

# PROJECT PLANNING & CONTROL

## Lesson 4: Project Estimating

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# Chapter Description

- Aims

- The aim of this chapter to expose and understanding students to apply basic project estimating into a project.

- Expected Outcomes

At the conclusion of this chapter, the students should be able to:

- Understand the project estimating and techniques and factor influencing the quality of estimates.
- Apply basic project estimating in project management discipline.
- Demonstrate SMART principles to a project

- References

- Erik W. Larson & Clifford F. (2014). Project Management: The Managerial Process (6<sup>th</sup> Ed.). McGraw-Hill Education, New York.



# Content of LESSON 4

## PROJECT ESTIMATING

- Overview of Project Estimates
- Top-down techniques
- Bottom-up techniques
- Delphi Techniques



# Project Estimating

*Project estimation is indeed a yardstick for project cost control. And if the yardstick is faulty, you start on the “wrong foot”.....we exhort you not to underestimate the estimate.*

*O.P Kharbanda and J.K Pinto, Learning from Project Failures: 1996*

## Definition

- *Estimating is the process of forecasting or approximating the time and cost of completing project deliverables.*

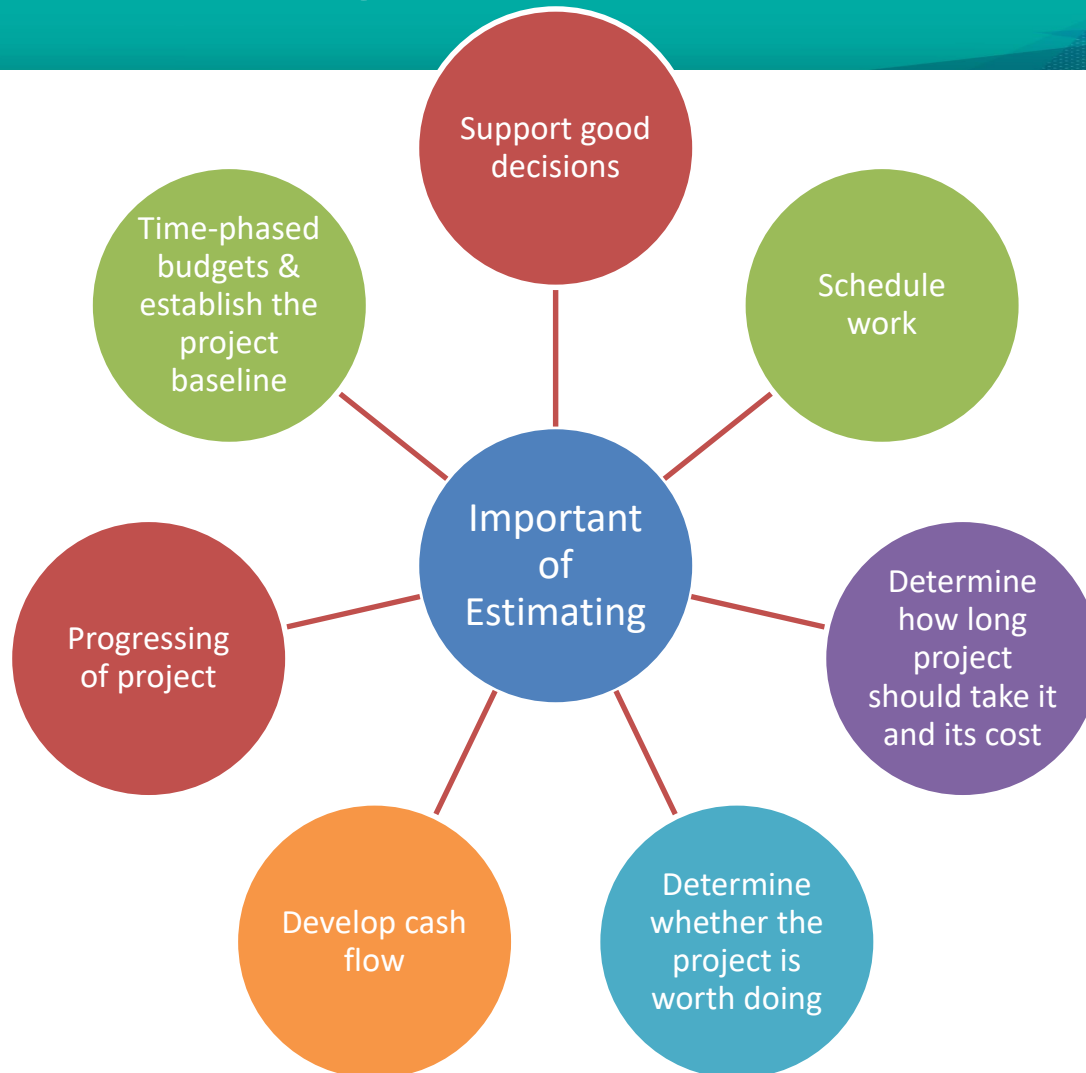
*all project stakeholders prefer accurate cost and time estimates, but they also understand the inherent uncertainty in all projects.*



