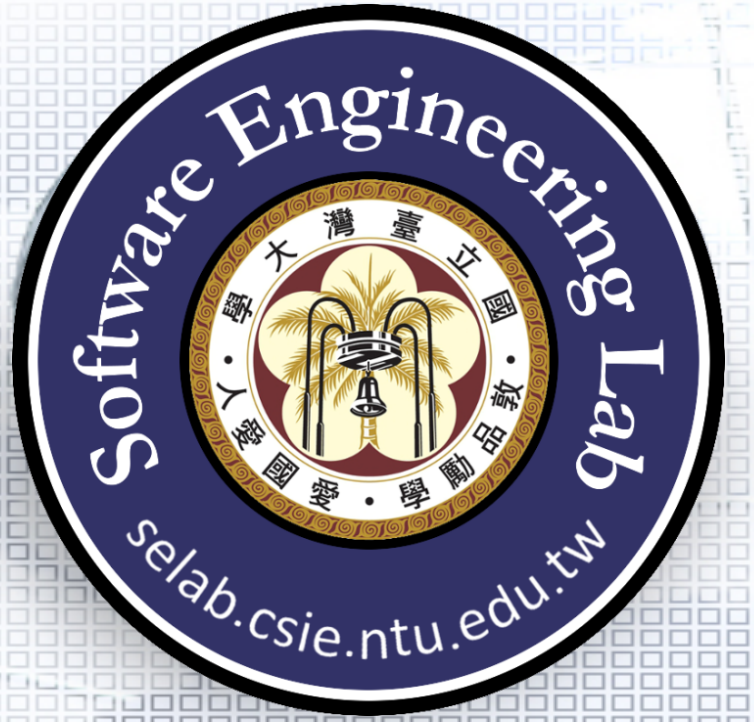


Software Project Management (WBS and Meeting Minutes)

Prof. Jonathan Lee (李允中)

CSIE Department
National Taiwan University

What is Project?

- Project – an endeavor undertaken to create a **unique** product or service
  - Has a definite beginning and end and interrelated activities
  - Cease when declared objectives have been attained
- Projects are unique – characteristics are **progressively elaborated**
- Scope of project should remain **constant**

What is Project Management?

- Project Management: the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder's needs and expectations from a **defined project** (a defined beginning and end, a defined scope and resources) – balancing the following:
  - **Scope, time, cost, and quality**
  - Requirements (needs) vs. unidentified requirements (expectations)

Work Breakdown Structure (WBS)

- Scope
  - Use WBS to establish a project's scope
- Estimation
  - Estimate required staff, budget, and time based on WBS
- Scheduling
  - Develop project schedule based on WBS
- Teamwork
  - Assign tasks to team members based on WBS
- Project Monitoring and Control
  - Monitor project progress based on WBS
  - Control action items generated from WBS

What is WBS?

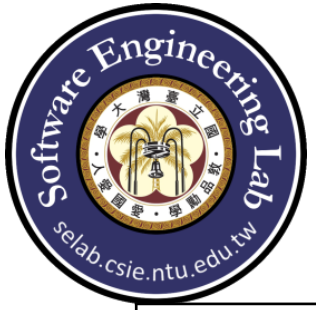
- Work Breakdown Structure (WBS) is a **deliverable-oriented** grouping of project assignments that organizes and defines the scope of the project
  - Each descending level represents further detail; smaller and more manageable pieces
  - Work products (deliverables) should also be explicitly described in the work package.
- WBS is a graphical picture of the **project hierarchy** with
- WBS was first introduced by DoD in 1957.

How to Divide the Work?

- Usually, first Level is commonly the same as the processes as the domain involved in the project, for example, software lifecycle in developing a software system.
- Each level of the WBS is a smaller segment of the level above
- Break down project into **tasks (lowest-level element)** that
  - Are realistically and confidently **estimable**
  - Can be **completed** under 80 person-hour rule of thumb, that is, 10 person-day (two weeks).
  - Have a meaningful conclusion and **deliverable.**
  - Work assignments, tasks, and action items usually refer to the same concept.

Work Package

- A task is described by a Work package, including
  - Task name
  - Description of work to be done
  - Preconditions for starting
    - Other Work packages that need to be completed before this task can be started
  - Duration
  - Required resources
  - Work product to be produced
  - Involved Risks
- Work package usually is the lowest level of WBS and corresponds to well defined work assignment for one worker for a week or two (80 person-hour).



