Chapter 9: Nightingale Project
Case Study

Assignment:

Chapter 9 Case Study: Nightingale Project- Part A & Part B

Background:

Assigned to assist in producing a project plan to be first to market with Nightingale, a nickname given to a project for the development of handheld electronic medical reference guide, available for use by emergency medical technicians. The goal is to produce 30 working handheld units in time to meet the October 25th deadline in order to showcase the devices at the MedCON event. Rassy Brown, in charge of the Nightingale project has called a meeting with the project team to begin work on a schedule to include a description of all activities, duration, and cost of production and miscellaneous expenditures to support project deliverables. The following schedule addresses the following questions:

Part-A

1. Will the project as planned meet the October 25th deadline?
2. What activities lie on the critical path?
3. How sensitive is this network?
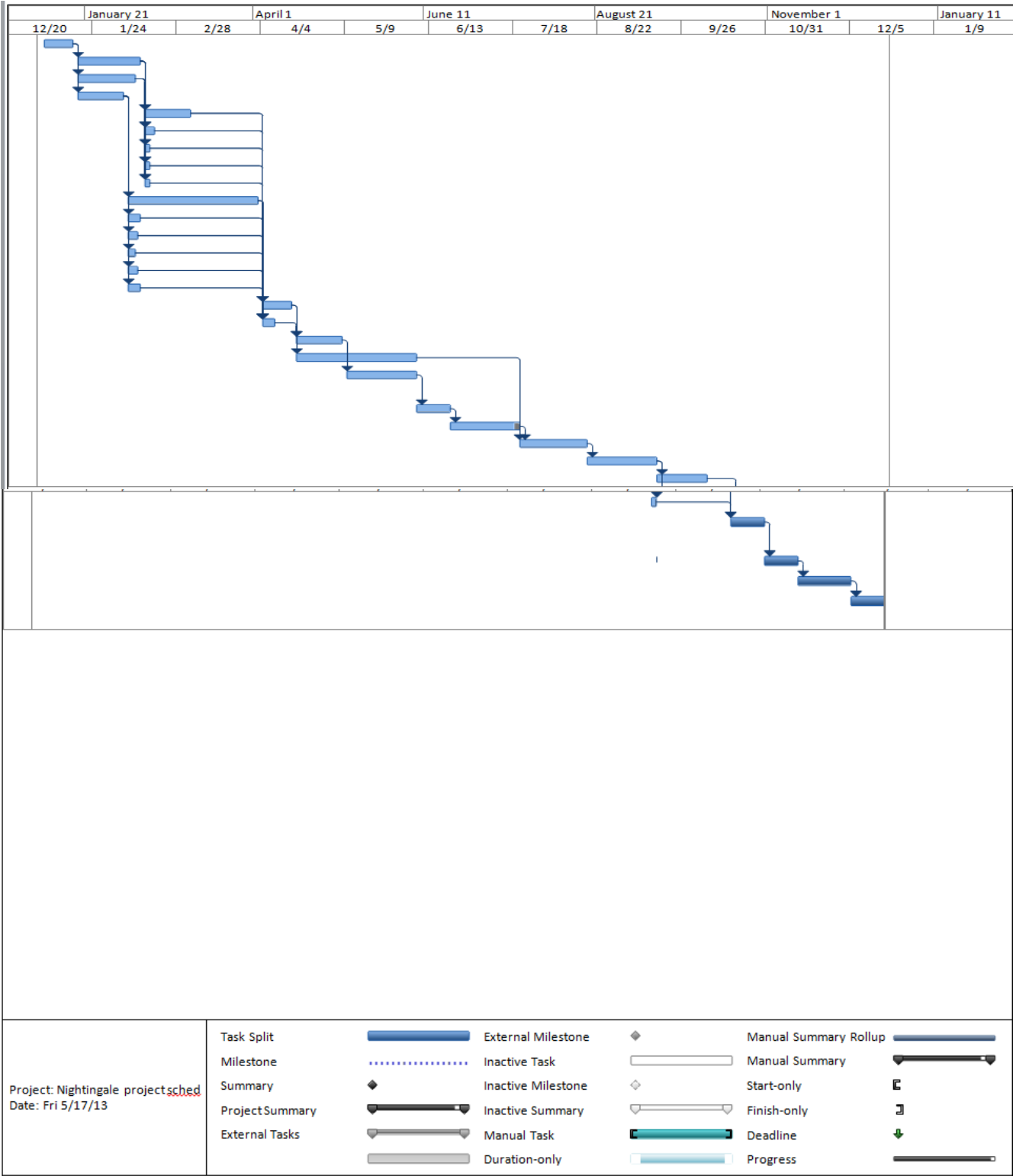
Part-B
1. Is it possible to meet the deadline?
2. If so, how would you recommend changing the original schedule (Part A) and why? Assess the relative impact of crashing activities versus introducing lags to shorten the project duration.
3. What would the new schedule look like?
4. What other factors should be considered before finalizing the schedule?

