

MWM Problem Solving Competition

Project Management Scheduling

The case study simulates a project management scenario where the student takes on the role of project manager. The case information is not complete so where necessary students will have to make assumptions and/or seek clarification from their tutor/lecturer.

To assist students in their solution development the following information is provided:

- Product development case description
- Specific assessment questions that must be answered
- Information regarding the submission of the assessment
- Marking guide

Case Description - Live Wires Electric company

In a parallel universe, the Live Wires Electric Company is a wholly owned State Government Corporation.

Customers of the Live Wires Electric Company currently receive their electricity accounts bi-monthly based on actual meter readings. The Directors were looking to improve the cash flow of the organisation, reduce bad debts and also make the amount of each electricity account more manageable for customers. However, in doing this, they wanted to minimise any costs associated with the production of electricity accounts.

The Directors decided to test public opinion by conducting a market survey. The analysis of the survey carried out for the Live Wires Electric Company showed that customers would be happy with monthly accounts. The survey also found that customers preferred the same amount for the account each month with an adjustment each six months, if it was not possible to read meters each month.

The Information Technology Steering Committee approved that a new billing scheme based on an agreed assessed amount be introduced, with the adjustment at the end of each six month period. They also approved a new layout for accounts. However, they felt it was time to move away from continuous stationery to printing of accounts using laser printers. At the same time, it was felt that provision should be made for electricity accounts to be paid using BPAY.

William Battersby was appointed as project manager to implement the system. The Accounts Manager, Elizabeth Jenkins, rang William to congratulate him and to say she was pleased he was appointed. Elizabeth felt she could rely on William to get the project completed in five months. Elizabeth also mentioned that she would prepare a report to get Directors approval and Cabinet

approval. The Directors approval could take up to four weeks and Cabinet approval a further two weeks.

The Information Technology Manager (Martin Smith) indicated to William that substantial changes would be necessary to the Database to meet the new requirements. He also mentioned that as he no longer had any staff member with the technical expertise to change the structure of the Database he would arrange for quotations to be called. Further questioning by William showed that the following activities and events in this area were:

Database Changes	
Preparation of request for Quotations	3 weeks
Period Quotation Open	3 weeks
Acceptance of Quotation	2 week
Notice required by Contractor to commence	2 weeks
Carry out the database changes	2 weeks

Note that you can assume that the preparation of the request for quotations cannot be developed until the analysis and design (see below) have been completed.

William also recognised that since BPAY was to be introduced, some changes associated with the network would be necessary. He met with Rebecca – the Network Manager. Rebecca told William the following would be necessary:

Network Modification and Server Upgrade	
Design of network changes	1 week
Preparation of quotation	2 weeks
Period Quotation open	4 weeks
Acceptance of Quotation	2 weeks
Cabling	1 week
Upgrade of server hardware and network management software	1 week
Installation of server changes	1 weeks

You can assume that the design of the network changes can commence as soon as the project has cabinet approval.

William thought he was coming to grips with the project. However, Martin rang to say in the previous meetings he forgot to mention that the analysis of the changes, Data Dictionary updates and design would take two analysts/designers six weeks to complete. Two Analysts/Designers were available for those activities. The two analysts/designers would be available to commence work on the analysis and design as soon as the project has cabinet approval.

As a result of the analysis the following program changes were required to implement the new billing system:

Program	Coding	Testing of program
A	2 weeks	1 week
B	2 weeks	1 week
C	2 weeks	1 week
D	6 weeks	3 weeks
E	1 week	3 days
F	3 weeks	1 week
G	6 weeks	3 weeks
H	6 weeks	3 weeks

Note: time estimates are for 1 programmer/tester working on the task. Assume that, apart from tasks D and F, all the coding tasks can commence as soon as analysis and design is complete.

Elizabeth also asked William to remind Martin that programs D and F could not be tested until the new stationery arrived.

To introduce BPAY, changes to the following Receipt Programs would also be necessary:

Program	Coding	Program testing
R1	2 weeks	1 week
R2	2 weeks	1 week

Note: time estimates are for 1 programmer/tester working on the task

The opportunity exists for William to use up to four programmers. Each has sufficient skill to be able to amend any of the programs.

Martin suggested William talk to the Database Administrator (Miranda Barnaby) about the Database design. From William's conversation with Miranda, William found out that to change the Database a lot of disk space to carry out the process of changing the design of the Database is required. Miranda also mentioned that for the new system, disk space required afterwards would be double the current size. Since an investigation by the Computer Operators Officer showed that there was nowhere near that amount of disk space spare, Martin said it would be necessary to allow the following:

Disk Storage Upgrade	
Proposal from Computer Vendor	3 weeks
Purchase Approval	3 weeks
Lead time for delivery	4 weeks
Installation matters (electrical wiring relocation of disk drives, upgrade operating system, install new drive, DBMS changes)	1 week

Assume that Miranda will ask for the proposal from the preferred computer vendor as soon as the project is approved by cabinet.

Note that this disk storage upgrade will also need to be completed before the contractor can begin on the database changes.

