

### Instructor Notes

This module refers to pages 39-43 in the Learning Log.

### Objectives of This Module

Using the documents provided, teams develop a bottom-up project budget for the work elements they identified. Teams also determine the cost of every deliverable and estimate the duration of every task for their team's assigned subproject.

### Module 6 Timing

This module lasts for 2 hour and 15 minutes, 13:10-15:25, on day 2. The agenda is:

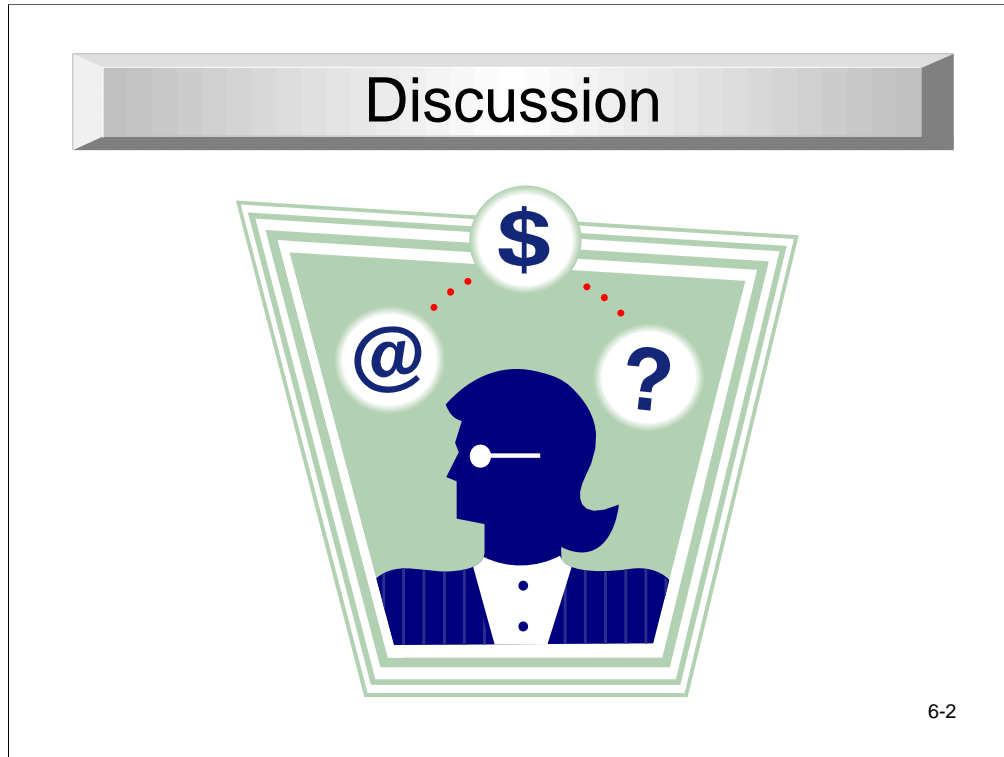
Start	End	Length	Subject
13:10	13:40	30	Discussion
13:40	14:30	50	Estimating Activity
14:30	14:50	20	Debrief and PM Feedback
14:50	15:10	20	Break
15:10	15:25	15	Energizer

### Summary of Documents

- Case Study 6-1 Perry Fields memo on the Budget.
- Case Study 6-2 Resource Rates for the Project.
- Case Study 6-3 Hardware and Software Requirements.
- Case Study 6-4 Equipment Costs.
- Case Study 6-5 Gymnastics Floor Plan.
- Case Study 6-6 Historical data for Planning.
- Case Study 6-7 A proposal from a contractor bidding on the event applications for the World Gymnastics Games project.
- Case Study 6-8 Cost Estimate Template
- Handout 6-1 Cost Estimate Solution
- Project Manager Feedback Form

### Documents in Previous Modules That Teams Should Use

Teams should review documents from earlier modules so they know which events have fixed duration.



Ask participants what kind of experience they have with estimating and adjust the discussion as appropriate.

