School of Computer Science and Engineering (CSE)

COMP9900 Information Technology Project
COMP3900 Computer Science Project
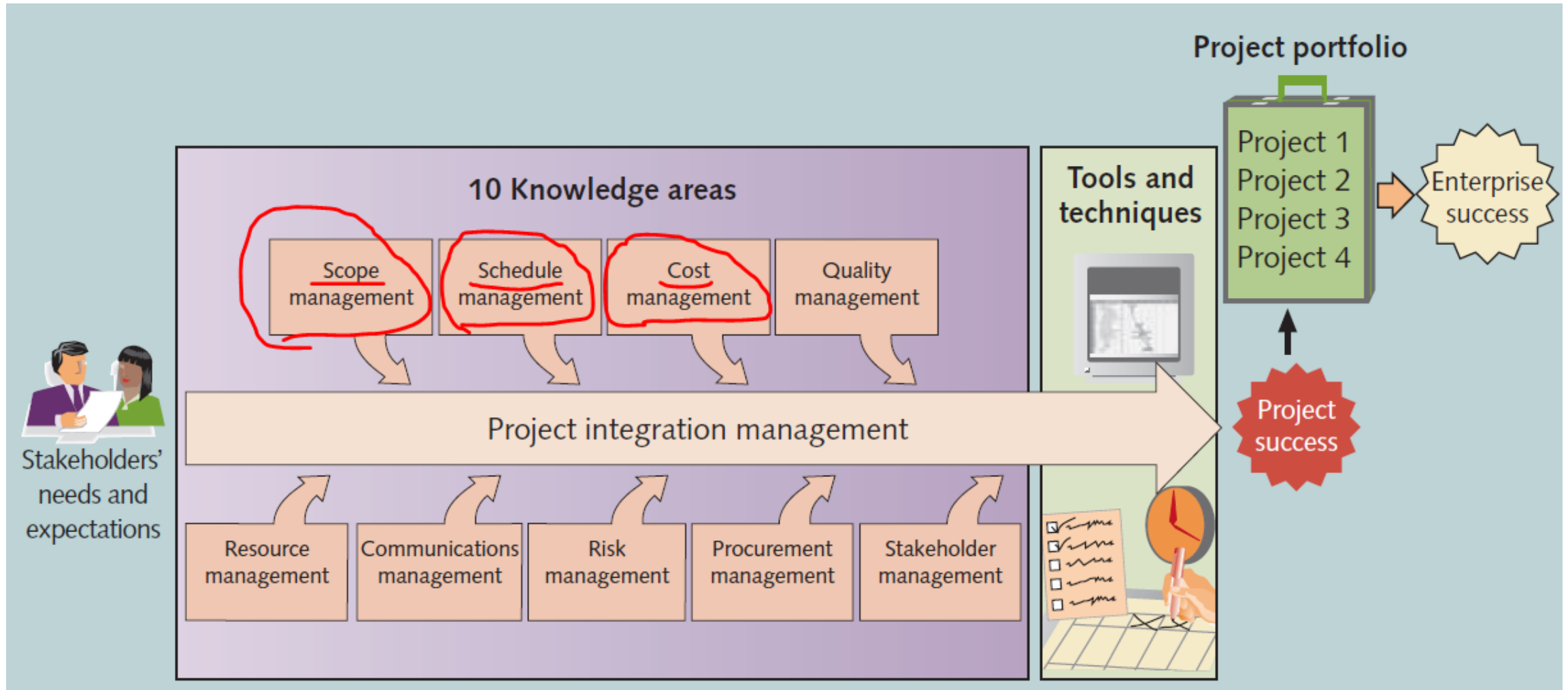
2023 Term 3

Week 7

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Outline

- Project Cost Management

- Progressive Demo B

- Retrospective B

- Week 7 Lab Tasks

- Q & A

Project Cost Management

Project Management Framework (Schwalbe, 2018)