At a further meeting with Elizabeth and Martin to discuss the new stationery layout William found out the following activities and events associated with the purchase of the laser printers would also be required:

New Printers	
Proposal from Printer Vendors	3 weeks
Purchase Approval	3 weeks
Lead time for delivery	5 weeks
Installation matters (upgrade operating system, install new printers)	3 days

At the same time, the following were required for the new stationery:

New Stationary	
Design/Art work	1 week
Quotation Open	3 weeks
Purchase approval	1 week
Lead time for delivery	4 weeks

Assume that the design of the new stationery can commence as soon as the project is approved by cabinet.

The Marketing Manager (Mary Brown) was excited about the opportunities the new account type and layout would open up. She also thought the new payment options would become very popular. She proposed to have brochures printed, use an existing message to remind customers of the new account type and payment method available, establish a hot line, and use Radio and newspapers for further promotion. Mary supplied William with the following information about the marketing requirements:

Advertising	
Telecom hot line installation	4 weeks notice required to install this – need to give notice 4 weeks before “systems go”/”system ready” – for the purposed of the assignment, show the last point in time for notification as a milestone on the schedule
Brochures design/print	8 weeks to design, approve and print – to be completed two weeks before “system ready”
Newspaper art work	2 weeks to prepare. Advertising should start 2 weeks before “system ready”.
Radio advertisements	1 week to prepare. Advertising should start 2 weeks before “system ready”.

Mary explained that she would be able to allocate 1 marketing staff member to work on the brochures, another to work on the newspaper art work and another to develop the radio advertisements.

Milestones

In addition to the “telecom hotline milestone” described above, include the following two milestones:

1. System ready. When everything is ready (all tasks complete). Add this at the very end of your schedule.
2. Software complete. When all the software (A-H, R1, R2) has been developed and tested. Add this at the end of all the software coding and testing tasks.

Resources

Add the following resources to your schedule and assign them to the tasks in your schedule according to their responsibilities:

- Analysts/designers
- Programmers
- Directors
- Cabinet
- Computer vendor
- Network contractor
- Database contactor
- Printer vendor
- Art work supplier (stationery)
- William/PM
- Martin/IT manager
- Rebecca/Network Manager
- Marketing staff

Assumptions

1. Elizabeth’s report is to be sent to the Directors on 5/5/14. This is to be the start date of your project schedule. The first “actual task” on your schedule should be the task to get director’s approval”.
2. There are no public holidays between 5/5/14 and late December, but from 24th December until 2nd January 2015 all staff will be on leave.
3. Project staff will normally work five (5) days per week, eight (8) hours per day.

In addition, you are free to make any assumptions necessary to complete the assignment. Any assumption for either part A or part B must be justified and stated clearly on the first page of your Word document. Marks will be deducted for any unreasonable assumption or for stating an assumption and then ignoring it in your assignment.

Part A: Requirements and Questions

For part A of the assessment you must complete the following tasks and questions. Read all the questions before you commence. The schedule is to be developed in an appropriately named Microsoft Project 2010 file (see below) and the questions are to be answered in a Word document. As stated above, any assumptions must also be listed at the beginning of the Word document.

1. Based on the information in the case study description above, use Microsoft Project 2010 to produce a “Part A” project schedule. You should ensure that all the activities in the case description are included, sequenced correctly and have the correct resource and duration information. The schedule is to show all activities from 5/5/14 until the “system ready” milestone (when all tasks will have been completed).

You should organise your tasks into key work packages (summary tasks) with sub-tasks (and sub-summary tasks etc.).

Live Wires Billing System (the whole project)

Approval

Directors Approval

Cabinet Approval

:

Database Changes

:

etc.

At this point there may be resource over allocation issues. Do **not** attempt to resolve these before answering question 2.

Make sure that the critical path(s) are automatically highlighted on the Gantt chart view of your PartA1 schedule.

Save this version of the schedule in LiveWires-PartA1.mpp. You will be required to submit this file as part of your assignment submission.

2. List the tasks that are on the critical path(s). Make sure that the critical path(s) are automatically highlighted on the Gantt chart view of your PartA1 schedule.
3. Create a copy of the LiveWires-PartA1.mpp schedule in a file called LiveWires-PartA2.mpp. If there was any resource over allocation, resolve this now in the new LiveWires-PartA2.mpp file. Note that you must resolve any resource over-allocation issues without the addition of extra resources. **Save** this modified version of the schedule in LiveWires-PartA2.mpp. This file must also be submitted as part of your assignment submission.
 - (a) In your Word document, list the tasks that are now displayed as “critical” on your schedule.
 - (b) What impact did the resource constraints have on your schedule?

