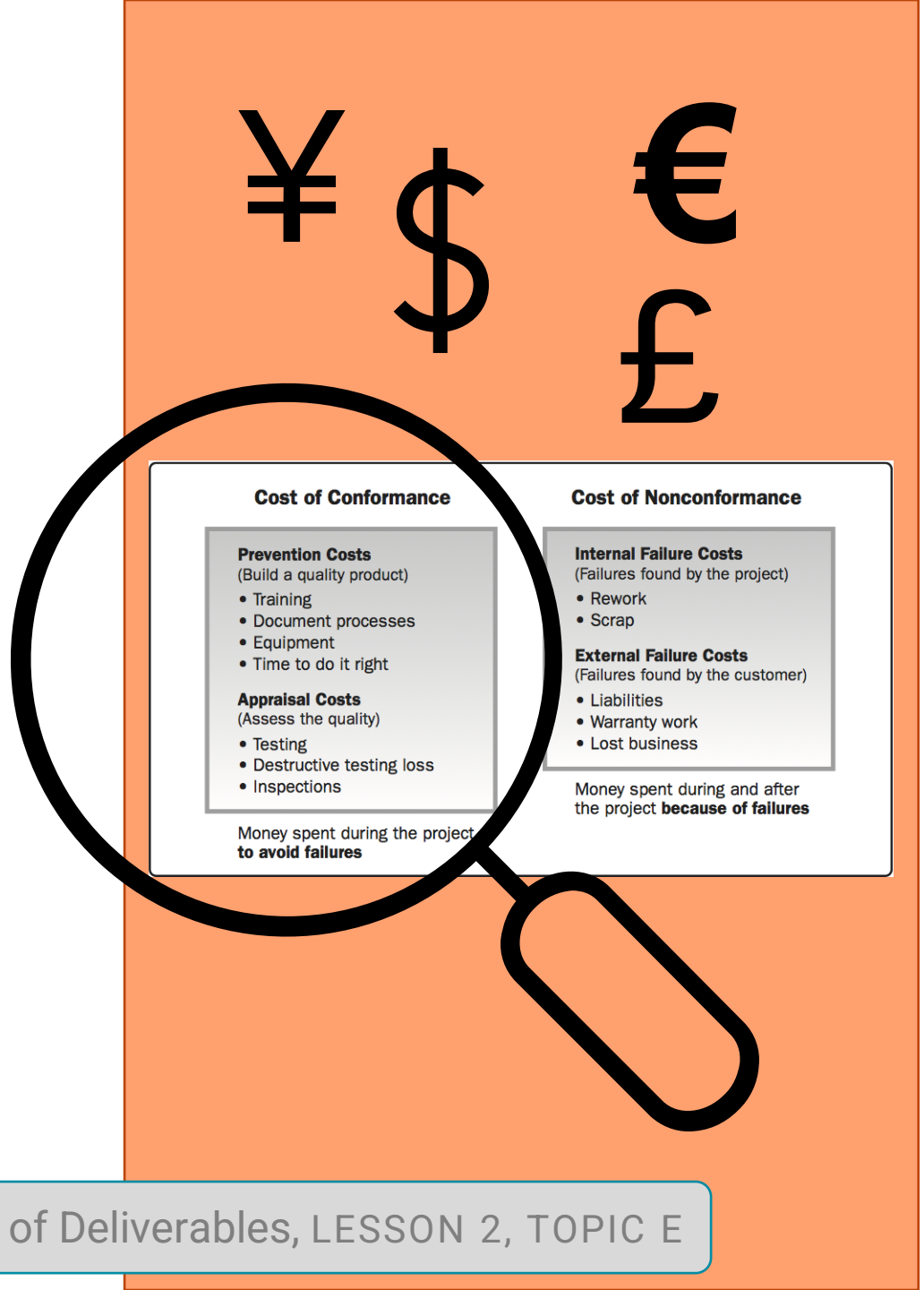
Quality Management Plan

- ✓ 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

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

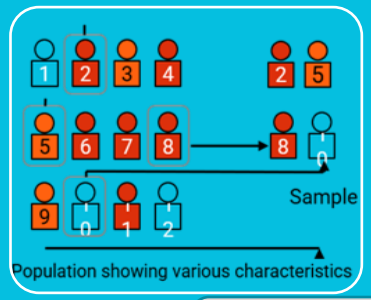
Data Gathering

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

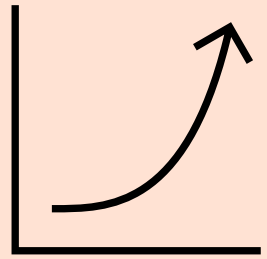
- Choosing part of a population of interest for inspection.
- Determine characteristics of an entire population based on measurement of representative sample.