Project
Management
Process Groups
(Schwalbe, 2018)

In Week 5 →

In Week 5 →

This week →

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Time Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations 6.6 Develop Schedule		6.7 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Perform Quality Assurance	8.3 Control Quality	
9. Project Human Resource Management		9.1 Plan Human Resource Management	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Control Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Control Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	12.4 Close Procurements
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

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Project Cost Management

- Project cost management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget (PMI, 2018)

- Processes include **plan cost management**, **estimate costs**, **determine budget**, and **control costs**

- Cost overruns are the extra dollar amount by which actual costs surpass estimates (Schwalbe, 2018)

Project Cost Management

Cost **overruns** are caused by:

- original cost estimates being too low
- original cost estimates based on unclear project requirements
- many project managers think preparing cost estimates is a job for accountants
- untested technology
- untested business processes
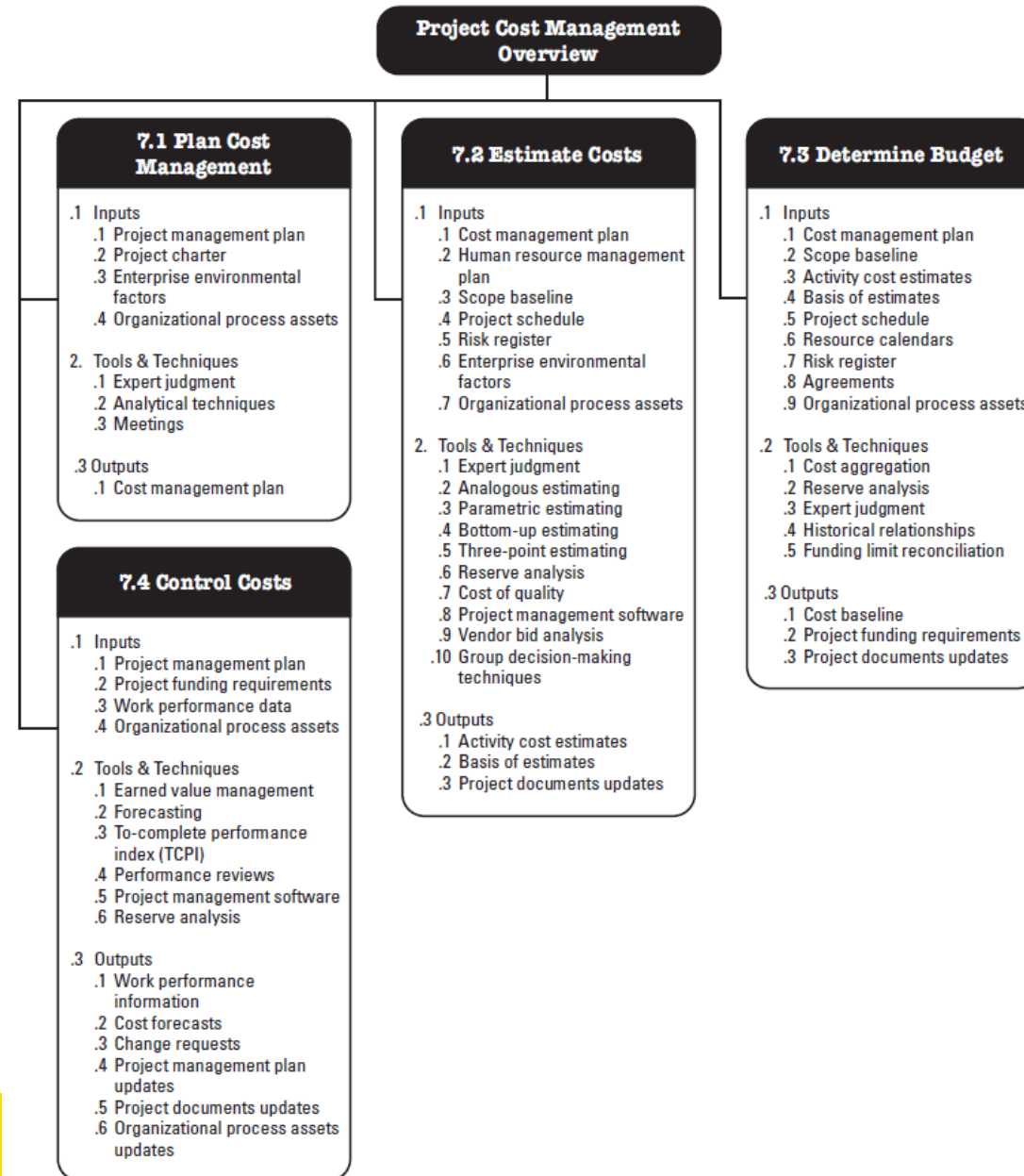
Figure 7-1. Project Cost Management Overview