4. Based on your schedule,
 - (a) When will all the software be complete (coding and testing)? Highlight this on your schedule using the manual highlight so that it is easy for the marker to check your work.
 - (b) When does notice have to be given for the Telecom hot line installation? Highlight this on your schedule using the manual highlight so that it is easy for the marker to check your work.
5. Assume that you are William. You are required to write a memo to Elizabeth Jenkins explaining whether or not you can meet Elizabeth's goal of five months. The memo should include the start date, expected completion and duration of the project (according to your schedule).
6. How should William ensure that the project is completed on time? Give a detailed answer describing procedures, processes and anything else that you believe is important both in general terms and specifically for this project.
7. Is there any way the time for the project can be shortened?
8. William is required to develop a risk plan for the project.
 - (a) What is involved in risk management during a project?
 - (b) Produce a partial risk assessment matrix that includes entries for 2 risks associated with this project.
9. Are there any activities and/or events that William Battersby may have overlooked (i.e. they have not been discussed in the case description)? These could relate to the project itself or to the management of the project.

Part B Changes

During the period the approval for the new system was being obtained from the Directors, Martin advised William that one of the Programmers has left the Company. Although Martin has obtained a replacement programmer, since he lacks the knowledge of the system, the replacement programmer will take twice as long as the other programmers.

Later in the project, the computer vendor also advised William that actual delivery for the Disk Drive (disk storage upgrade) would now be ten weeks.

The grapevine was also alive and well within the organisation. The engineers had heard that the main database was going to be substantially changed. For some time they had wanted to try and estimate the load on the various distribution transformers by simply adding the power consumed by the various customers connected to each transformer. Instead of having to install meters at any substation they wanted to estimate the load for the distribution transformer. This would save considerable money as many of the substations were in rural locations. So they approached Martin to work out the changes required to the system. They also engaged in lobbying directors.

Martin recognised that the engineers would want to maintain the details of the substations online and also perform the queries online. So he knew it would be necessary to develop a substation maintenance CRUD (Create, Read, Update and Delete) program to perform these functions. He informed William that the program would take four weeks to develop and another two weeks to test.

He also knew that another program to add the load from the various customers would be necessary to estimate the load on the substation. He felt it desirable to make this a parameter driven program so the engineers could request the totals for several substations at a time. He estimated that this program would take six weeks to develop and three weeks to test. Martin said that the analysts/designers would be able to carry out the analysis and design of the new software requirements after they completed the initial analysis and design task for the new billing system. This new analysis and design task would take the two analysts/designers 2 weeks. The development of the new software would be able to commence after completion of the analysis and design.

Fortunately for Martin, his experience had told him to always buy a bigger disk drive and server than was required. So he told William that apart from the new programs, no other changes would be necessary for the estimation of the substation loads.

Whereas the engineers had failed in their past efforts, on this occasion, they were able to persuade the directors on a cost / benefit basis that the software should be developed to allow their estimation requirements.

For the purposes of this assignment, assume that this new software must also be completed before the “system ready” milestone.

Part B Questions

1. Copy your “Part A2” schedule into a new Part B file and amend the schedule according to the **all** the new information given above. If the changes result in any resource over-allocation, you must resolve those issues without adding any additional resources.

Highlight the changes in your schedule to make it easy for the marker to check your work.

2. What is the new time for the project to complete (new duration and end date)?
3. Describe how the delay described in part B impacts upon the project.
4. Describe how the change in programmer resources impact on the project. In your answer you must also explain what changes you made to your .mpp file to replace one of the programmers with the new programmer who is less efficient.

5. What will be the effect on the costs of the project by each of the changes detailed in Part B?
(Describe the impact of each change separately.)

Submission of Assessment

The assignment is to be submitted as 4 separate files using the electronic assignment submission system that can be accessed from the link on the course website. The three files to be submitted are as follows:

1. The Word document with the assumptions and answers to the questions for Part A and Part B.
2. The three Microsoft project files created for Part A (LiveWires-PartA1.mpp, LiveWires-PartA2.mpp) and LiveWires-PartB.mpp. Please ensure that the names of these files clearly indicate their purpose, e.g. WaterMeters_Part_A.mpp and WaterMeters_Part_B.mpp

Marking Guide for Assessment item 2 – Individual Case Study

Assignment Question	Criteria	Marks available	Marks awarded
Part A			
Assumptions			
Q1	The adequacy of the project schedule. Includes: <ul style="list-style-type: none"> • Tasks + WBS + summary tasks • Durations/effort • Resources • Predecessor relationships • Holidays • Milestones 	7	
Q2	Critical path (highlighted and tasks listed)	1	
Q3	Resolution of resource issues, new critical tasks and impact	1	
Q4	2 dates highlighted and answered correctly	1	
Q5	Appropriateness of the Written Memo – includes all details required	3	
Q6	Ensuring completed on time	4	
Q7	Details on shortening the Project	2	
Q8	Discussion of risk management + risk assessment matrix.	3	
Q9	Missing activities	2	
Sub Total Part A		24	
Part B			
Q1	The adequacy of the amended schedule	5	
Q2	Time for the new project to complete	1	
Q3	Impact of delay	1	
Q4	Impact of programmer change.	1	
Q5	Impact of each of the changes on the cost.	3	
Sub Total Part B		11	
TOTAL		35	