*Inaccurate estimates lead to false expectations and customer dissatisfaction.*

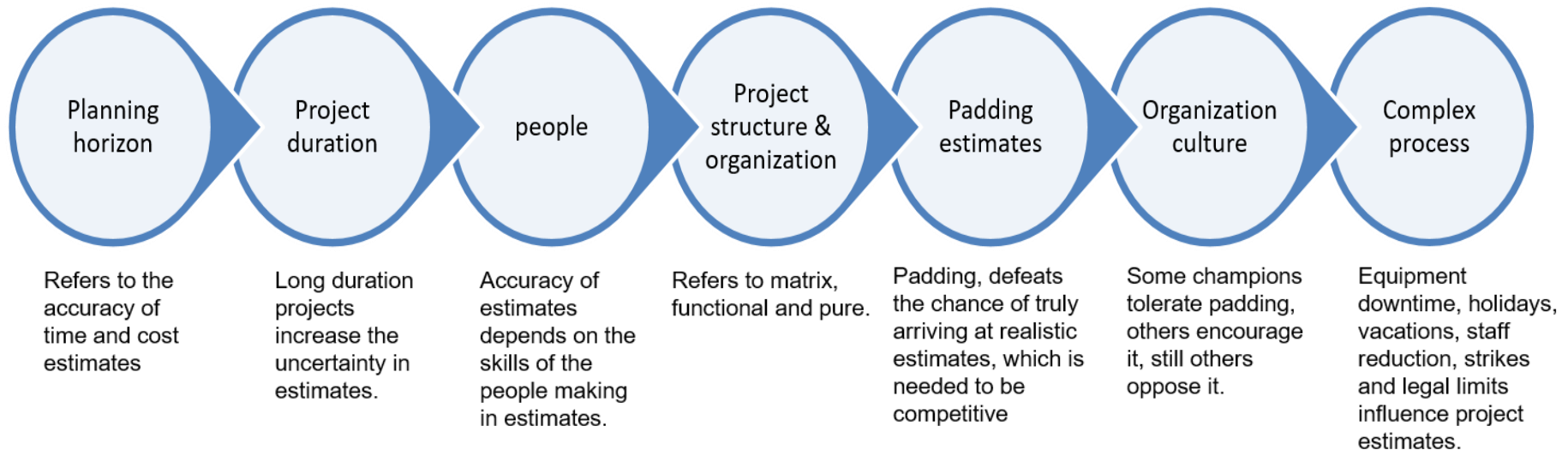


# Why Estimating Time & Cost are Important?



# Factors Influencing the Quality of Estimates

Past experience is a good starting point for developing time and cost estimates but these must be further refined for the current project. The following factors will have a strong influence on the accuracy of estimates:



# Estimating Guidelines for Times, Cost & Resources





# TECHNIQUES & TOOL FOR ESTIMATING



# Conditions for preferring Top-down or Bottom-Up Time & Cost Estimating

| Condition                 | Top-Down Estimates | Bottom-Up Estimates |
|---------------------------|--------------------|---------------------|
| Strategic decision making | X                  |                     |
| Cost and time important   |                    | X                   |
| High uncertainty          | X                  |                     |
| Internal, small project   | X                  |                     |
| Fixed-price contract      |                    | X                   |
| Customer wants details    |                    | X                   |
| Unstable scope            | X                  |                     |

Sources: Larson & Gray (2014). Project Management, Chapter 5, Mc-Graw Hill, Page 134



By: Larson & Gray (2014)

# Top Down Techniques for Estimating Overview

An estimating method that uses the actual costs of a previous, similar project as the basis for estimating cost totals of a current project

Enter broad overall resource, task, and project cost totals **based on past experiences and previous, similar projects.**

This method is often used when there is **limited information** about the project.