(PMI, 2018)

Plan Cost Management

- Plan cost management is the process that establishes the policies, procedures, and documentation for planning, managing, expending, and controlling project costs

- Key benefit is that it provides guidance and direction on how the project schedule will be managed throughout the project (PMI, 2018)

- The main output is:
  - **cost management plan**

Cost Estimate

- Estimate costs is the process of developing an approximation of the **monetary** resources needed to complete project activities

- Key benefit of this process is that it determines that amount of cost required to complete project work (PMI, 2018)

- The main outputs are:
  - **activity cost estimates**
  - **basis of estimates**

Cost Estimation Tools and Techniques

- expert judgment
- analogous estimating
- parametric modelling
- bottom-up estimates
- three-point estimates
- reserve analysis (PMI, 2018)

Match the cost estimation techniques and definitions.

Expert judgement

Analogous estimating

Parametric modelling

Bottom-up estimates

Three-point estimates

Reserve analysis

A. Involves estimating individual work items or activities and summing them to get a project total

B. Uses values of parameters, from a previous, similar project

C. Guided by experience

D. Includes contingency to account for cost uncertainty

E. Uses most likely, optimistic and pessimistic values

F. Uses a statistical relationship between historical data and other variables

Example Cost Estimate

- Before creating an estimate, the project manager must know what it will be used for, and gather as much information about the project as possible, and clarify the ground rules and assumptions for the estimate

- Costs should be estimated by major WBS categories

- A cost model should be employed to make it easy to change and document the estimate (Schwalbe, 2018)

Example Cost Estimate (Schwalbe, 2018)

Surveyor Pro Project Cost Estimate Created October 5, 2006

	# Units/Hrs.	Cost/Unit/Hr.	Subtotals	WBS Level 1 Totals	% of Total
WBS Items					
1. Project Management				**$306,300**	**20%**
Project manager	960	$100	$96,000		
Project team members	1920	$75	$144,000		
Contractors (10% of software development and testing)			$66,300		
2. Hardware				**$76,000**	**5%**
2.1 Handheld devices	100	$600	$60,000		
2.2 Servers	4	$4,000	$16,000		
3. Software				**$614,000**	**40%**
3.1 Licensed software	100	$200	$20,000		
3.2 Software development*			$594,000		
4. Testing (10% of total hardware and software costs)			$69,000	**$69,000**	**5%**
5. Training and Support				**$202,400**	**13%**
Trainee cost	100	$500	$50,000		
Travel cost	12	$700	$8,400		
Project team members	1920	$75	$144,000		
6. Reserves (20% of total estimate)			$253,540	**$253,540**	**17%**
Total project cost estimate				**$1,521,240**	

* See software development estimate

Example Cost Estimate (Schwalbe, 2018)

