Wideband Delphi

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.

It is believed that during this process the range of answers will decrease and the group will converge towards the "correct" answer. Finally, the process is stopped after a predefined stop criterion (e.g. number of rounds, achievement of consensus, and stability of results) and the mean or median scores of the final rounds determine the results.

Delphi Method was developed in the 1950-1960s at the RAND Corporation.

Wideband Delphi Technique

In the 1970s, Barry Boehm and John A. Farquhar originated the Wideband Variant of 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.

In Wideband Delphi Technique, the estimation team comprise the project manager, moderator, experts, and representatives from the development team, constituting a 3-7 member team. There are two meetings –

- Kickoff Meeting
- Estimation Meeting

Wideband Delphi Technique – Steps

Step 1 – Choose the Estimation team and a moderator.

Step 2 – The moderator conducts the kickoff meeting, in which the team is presented with the problem specification and a high level task list, any assumptions or project constraints. The team discusses on the problem and estimation issues, if any. They also decide on the units of estimation. The moderator guides the entire discussion, monitors time and after the kickoff meeting, prepares a structured document containing problem specification, high level task list, assumptions, and the units of estimation that are decided. He then forwards copies of this document for the next step.

Step 3 – Each Estimation team member then individually generates a detailed WBS, estimates each task in the WBS, and documents the assumptions made.

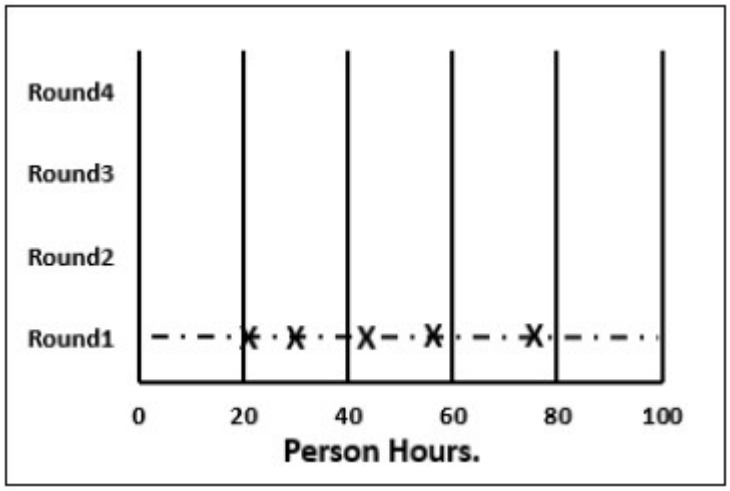
Wideband Delphi Estimation Sheet						
Project:	<Project Name>			**Estimation Units:**	Person Hours	
Estimation Team Member:	<Name>			**Date:**	<MM-DD-YY>	
Task	**Initial Estimate**	**Change 1**	**Change 2**	**Change 3**	**Change 4**	**Final**
Task1	n_1					
Task2	n_2					
Task3	n_3					
Task4	n_4					
Task5	n_5					
Task6	n_6					
Task7	n_7					
Task8	n_8					
Net Change						
Total	$\sum n_i$					

Step 4 – The moderator calls the Estimation team for the Estimation meeting. If any of the Estimation team members respond saying that the estimates are not ready, the moderator gives more time and resends the Meeting Invite.

Step 5 – The entire Estimation team assembles for the estimation meeting.

Step 5.1 – At the beginning of the Estimation meeting, the moderator collects the initial estimates from each of the team members.

Step 5.2 – 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. The Estimation team gets an idea of the range of estimates, which initially may be large.



Step 5.3 – Each team member reads aloud the detailed task list that he/she made, identifying any assumptions made and raising any questions or issues. The task estimates are not disclosed.

The individual detailed task lists contribute to a more complete task list when combined.

Step 5.4 – The team then discusses any doubt/problem they have about the tasks they have arrived at, assumptions made, and estimation issues.

Step 5.5 – Each team member then revisits his/her task list and assumptions, and makes changes if necessary. The task estimates also may require adjustments based on the discussion, which are noted as +N Hrs. for more effort and –N Hrs. for less effort.

The team members then combine the changes in the task estimates to arrive at the total project estimate.

Wideband Delphi Estimation Sheet						
Project: <Project Name>			**Estimation Units:**	Person Hours		
Estimation Team Member:	<Name>			**Date:**	<MM-DD-YY>	
Task	**Initial Estimate**	**Change 1**	**Change 2**	**Change 3**	**Change 4**	**Final**
Task1	n_1	-1				
Task2	n_2	-2				
Task3	n_3	-4				
Task4	n_4	5				
Task5	n_5	0				
Task6	n_6	0				
Task7	n_7	2				
Task8	n_8	-3				
Net Change		**-3**				
Total	$\sum n_i$	$\sum n_i$-3				

Step 5.6 – The moderator collects the changed estimates from all the team members and plots them on the Round 2 line.

In this round, the range will be narrower compared to the earlier one, as it is more consensus based.

Step 5.7 – The team then discusses the task modifications they have made and the assumptions.

Step 5.8 – Each team member then revisits his/her task list and assumptions, and makes changes if necessary. The task estimates may also require adjustments based on the discussion.

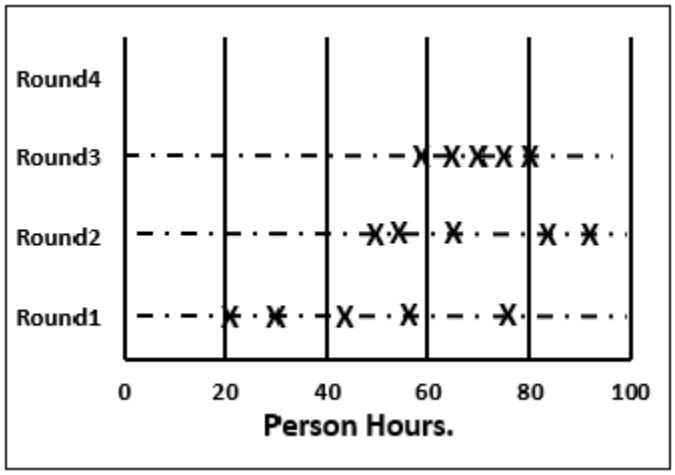
The team members then once again combine the changes in the task estimate to arrive at the total project estimate.

Step 5.9 – The moderator collects the changed estimates from all the members again and plots them on the Round 3 line.

Again, in this round, the range will be narrower compared to the earlier one.

Step 5.10 – 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.



Step 6 – The Project Manager then assembles the results from the Estimation meeting.

Step 6.1 – He compiles the individual task lists and the corresponding estimates into a single master task list.

Step 6.2 – He also combines the individual lists of assumptions.

Step 6.3 – He then reviews the final task list with the Estimation team.

Advantages and Disadvantages of Wideband Delphi Technique

Advantages

- 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.
- Assumptions are documented, discussed and agreed.

Disadvantages

- Management support is required.
- The estimation results may not be what the management wants to hear.