Project Estimation

- Project estimation is the process of forecasting the time, cost, and resources needed to deliver a project.
- It typically happens during project initiation and/or planning and takes the project's scope, deadlines, and potential risks into account.
- Estimating is a critical part of project planning, involving a quantitative estimate of project costs, resources or duration.

Project Estimation Checklist

- Cost
- Time
- Scope
- Risk
- Resource
- Quality

Types of Project Estimation Technique

- Top Down Estimate
  - A top-down estimating technique assigns an overall time for the project and then breaks it down into discrete phases, work, and tasks.
  - A top-down approach allows to take that overall timeline and estimate how much time you can take for each activity within the project and still complete it on time.
  - It is developed based on Work Breakdown Structure.

Types of Project Estimation Technique

- Bottom up Estimate
  - Estimation is done by starting by estimating each individual task or aspect of the project.
  - Then it combine all those separate estimates to build up the overall project estimate.
  - Since each activity is being assessed individually.
  - This type of estimate tends to be more accurate than the top-down approach.

Types of Project Estimation Technique

- Analogous/Comparative Estimating
  - Comparative estimation uses past project data combined with a top-down approach to estimate project duration.
  - If the average completion time of similar projects was eight months, you'd assume the current one will take eight months.

Types of Project Estimation Technique

- Parametric Estimate
  - Parametric modeling also uses past project data, but it attempts to adjust the data to reflect each project's differences.
  - This technique takes the detail of past projects and pro-rates it to estimate the current project.
  - Parametric modeling could take the cost of all past construction projects divided by each projects into meaningful structure.

Types of Project Estimation Technique

- Three Point Estimating
  - Project manager can assign three: optimistic, pessimistic, and most likely time to completion project.
  - These three numbers are averaged to create your actual estimate.
  - The PERT method uses three-point estimating.
- Expert Judgments
  - This technique involves relying on the experience and gut feel of experts to estimate projects.

Project Estimation problems

- Poor requirements
  - It is impossible to provide an accurate estimate if the requirements provided are not detailed enough.
  - After all, estimating the unknown is extremely difficult.
  - Even a good estimation based on poorly defined requirements is worthless as it won't match what the customer has in mind.

Project Estimation problems

- Over Optimism
  - Basing estimates based on the best-case scenario will inevitably lead to budget deficits and delivery delays.
  - Unforeseen problems will almost certainly occur and the project team will not always work to 100% of capacity.
  - A project can also be held up by delays in customer approvals along the way, equipment failures or difficulties in sourcing materials.

Project Estimation problems

- Padding
  - Making predictions based on the best-case scenario is poor practice.
  - Giving a buffer time simply to prevent running over your estimate will not impress clients.
  - Consult experts who understand the scope of the task to ensure realistic predictions based on experience.

Project Estimation problems

- Failure to asses risk and uncertainty
  - Every project carries some uncertainties and risks.
  - When assessing risk in terms of your estimates, consider the individual threats to each project rather than using a standard approach.
  - This will increase the consistency of your estimations.

Project Estimation problems

- External Pressures
- Challenges improve you and your team but chasing unrealistic targets only leads to failure and reputational damage.
- When providing estimates you must communicate what you believe is reasonably achievable.

Tips for Project Estimation

- Get the Task Duration Right
- Task management is not micro management
- Estimate for your resources
- Break out Big Task
- Factor in tools

Wideband Delphi Technique

- **Delphi Method** is a structured communication technique, originally developed as a systematic, interactive forecasting method which relies on a panel of experts.
- The experts answer questionnaires in two or more rounds After each round, a facilitator provides an anonymous summary of the experts' forecasts from the previous round with the reasons for their judgments.
- Experts are then encouraged to revise their earlier answers in light of the replies of other members of the panel.