Surveyor Pro Software Development Estimate Created October 5, 2006

1. Labor Estimate	# Units/Hrs.	Cost/Unit/Hr.	Subtotals	Calculations
Contractor labor estimate	3000	$150	$450,000	3000*150
Project team member estimate	1920	$75	$144,000	1920*75
Total labor estimate			**$594,000**	Sum above two values
2. Function point estimate**	Quantity	Conversion Factor	Function Points	**Calculations**
External inputs	10	4	40	10*4
External interface files	3	7	21	3*7
External outputs	4	5	20	4*5
External queries	6	4	24	6*4
Logical internal tables	7	10	70	7*10
Total function points			175	Sum above function point values
Java 2 languange equivalency value			46	Assumed value from reference
Source lines of code (SLOC) estimate			8,050	175*46
Productivity*KSLOC^Penalty (in months)			29.28	3.13*8.05^1.072 (see reference)
Total labor hours (160 hours/month)			4,684.65	29.28*160
Cost/labor hour ($120/hour)			$120	Assumed value from budget expert
Total function point estimate			**$562,158**	4684.65*120

**Approach based on paper by William Roetzheim, "Estimating Software Costs," Cost Xpert Group, Inc. (2003) using the COCOMO II default linear productivity factor (3.13) and penalty factor (1.072).

Determine Budget

- Determine budget is the process of aggregating the estimated costs of individual activities or work packages to establish an authorised cost baseline

- Work items are based on the WBS from the project. The main goal is to produce a cost baseline for measuring project performance and project funding requirements

- Key benefit is that it determines the cost baseline against which project performance can be monitored and controlled (PMI, 2018)

- The main outputs include:
  - **cost baseline**

Example Cost Baseline

- A cost baseline is a **time-phased budget** that project managers use to measure and monitor cost performance

- Estimating costs for each major project activity over time provides project managers and top management with a foundation for project cost control

- It is important for project managers to document assumptions made when developing the cost baseline

Example Cost Baseline (Schwalbe, 2018)

Surveyor Pro Project Cost Baseline Created October 10*

WBS Items	1	2	3	4	5	6	7	8	9	10	11	12	Totals
1. Project Management													
1.1 Project manager	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	96,000
1.2 Project team members	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	144,000
1.3 Contractors		6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	6,027	66,300
2. Hardware													
2.1 Handheld devices				30,000	30,000								60,000
2.2 Servers				8,000	8,000								16,000
3. Software													
3.1 Licensed software				10,000	10,000								20,000
3.2 Software development		60,000	60,000	80,000	127,000	127,000	90,000	50,000					594,000
4. Testing			6,000	8,000	12,000	15,000	15,000	13,000					69,000
5. Training and Support													
5.1 Trainee cost									50,000				50,000
5.2 Travel cost									8,400				8,400
5.3 Project team members							24,000	24,000	24,000	24,000	24,000	24,000	144,000
6. Reserves				10,000	10,000	30,000	30,000	60,000	40,000	40,000	30,000	3,540	253,540
Totals	20,000	86,027	92,027	172,027	223,027	198,027	185,027	173,027	148,427	90,027	80,027	53,567	1,521,240

Example: Software Evaluation Project

Your project is to evaluate the efficiency of an ERP system using a mixed approach of log file statistical analysis, and face-to-face interviews. Present your findings in a report and give a presentation

This is a 2-month (8 week) project. The budget for this project is $60,000, with a contingency reserve of approximately 10%

Your project management contract will be at a rate of $120 p/hr for 2 d/wk

The project team will be composed of 2 members (statistical analyst and data analyst) paid at a rate of $65 p/hr. They will spend the equivalent of half a day a week on project management related activities (e.g. completing status reports and attending meetings etc.) and the remaining 4.5 days on preparation and analysis

All normal Australian employment conditions apply

All executing activities have a finish to start relationship. It is expected gathering and analysing log files will take 2 weeks, preparing interview questions 1 week, conducting interviews and preparing the report 2 weeks, and prepare and conduct the final presentation 1 week

Use the cost model and assumptions provided to create a cost baseline

Example: Software Evaluation Project (cont'd)