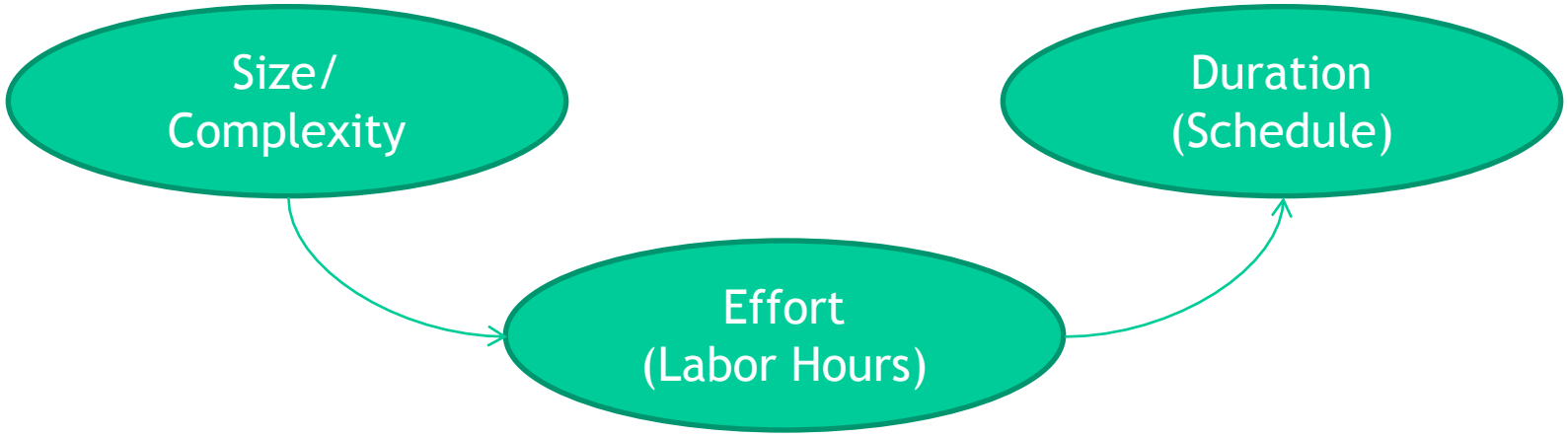
Work Package Example

WBS #:	2.1	Task:	Develop Project Plan
Est. Level of Effort:	20 hrs	Owner:	Project Manager
Resources Needed:	Subject Matter Experts	Work Products:	Project Plan
Description of Task:	Development of a detailed project plan that lists all key resources, tasks, milestones, dependencies, and durations.		
Input:	• Approved Project Charter		
Dependencies:	• Approval of Budget		
Risk:	• Changes to IT Apps plans and deliverables • IT Apps implementation releases, which conflict with implementation		

A WBS Example

Project Estimation

- Estimate **size** or complexity first
- Estimate required **effort** based on the size estimation
- Estimate required **duration** based on the effort estimation



Planning Poker

- WHO: participants in planning poker include all developers on a team.
- HOW:
  - For each task, task owners answer any questions that the estimators have.
  - Each estimator write down his/her estimate on a card.
  - When every estimator has made a decision, all cards are simultaneously turned and shown.
  - The high and low estimators explain their estimates.
  - If the estimates do not converge, repeat the process until they do.

WBS with Estimation

名稱	工時
Meeting Scheduler	993
Survey	60
專案規劃	30
發展WBS	10
發展專案計畫書	20
需求分析	338
需求擷取	25
訂定目標	20
定義角色	15
發展使用案例	166
發展Data Dictionary	21
發展系統架構	21
撰寫需求文件	70
M1：需求文件產出	
系統設計	257
系統實作	210
系統測試	95
M6：驗收測試	

Effort Estimation

WBS with Schedule

名稱	工時	期間	起始日期	結束日期
Meeting Scheduler	993	304	2011/10/18	2012/12/15
Survey	60	30	2011/10/18	2011/11/29
Goal-driven	25	5	2011/11/22	2011/11/29
Meeting Scheduler Spec.	20	4	2011/10/18	2011/10/22
現有Meeting Scheduler系統	15	5	2011/10/24	2011/10/29
專案規劃	30	285	2011/11/14	2012/12/15
發展WBS	10	12	2011/11/14	2011/11/30
發展專案計畫書	20	272	2011/12/1	2012/12/15
需求分析	338	42	2011/10/24	2011/12/21
需求擷取	25	5	2011/10/24	2011/10/29
訂定目標	20	4	2011/11/29	2011/12/3
定義角色	15	3	2011/10/24	2011/10/27
發展使用案例	166	28	2011/11/3	2011/12/13
發展Data Dictionary	21	21	2011/11/14	2011/12/13
發展系統架構	21	21	2011/11/14	2011/12/13
撰寫需求文件	70	14	2011/11/29	2011/12/17
M1：需求文件產出		1	2011/12/20	2011/12/21