# Top Down Techniques for Estimating

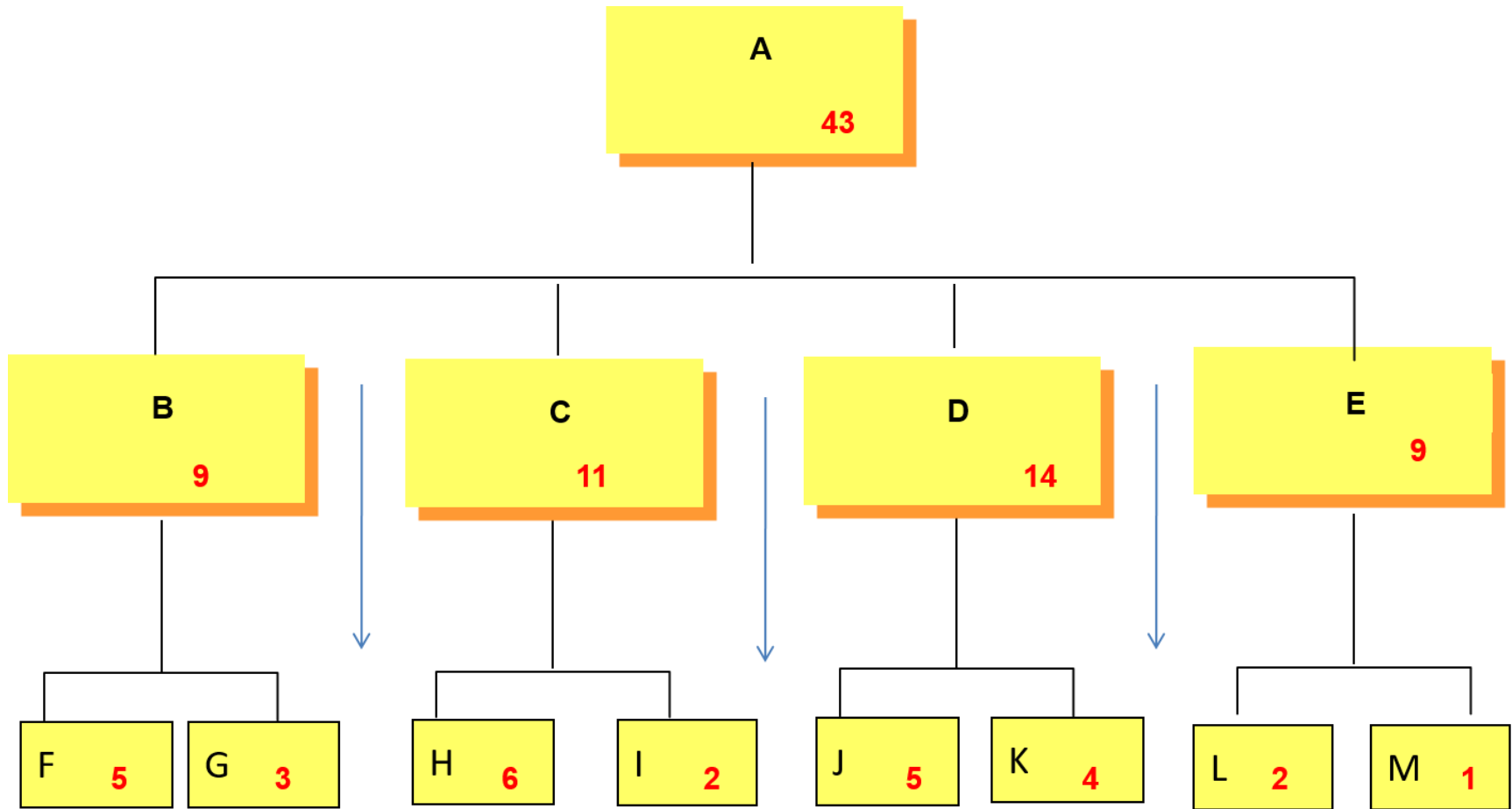
Previous  
history

Partial  
WBS

Expert  
Opinion



# Top Down Techniques for Estimating



# Bottom Up Techniques for Estimating

With a detailed WBS, a project manager can make a systematic and accurate estimate of the project's required resources, and the cost associated with it.