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.

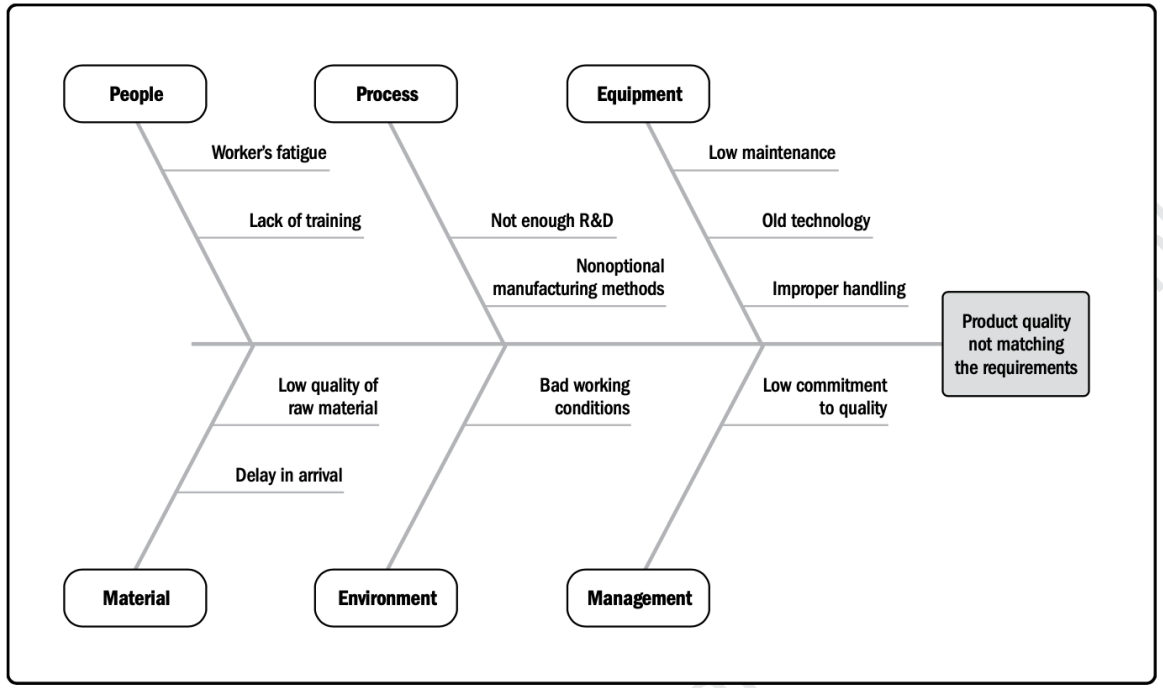
- Using gathered data, identify the cause of the problem.
- Goal is to pinpoint the exact cause.
- Follow issue back to the initial trigger.
- Use RCA tools - Failure Modes and Effects Analysis (FMEA), a fishbone diagram, a Pareto chart, a scatter diagram

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.