Task Schedule

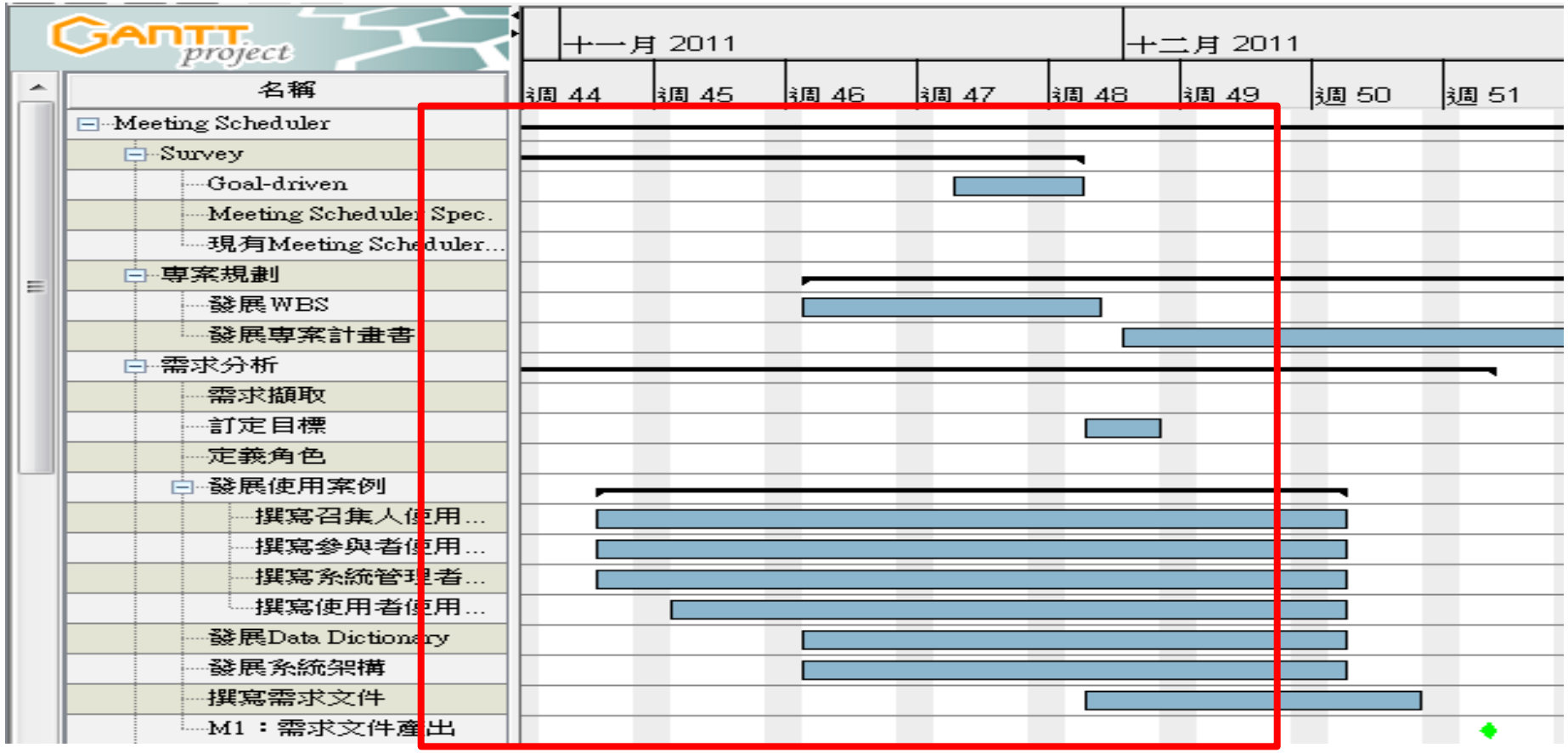
WBS with Assigned Responsibility

名稱	工時	期間	起始日期	結束日期	協調者
Meeting Scheduler	993	304	2011/10/18	2012/12/15	吳彥諄
Survey	60	30	2011/10/18	2011/11/29	吳彥諄
Goal-driven	25	5	2011/11/22	2011/11/29	吳彥諄
Meeting Scheduler Spec.	20	4	2011/10/18	2011/10/22	吳彥諄
現有Meeting Scheduler...	15	5	2011/10/24	2011/10/29	鄭聖翰, 洪東昇
專案規劃	30	285	2011/11/14	2012/12/15	陳石佳
發展WBS	10	12	2011/11/14	2011/11/30	陳石佳
發展專案計畫書	20	272	2011/12/1	2012/12/15	陳石佳
需求分析	338	42	2011/10/24	2011/12/21	吳彥諄
需求擷取	25	5	2011/10/24	2011/10/29	吳彥諄
訂定目標	20	4	2011/11/29	2011/12/3	吳彥諄
定義角色	15	3	2011/10/24	2011/10/27	吳彥諄
發展使用案例	166	28	2011/11/3	2011/12/13	吳彥諄
撰寫召集人使用...	56	28	2011/11/3	2011/12/13	吳彥諄, 丘偉廷
撰寫參與者使用...	56	28	2011/11/3	2011/12/13	鄭聖翰, 洪東昇
撰寫系統管理者...	28	28	2011/11/3	2011/12/13	陳石佳
撰寫使用者使用...	26	26	2011/11/7	2011/12/13	丘偉廷
發展Data Dictionary	21	21	2011/11/14	2011/12/13	鄭聖翰
發展系統架構	21	21	2011/11/14	2011/12/13	吳彥諄
撰寫需求文件	70	14	2011/11/29	2011/12/17	吳彥諄
M1 ：需求文件產出		1	2011/12/20	2011/12/21	

Responsibility

Gantt Chart

- Gantt Charts is used to visualize task dependency, schedule and responsibility.



Project Monitoring and Control

- The project manager should monitor actual performance and progress of the project against the project plan (WBS is the core)
  - Progress review
  - Milestone review

Progress Review

- Periodically review the project's progress, performance, and issues.
  - Regularly communicate status on assigned activities and work products to relevant stakeholders.
  - Review the results of collecting and analyzing measures for controlling the project.
  - Identify and document significant issues and deviations from the plan.
  - Document change requests.
  - **Track action items to closure.**

Milestone Review

- Review the accomplishments and results of the project at selected project milestones.