Remind participants about the learning objectives from Project Management Orientation:

- Defining an estimate
- Determining what to estimate
- Generating an estimate
- Recognizing the difference between effort and duration
- Describing specific types, methods of estimating
- Discussing the estimating process
- Validating an estimate

Ask participants to think about:

What is the purpose of estimating?

When do you do estimating?

Who should be involved with making estimates?

What happens when you do create good estimates as a PM?

What happens when you do not create good estimates as a PM?

Answer questions the participants have about the PM Orientation work

## Top-down Estimating

- Top-down estimating results in high-level estimates of projects or their summary tasks based on parametric, analogy or comparison, or expert judgment.
- Based on collecting judgments, past experiences, and on evaluating past data concerning similar activities.

6-3

## Parametric Estimating

Uses specific measures to estimate the effort required to complete a task or to produce a work product, such as hours per lines of code and dollars per function point.

### Advantages

- Can be more accurate and detailed than analogous
- Can be quicker than bottom-up

### Disadvantages

- Accuracy varies widely
- Can be more costly to produce
- Historical information may not be available
- Parameters may not be quantifiable or scalable

6-4

## Analogous Estimating

Use the actual cost of a previous, similar task, activity, or project as the basis for estimating the cost of the current task, activity, or project.

### Advantages

- Little time and effort
- Less costly
- Details don't need to be known

### Disadvantages

- Less accurate
- Historical information or expert opinion may not be available

6-5

## Bottom-up Estimating

Cost and duration of individual work items in hours and summarized to a project total.

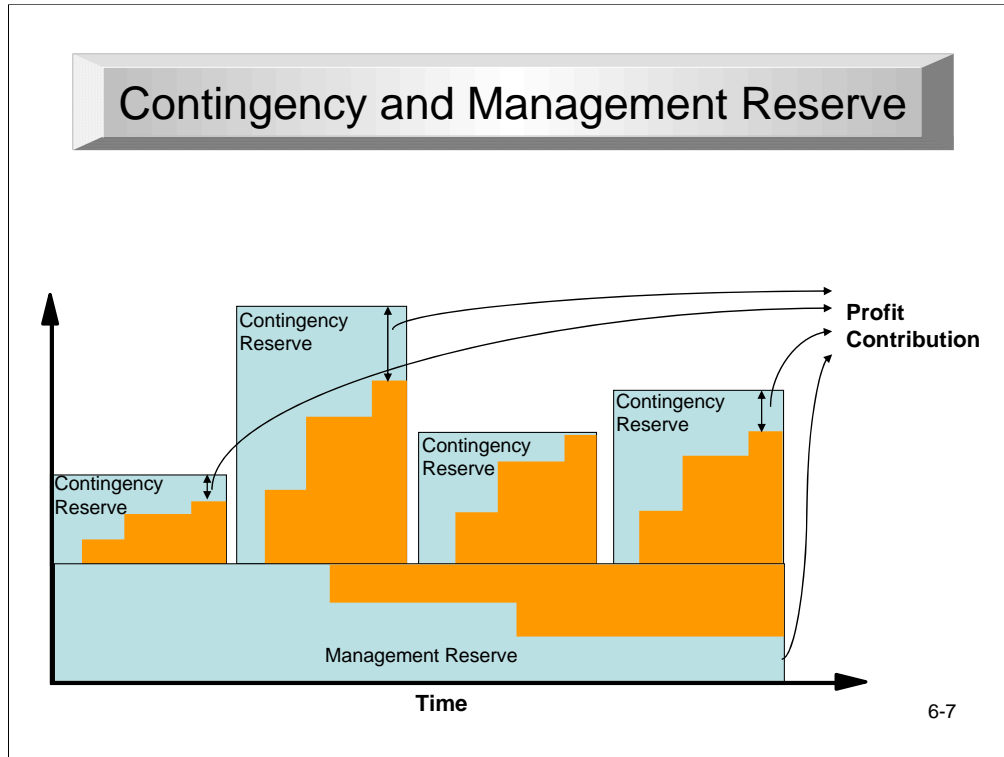
### Advantages

- Improved accuracy
- Appropriate detail to monitor and control project
- Provide team buy-in to estimates

### Disadvantages

- Longer time
- Higher cost
- Only as accurate as the WBS
- Team members may pad estimates

6-6



Contingency Reserve is established at the project level to deal with known risks. This can include both time (buffer in the schedule) and money. The Project Manager owns the contingency reserve.