Wideband Delphi Technique

- In the 1970s, Barry Boehm and John A. Farquhar originated the Delphi Method.
- The term "wideband" is used because, compared to the Delphi Method, the Wideband Delphi technique involved greater interaction and more communication between the participants.
- Estimation team contains the project manager, moderator, experts, and representatives from the development team, constituting a 3-7 member team.
- Two meetings of Techniques are
  - Kickoff Meeting
  - Estimation Meeting

Wideband Delphi Technique-Steps

- Choose the estimation team and moderator.
- The moderator conducts the kickoff meeting, guides and monitors entire discussion, then forwards copies of this document for the next step.
- Each team member then individually generates a detailed WBS, estimates each task in the WBS, and documents the assumptions made.
- The moderator calls for the Estimation meeting. If any of the Estimation team members are not ready for resend, the moderator gives more time and resends the Meeting Invite.

Wideband Delphi Technique-Steps

- The entire Estimation team assembles for the estimation meeting.
  - At the beginning, the moderator collects the initial estimates from each of the team members.
  - He then plots a chart on the whiteboard. He plots each member's total project estimate as an X on the Round 1 line, without disclosing the corresponding names.
  - Each team member reads aloud the detailed task list that he/she made, identifying any assumptions made and raising any questions or issues.
  - The team then discusses any doubt/problem they have about the tasks they have arrived at, assumptions made, and estimation issues.

Wideband Delphi Technique-Steps

- The entire Estimation team assembles for the estimation meeting.
  - Each team member then revisits his/her task list and assumptions, and makes changes if necessary.
  - The moderator collects the changed estimates from all the team members and plots them on the Round 2 line.
  - The team then discusses the task modifications they have made and the assumptions.
  - Each team member then revisits his/her task list and assumptions, and makes changes if necessary.
  - The moderator collects the changed estimates from all the members again and plots them on the Round 3 line.

Wideband Delphi Technique-Steps

- The Project Manager then assembles the results from the Estimation meeting.
  - He compiles the individual task lists and the corresponding estimates into a single master task list.
  - He also combines the individual lists of assumptions.
  - He then reviews the final task list with the Estimation team.

Wideband Delphi Technique-Steps

- The entire Estimation team assembles for the estimation meeting.
  - Steps 5.7, 5.8, 5.9 are repeated till one of the following criteria is met :
    - Results are converged to an acceptably narrow range.
    - All team members are unwilling to change their latest estimates.
    - The allotted Estimation meeting time is over.

Advantages and Disadvantages

- Wideband Delphi Technique is a consensus-based estimation technique for estimating effort.
- Useful when estimating time to do a task.
- Participation of experienced people and they individually estimating would lead to reliable results.
- People who would do the work are making estimates thus making valid estimates.
- Anonymity maintained throughout makes it possible for everyone to express their results confidently.
- A very simple technique.

Project Estimation problems

- Poor requirements
  - It is impossible to provide an accurate estimate if the requirements provided are not detailed enough.
  - After all, estimating the unknown is extremely difficult.
  - Even a good estimation based on poorly defined requirements is worthless as it won't match what the customer has in mind.

Project Estimation problems

- Over Optimism
  - Basing estimates based on the best-case scenario will inevitably lead to budget deficits and delivery delays.
  - Unforeseen problems will almost certainly occur and the project team will not always work to 100% of capacity.
  - A project can also be held up by delays in customer approvals along the way, equipment failures or difficulties in sourcing materials.

Project Estimation problems

- Padding
  - Making predictions based on the best-case scenario is poor practice.
  - Giving a buffer time simply to prevent running over your estimate will not impress clients.
  - Consult experts who understand the scope of the task to ensure realistic predictions based on experience.

Project Estimation problems

- Failure to asses risk and uncertainty
  - Every project carries some uncertainties and risks.
  - When assessing risk in terms of your estimates, consider the individual threats to each project rather than using a standard approach.
  - This will increase the consistency of your estimations.

Project Estimation problems

- External Pressures
- Challenges improve you and your team but chasing unrealistic targets only leads to failure and reputational damage.
- When providing estimates you must communicate what you believe is reasonably achievable.