Assumptions:

a) assume project management costs are evenly expensed across the duration (8 weeks) of the project

b) assume all work a 38 hour week @ 7.6 h/day (pro-rata)

c) assume project manager works on project management tasks only for 2 days p/wk @ $120.00 p/hr

d) assume project development team is composed of 2 members (statistical analyst and data analyst) @ $65 p/hr, available:

   0.5 day p/wk on project management tasks

   4.5 days p/wk on executing activities

e) assume all executing activities have F-S relationships

f) assume gather and analyse log files will take two weeks to complete (commencing in week 1)

g) assume prepare interview questions will take one week to complete

h) assume conduct interviews will take two weeks to complete

i) assume prepare final report will take two weeks to complete

j) assume prepare and conduct presentation will take one week to complete

Example: Software Evaluation Project (cont'd)

	A	B	C	D	E
1	**Revision 7.1 – Cost Model**				
2	**Software Evaluation Project**				
3					
4	**Project Expenses**	**#Units/Hours**	**Cost/Unit/Hr**	**Subtotals**	**Total**
5	1.0 Project management				
6	1.1. Project manager	121.60	$ 120.00	$ 14,592.00	
7	1.2. Team members	60.80	$ 65.00	$ 3,952.00	**$ 18,544.00**
8					
9	2.0 Executing				
10	2.1. Gather and analyse log files	136.80	$ 65.00	$ 8,892.00	
11	2.2. Prepare interview questions	68.40	$ 65.00	$ 4,446.00	
12	2.3 Conduct interviews	136.80	$ 65.00	$ 8,892.00	
13	2.4 Prepare final report	136.80	$ 65.00	$ 8,892.00	
14	2.5 Prepare and conduct presentation	68.40	$ 65.00	$ 4,446.00	**$ 35,568.00**
15	**Total Project Expenses**				**$ 54,112.00**
16	**Contingency Reserve**				**$ 5,888.00**
17	**Budget Total**				**$ 60,000.00**
18					
19	**Contingency Reserve %**				10%
20					

Example: Software Evaluation Project (cont'd)

	A	B	C	D
1	**Revision 7.1 – Cost Baseline**			
2	**Software Evaluation Project**			
3				
4	**Project Expenses**	**Month 1**	**Month 2**	**Total**
5	1.0 Project management			$
6	1.1. Project manager			$
7	1.2. Team members			$
8	2.0 Executing			$
9	2.1. Gather and analyse log files			$
10	2.2. Prepare interview questions			$
11	2.3 Conduct interviews			$
12	2.4 Prepare final report			$
13	2.5 Prepare and conduct presentation			$
14		$	$	$
15	**Contingency reserve**			
16	**Total**			**$ 60,000.00**
17				

Progressive Demo B

- The **Progressive Demo B** and **Retrospective B** related to the **second sprint** (or **2nd and 3rd sprints** for those who chose to have **five** sprints in total) are due resp. during your **Week 8 lab time** and **Saturday 4 November 2023 @ 9pm** (**Week 8**)

- They are worth **5%** of the total marks for the course:

  - Progressive Demo B − **2.5%**

  - Retrospective B − **2.5%**

- **Progressive Demo B** provide an opportunity to showcase user stories completed during **Sprint 2** (or **Sprints 2 and 3** for those who chose to have **five** sprints in total) and how well your team has developed functionality to support these

- The **demonstrated user stories** are shown in Jira and described, with these user stories having the correct status "**Done**" (or "**In Progress**" if acceptance criteria not yet satisfied or not yet completed) in Jira

- Your team should **demonstrate** the **functionality** used to support each **completed user story**

One way to conduct the demo is described below:

- Use **Jira** and your **developed software** so far to do the demo

- For each story:
  - **show**, **read**, and **describe** the completed user story from **Jira**, also showing its **ideally 'Done'** status in Jira
  - walk-through and demonstrate the completed functionality described in the user story in your **developed software**