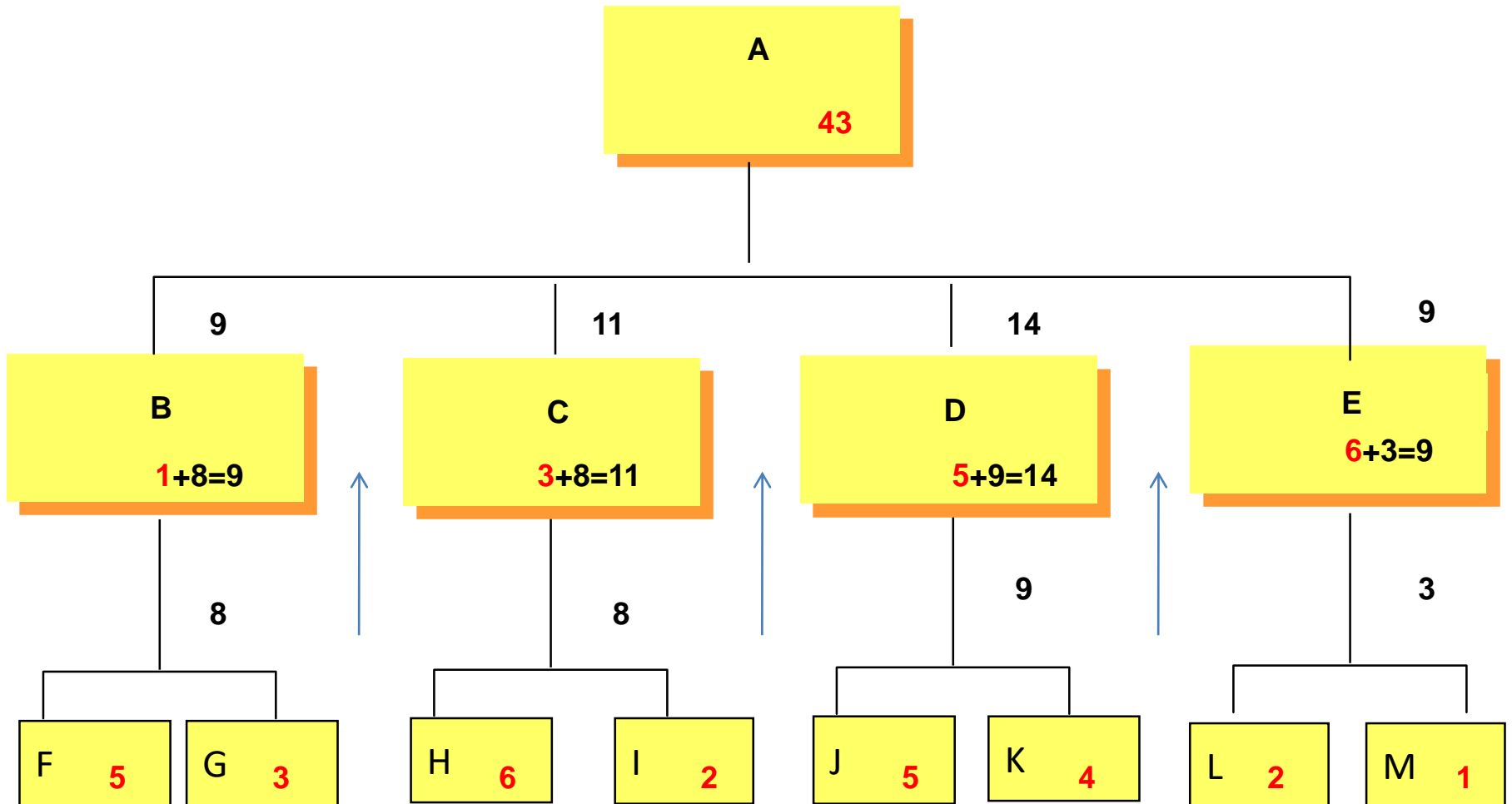
Provides the customer with an opportunity to compare the low-cost.

Steps will be done before final negotiation with either an internal or external customer

This bottom-up approach is, unfortunately, the **most time consuming**.