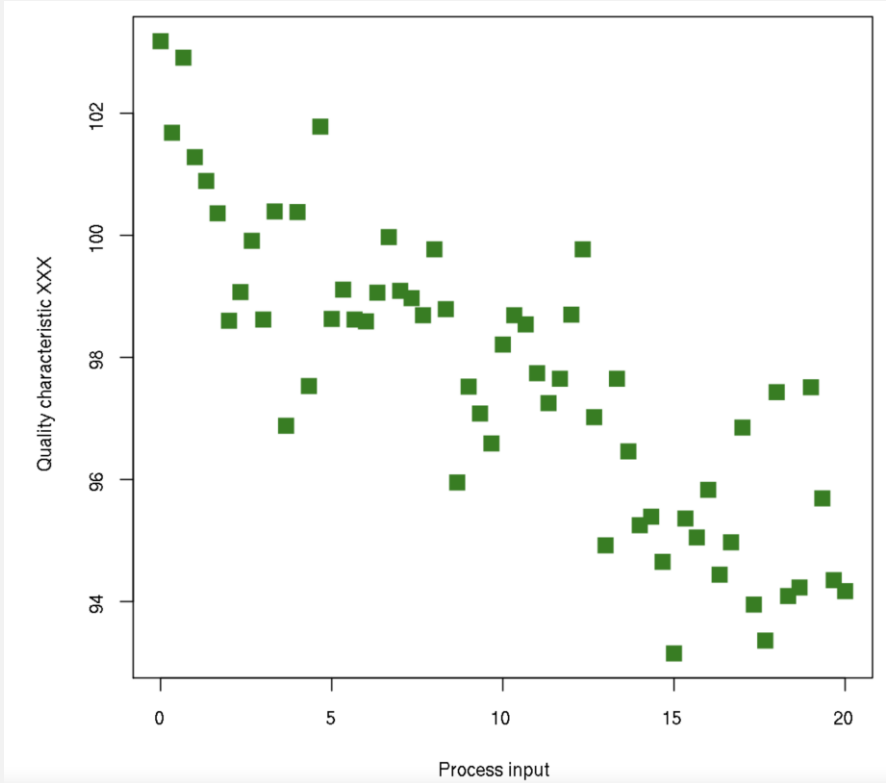


Example fishbone diagram

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.

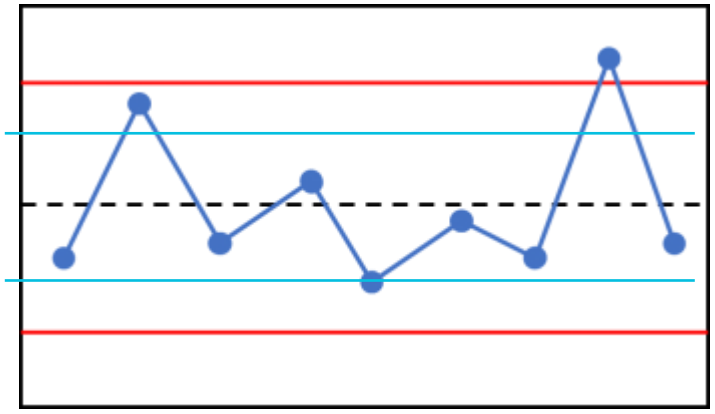


Data Representation (3 of 4)

Control Chart

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

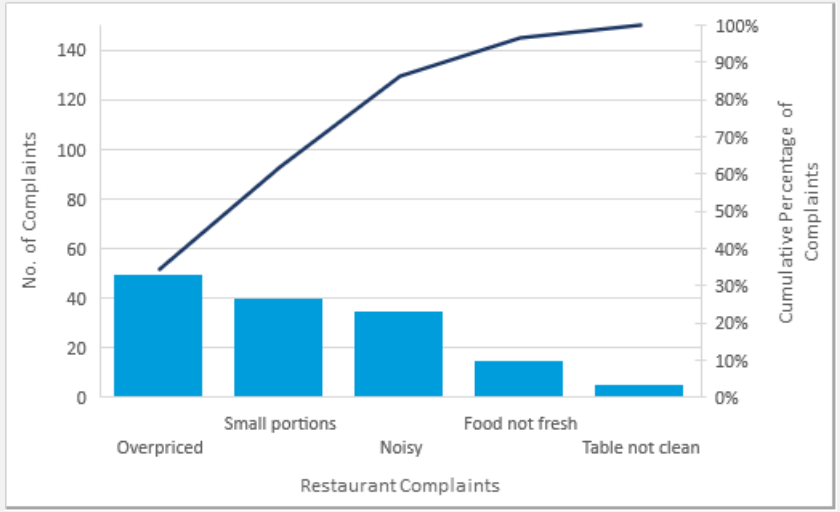
- ✓ A graphic display of project data against established control limits to reflect both the maximum and minimum values.
- ✓ Gives visibility to where corrective actions can prevent further problems.
- ✓ Ideal for repetitive processes with predictable results.



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.

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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Creating a high performing team

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 high performing team

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 high performing team

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Creating a high performing team

DAILY BOOTCAMP SURVEY

Please share your thoughts.

At the end of each Bootcamp session please let us know how we are doing. Your feedback helps us to offer the best possible Bootcamp experience.

Thank you for attending Session 2!