If the risk consequences can be quantified, one way to calculate reserve is to quantify the impact of risk in terms of money and/or time. Multiply the impact by the probability to get the risk exposure in terms of money and/or time. The sum of the risk exposures could be used to determine the contingency reserve needed.

Another less precise, but often used, way to calculate reserve is to apply a “rule of thumb” percentage such as 15% of the total project cost.

Usually, a contingency reserve is established during the planning process of a project. The project manager needs to periodically review the contingency reserve to ensure it will meet the changing risk profile of the project.

Management reserve is owned by ‘Senior Management’ and is held outside the project. Management reserve is shared across projects and intended as cross-project business insurance to meet overall business risk.

If the project uses all of its contingency reserve, the PM would have to negotiate with Senior Management to access the Management Reserve.

## Create Case Study Estimates

**Purpose:** Practice creating cost estimates based upon your WBS and resources

**Process:**

1. Estimate the quantity and cost of equipment and other materials
2. Estimate human resource hours
3. Apply costs to the hours
4. Calculate the total cost



**Participation:** Teams led by Project Manager

**Product:** Completed cost estimate template  
Be prepared to present your cost estimate

6-8

Ask each team if they believe they can finish each of these three deliverables on time although they have not yet calculated the schedule based on the precedence diagramming method (PDM). The students' "guesstimates" are usually not accurate at this point, and it underscores the need for the process when they actually calculate the schedule in the PDM exercise.

### Set-up Activity

Give the participants 50 minutes to complete the case study. They should use the Case Study 6-8 Estimate template to simplify this exercise. They need to calculate the cost of materials, estimate the number of labor hours and then apply costs to those hours.

Remind teams to:

- Change project managers and observers
- Use the Estimate Template to simplify this exercise
- Divide the work among different team members – ie. Two people to do the hardware estimate while others do the labor estimates based upon their roles on the team.
- Document their assumptions
- Prepare a bottom-up estimate

### Points to Be Aware of in Documents

- Remind students that they are the experts for their role and they should focus on their work packages.
- Remind students that they have only the resources on their team.

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### Debrief

- What are the difficult aspects of estimating?
- How do you overcome the difficulties?
- How do you validate your estimates?



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#### Debrief Activity

Once all the teams have shared something on the content, conduct a learning debrief, and pass out Handout 6-1 Estimating Possible Solution

#### Explore what happened

- How teams came up with their estimates?

#### Explore what the participants learned

- What worked well?
- What are the “Even Better Ifs”?
- What could have contributed to that? (cause and effect)
- What key things did you learn from this exercise?
- What advice would you give someone about to start this exercise?

#### Explore how the participants can apply the learning

- How does this relate to the real world?
- How might your learning today impact what you do Monday morning?
- How might this change the way you ....?
- What would make dealing with this situation more difficult/easier?
- How might you respond/apply these learnings when/if ...?
- How does estimating link back to the Seven Keys?

Not taking the time to make good estimates can affect several of the keys. First, work and schedule will not be predictable, as deadlines will be missed. The delivery organization benefits key will likely go red as spending increases and the project goes over budget. How do the sponsor and key stakeholders react when the project is late and over budget? Now your stakeholders lose their commitment. And at the end, the project will not be successful and deliver the business benefits that were expected.

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## PM Feedback

After the case study exercise:

- The PM describes what went well
- The team describes what went well
- The PM describes what could have been better
- The team describes what could have been better
- Hand the feedback forms to the PM
- After providing the PM feedback. Document your on page 44 of the Learning Log.
  - This should include any changes that you plan daily work as a result of this exercise.



6-10

After teams have presented their results, give them a few minutes to provide feedback to the participant playing the PM for the activity, and to document their own thoughts.