# Bottom Up Techniques for Estimating

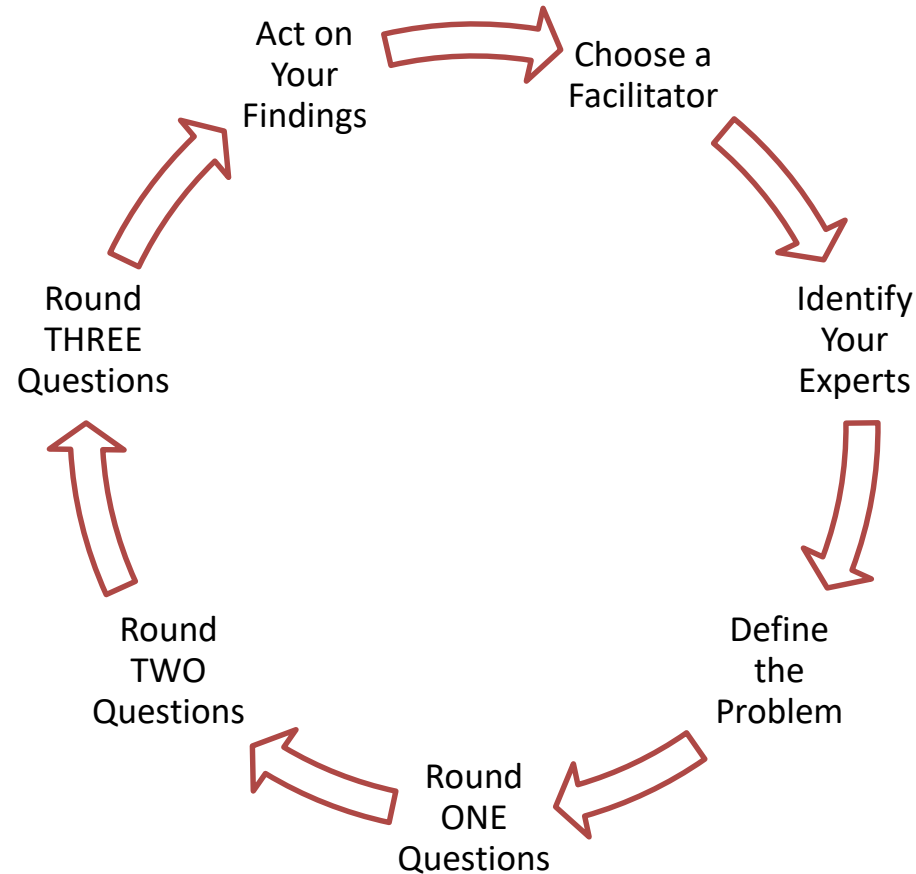


# Delphi Techniques for Estimating

The Delphi Technique is a method used to estimate the likelihood and outcome of future events. A group of experts exchange views, and each individually gives estimates and assumptions to a facilitator who reviews the data and issues a summary report.

as “a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem”.

# Basic Steps Delphi Techniques for Estimating





# Advantages & Disadvantages of Delphi Techniques

## ADVANTAGES

Delphi technique **saves corporations money** in travel expenses.

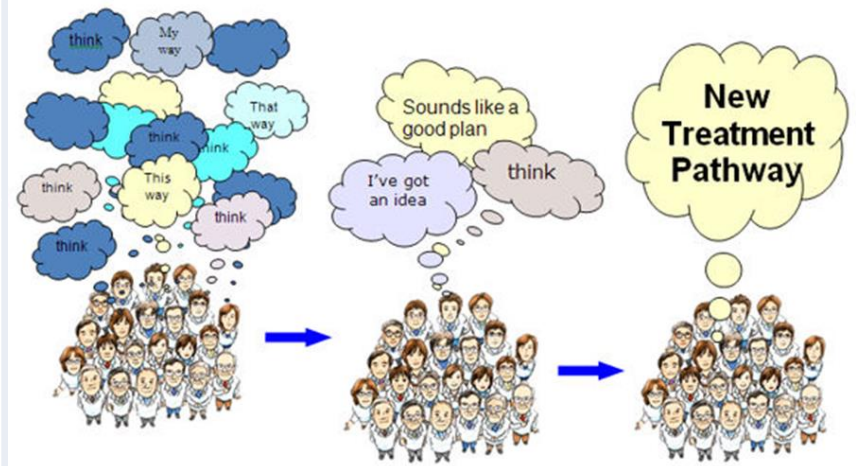
do not have to gather participants from several points of the globe in one place to resolve a problem or predict the future, yet they still can generate relevant ideas from the people best suited to offer their expertise.

beneficial to multinational corporations, whose executives and key personnel may be based in cities as far apart as Melbourne, New York, Tokyo, Buenos Aires, and London

## DISADVANTAGES

The Delphi technique is somewhat time consuming, which renders it ineffective when fast estimates are needed.

Time is not the essence, Delphi Technique provides a significant impact on estimating.



# Key Input Required for Accurate Estimate

## Activity List

- the work elements necessary to create the deliverables

## Constraints

- An identification of the project constraints is needed since they may influence the estimates.
- A deadline is an example of a constraint.

## Resource requirements

- Activity durations may change based on the number assigned to the activity

## Historical information

- Historical information is always an excellent source for information on activity duration estimates. Historical information can come from several sources

## Assumptions

- An identification of the assumptions is needed since work estimates may be influenced by the assumptions.

# Conclusion of The Chapter



- **Conclusion #1**
  - The quality of estimates is influenced by other factors such as people, technology and downtimes.
- **Conclusion #2**
  - Using top-down estimates is good for original and strategic decision making in situations where the costs associated with developing better estimates have little benefits.
- **Conclusion #3**
  - Bottom-up approach for estimating is preferred and more reliable because it assesses each work package.



# THANK YOU