**TEAM ASSIGNMENT 13.**

1. **Introduction**.

* Document will provide information about how to estimate by using wideband Delphi method and parameter method.
* Document will provide information about how to schedule for Viking project, prepare resource, time and cost in step by step.

1. **How to schedule.**
2. Collect data (prepare to schedule).

Each member will collect data to estimate their own work. Data include process of a finished project, people join in project, size and duration of project, basic cost in same project (salary of programmer, designer .. and others). Average effort of each member in project and more.

People can collect data from previous project, from completed project or on internet.

People also collect data from current project, effort, time, current cost, budget …

People also collect data from the same projects in progress in others team.

1. Work breakdown structure (WBS).

WBS is a method help manager determine the tasks need to do in project. Use WBS will help team leader estimate resource for each task and for all tasks of project, estimate for project. Basically, it will be the target of estimation, people in team have to estimate from each unit (task) to high level stage. Estimate time, resource and cost for each task, each phase and all project.

How to implement WBS ?

First, we determine list basic phase of project (in Viking, they are plan, requirement, re-plan, design, implement, testing, deploy, close out and management).

Next, based on personal experience, we will divide each phase into different parts. (example, in phase plan, we divide it into three parts: define goals, estimate and schedule).

Next, based on above parts, we define what should we do to complete its and divide each part into tasks. Each task will be estimated and help team leader build schedule.

1. Estimate.

In team, we use two method to estimate, wideband Delphi and parameter method.

*How to use* *wideband Delphi and parameter method , we detail described in next sessions of document.*

Estimate is a hard stage.

Team leader has to know what is the input – output, resource, time, cost before project is began. Estimate stage is implemented in each phase at begin or after finish a milestone of project. Estimate will help team leader capture progress of project.

1. Schedule.

Team leader will use estimation result and WBS to schedule.

WBS provide tasks for schedule and estimation result will provide data. Team leader can assign resource and others information in schedule. After schedule, team leader should share and discuss with team member.

1. **Wideband Delphi method.**
2. Purpose.

Help project team estimate (risk, time, resource and budget) and define works base on Work Breakdown Structure.

1. Input and output.

*Input*: vision and scope document, or other documentation that defines the scope of the work product being estimated. In team assignment 13, input is Viking URD document, Work breakdown structure document.

*Output:*

1. Estimate for each task defined in WBS (present as detail schedule, include work, time, resource, cost and budget ).
2. Delphi form.
3. Wideband Delphi form.
4. Steps of estimate.

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| In theory | In team assignment 13 |
| **Choosing the team**. The project manager selects the estimation team and a moderator. The team should consist of three to seven project team members. The team should include representatives from every engineering group that will be involved in the development of the work product being estimated | First, we do not choose a team, together, we prepare for a meeting. Team leader will introduce what thing we need to do in project, step by step. Goals of project and basic process, “design – code – test” ..  A member will assigned to prepare for next meeting – kickoff meeting, who will draft a list of basic work (detail described in next step). |
| **Kickoff meeting**. The moderator prepares the team and leads a discussion to brainstorm assumptions, generate a WBS, and decide on the units of estimation | Before this meeting, a member will draft a list of basic work need to be completed in project. The moderator will leads a discussion to brainstorm assumptions, generate a WBS, and decide on the units of estimation, like in theory.  WBS will be built base on the project development stage, top-down, from basic to detail. Begin at requirement, design, code and test phase. Each phase will be discussed to identify how to complete this phase. Split work into several parts and so on until work can be easily estimated resources and effort. |
| **Individual preparation**. After the kickoff meeting, each team member individually generates the initial estimates for each task in the WBS, documenting any changes to the WBS and missing assumptions | Each member will complete his/her Delphi form with estimation for each task (in this case, task is basic unit should be estimated), time, cost, resource and assumption. They can use their own ways to estimate.  All member will send their Delphi form to team leader.  Delphi form have delta columns that members fill their estimate in. Delta 1 is the first individual estimation, delta 2 is second and delta 3 is third and so on.  After each phase of project or after finish estimation session step, team member should re-estimate and update by fill in delta columns. |
| **Estimation session**. The moderator leads the team through a series of iterative steps to gain consensus on the estimates. At the start of the iteration, the moderator charts the estimates on the whiteboard so the estimators can see the range of estimates. The team resolves issues and revises estimates without revealing specific numbers. The cycle repeats until either no estimator wants to change his or her estimate, the estimators agree that the range is acceptable, or two hours have elapsed. | Team leader will collect all member Delphi form and prepare for estimation meeting.  In meeting, team leader will ask each member why can and how do they estimate. Each team member must explain about the way to estimate, formula or something else.  Leader have responsibility to focus on members with estimation that have much time, source, budget… find out why they estimate that. If leader find out anything uncertainty, leader will refer the matter to discuss and after ask that member to re-estimate in meeting. |
| **Assembling tasks**. The project manager works with the team to collect the estimates from the team members at the end of the meeting and compiles the final task list, estimates, and assumptions. | End of estimation meeting, leader will collect all team members data and make a wideband Delphi report, estimate for project. |
| **Reviewing results**. The project manager reviews the final task list with the estimation team |  |
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1. **Parameter**.