  - Conduct reviews at meaningful points in the project's schedule, such as the completion of selected stages, with relevant stakeholders.
  - Review the commitments, plan, status, and risks of the project.
- Milestones can be event based or calendar based.
  - If the duration between two event-based milestones is too long, calendar-based milestones can be inserted to enhance the effect of project monitoring.

Meeting Minutes

- Meeting Location
- Meeting Start Time and End Time
- Attendance
- Agenda: Including **Issues** and risks
- Action Items
- Decisions Made
- Next Meeting

Issue

- Issues are major questions to be resolved
- Examples of issues to be gathered include the following:
  - Issues discovered when performing technical reviews, verification, and validation
  - Significant deviations in project planning parameters from estimates in the project plan
  - Commitments (either internal or external) that have not been satisfied
  - Significant changes in risk status
- Can be managed by Issue Tracking System
  - BugZilla, Trac, Mantis, etc.

Action Item

- Action Item: a task assigned to a person to be done by a certain time
  - What?, Who?, When?
  - Heuristics for Duration: be done within one week or two weeks
  - Generated from WBS or raised in the progress review meeting
  - Including corrective actions to address issues
- Action items should be tracked by the project manager

Action Item Tracking

Action Item 後續處理項目

編號	處理動作	負責人員	處理期限	狀態	備註
1	Meeting Scheduler Spec. Survey	吳彥諄	2011/10/22	**Closed 10/22**	
2	現有 Meeting Scheduler 系統 Survey	鄭聖翰, 陳石佳	2011/10/29	**Closed 10/29**	
3	發展 WBS	洪東昇	2011/11/30	**Closed 11/30**	
4	發展專案計畫書	洪東昇	2011/12/15	**Closed 12/15**	
5	寄出公司參訪感謝函及簡報	陳石佳	2011/12/29	**ongoing**	
6	企業參訪投影片製作	全體人員	2011/12/26	**Closed 12/26**	
7	編寫追蹤矩陣	鄭聖翰	2011/12/19	**Closed 12/19**	預計於 12/19 晚上整合完畢並審查
8	Goal-Driven Use Case 召集人、使用者 撰寫	丘偉廷 吳彥諄	2011/12/12	**Closed 12/12**	

From WBS

Raised in Meeting