- The progressive demonstration should not go beyond **12 minutes** and no less than **10 minutes**

- Team members **absent** for a progressive demo will receive **zero (0) mark out of 2.5** for that demo

- Not **necessarily** all team members **speak** during the progressive demo

- However, all team members should be involved in **preparing** it and being **present**

Marking Rubric

Category	Team Mark	Max Mark
Completed user stories to be demonstrated are shown in Jira and described, with these stories having the correct status in Jira (i.e., Done)		/1
Demonstrates the functionality used to support each completed story		/1
Keep the Demo between 10 and 12 minutes		/0.5
Progressive Demo B Mark	0	/2.5
General Comments		

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Retrospective B

- Retrospective B is a **reflective** activity where team members meet to think about their **teamwork process** over **Sprint 2** (or **Sprints 2 and 3** for those who chose to have **five** sprints in total)

- The team will discuss:

  - How **effective 'things to try'** from **Retrospective A** were at improving the teamwork process

  - What **went well**

  - What **did not go so well**

  - What the team members should **try over the next sprint** to **improve** their **teamwork process**

- This meeting should follow **soon after the Sprint 2 demo** (usually in the **same day**)

- **At least one team member** should be **assigned** responsibility for attempting to **enforce** or **follow up** on each **action** on the '**to try**' list

- Team members **absent** for the **retrospective meeting**, as per the brief document's members present/absent list, will **receive zero (0) mark out of 2.5** for Retrospective B

- A brief retrospective report must be submitted
- The retrospective report includes:
  - A **title page**
  - A section giving **meeting details** (date, time, and members present/absent)
  - A section **outlining how effective 'things to try' from Retrospective** A were at **improving the teamwork process**
  - A section describing **what went well**
  - A section describing **what did not go well**
  - A section describing **actions 'to try' next sprint**
    - Actions must be **concrete** and **measurable**
    - Each action in the 'to try' list is **assigned at least one team member** who is responsible for attempting to enforce it or follow it up

Marking Rubric

Category	Team Mark	Max Mark
Includes column or section describing what went well (empty section/column must have an explanation)		**/0.5**
Includes column or section describing what didn't go so well (empty section/column must have an explanation)		**/0.5**
Includes column or section describing items 'to try' next sprint (empty section/column must have an explanation)		**/0.5**
Includes outline of how effective 'things to try' from the previous retrospective (Retrospective A) were at improving the team work process (if this outline is empty, there should be an explanation for why it is empty)		**/0.25**
A team member assigned responsibility for attempting to enforce or follow up on each item on the 'to try' list (If an item in the to-try list is not assigned a member this must have an explanation)		**/0.5**
Title page, date, time, and team members present or absent at the Retrospective B meeting		**/0.25**
Retrospective B Mark	0	**/2.5**

New

Week 7 Lab Tasks

Week 7 Lab Tasks

- **Progressive Demo A** and **Retrospective A** marks and feedback are released in Moodle

- A reminder that **teams** have their **Progressive Demo B** next week during **Week 8** lab

- In their **Retrospective B Report**, teams should also reflect on, and provide an outline of **how effective "to-try" items** from **Retrospective A** were at improving the teamwork processes

Week 7 Lab Tasks (cont'd)

- Start your team's **Retrospective B** meeting with the reflection of **past to-try items** before going through all the regular retrospective **went well / didn't go so well / to-try items**, to assess whether to continue with each of those past to-try items or look at trying something else instead

- A reminder that your final system needs to be **tested regularly** and **must run** in **the clients' environment** since the marking of your final project will be done in this environment

- PMI (2018). Guide to the Project Management Body of Knowledge. Project Management Institute.

- Schwalbe, K. (2018). Information technology project management (9th ed.). Cengage Learning.

  UNSW E-Book:
  https://ebookcentral.proquest.com/lib/unsw/reader.action?docID=5723273

Q & A