Schedule:

Schedule has been included to illustrate initial planning phase for Nightingale project. The project team will identify the critical path and network sensitivity to meet the project deadline date for the MedCON event.

ID	Task Mode	Task Name	Start	Finish	Late Start	Late Finish	Free Slack	Total Slack
1		Architectural decisions	Mon 1/4/10	Fri 1/15/10	Mon 1/4/10	Fri 1/15/10	0 days	0 days
2		Internal specifications	Mon 1/18/10	Fri 2/12/10	Mon 2/15/10	Fri 3/12/10	0 days	20 days
3		External specifications	Mon 1/18/10	Wed 2/10/10	Wed 2/17/10	Fri 3/12/10	2 days	22 days
4		Feature specifications	Mon 1/18/10	Fri 2/5/10	Mon 1/18/10	Fri 2/5/10	0 days	0 days
5		Voice recognition	Mon 2/15/10	Fri 3/5/10	Mon 3/15/10	Fri 4/2/10	20 days	20 days
6		Case	Mon 2/15/10	Thu 2/18/10	Tue 3/30/10	Fri 4/2/10	31 days	31 days
7		Screen	Mon 2/15/10	Tue 2/16/10	Thu 4/1/10	Fri 4/2/10	33 days	33 days
8		Speaker output jacks	Mon 2/15/10	Tue 2/16/10	Thu 4/1/10	Fri 4/2/10	33 days	33 days
9		Tape mechanism	Mon 2/15/10	Tue 2/16/10	Thu 4/1/10	Fri 4/2/10	33 days	33 days
10		Database	Mon 2/8/10	Fri 4/2/10	Mon 2/8/10	Fri 4/2/10	0 days	0 days
11		Microphone/soundcard	Mon 2/8/10	Fri 2/12/10	Mon 3/29/10	Fri 4/2/10	35 days	35 days
12		Pager	Mon 2/8/10	Thu 2/11/10	Tue 3/30/10	Fri 4/2/10	36 days	36 days
13		Barcode reader	Mon 2/8/10	Wed 2/10/10	Wed 3/31/10	Fri 4/2/10	37 days	37 days
14		Alarm clock	Mon 2/8/10	Thu 2/11/10	Tue 3/30/10	Fri 4/2/10	36 days	36 days
15		Computer I/O	Mon 2/8/10	Fri 2/12/10	Mon 3/29/10	Fri 4/2/10	35 days	35 days
16		Review design	Mon 4/5/10	Fri 4/16/10	Mon 4/5/10	Fri 4/16/10	0 days	0 days
17		Price components	Mon 4/5/10	Fri 4/9/10	Mon 4/12/10	Fri 4/16/10	5 days	5 days
18		Integration	Mon 4/19/10	Fri 5/7/10	Mon 4/19/10	Fri 5/7/10	0 days	0 days
19		Document design	Mon 4/19/10	Mon 6/7/10	Tue 6/1/10	Tue 7/20/10	30 days	30 days
20		Procure prototy[e components	Mon 5/10/10	Mon 6/7/10	Mon 5/10/10	Mon 6/7/10	0 days	0 days
21		Assemble prototypes	Tue 6/8/10	Mon 6/21/10	Tue 6/8/10	Mon 6/21/10	0 days	0 days
22		Lab test prototypes	Tue 6/22/10	Tue 7/20/10	Tue 6/22/10	Tue 7/20/10	0 days	0 days
23		Field test prototypes	Wed 7/21/10	Tue 8/17/10	Wed 7/21/10	Tue 8/17/10	0 days	0 days
24		Adjust design	Wed 8/18/10	Wed 9/15/10	Wed 8/18/10	Wed 9/15/10	0 days	0 days
25		Order stock parts	Thu 9/16/10	Wed 10/6/10	Thu 9/16/10	Wed 10/6/10	0 days	0 days
ID	Task Mode	Task Name	Start	Finish	Late Start	Late Finish	Free Slack	Total Slack
26		Order custom parts	Thu 9/16/10	Fri 9/17/10	Tue 9/28/10	Wed 9/29/10	8 days	8 days
27		Assemble first production unit	Tue 10/19/10	Mon 11/1/10	Tue 10/19/10	Mon 11/1/10	0 days	0 days
28		Test unit	Tue 11/2/10	Mon 11/15/10	Tue 11/2/10	Mon 11/15/10	0 days	0 days
29		Produce 30 units	Tue 11/16/10	Tue 12/7/10	Tue 11/16/10	Tue 12/7/10	0 days	0 days
30		Train sales representatives	Wed 12/8/10	Tue 12/21/10	Wed 12/8/10	Tue 12/21/10	0 days	0 days

Network Diagram

Task Split   External Milestone   Manual Summary Rollup

Milestone   Inactive Task   Manual Summary

Project: Nightingale project sched
Date: Fri 5/17/13

Summary   Inactive Milestone   Start-only

Project Summary   Inactive Summary   Finish-only

External Tasks   Manual Task   Deadline

Duration-only   Progress

Part-A

1. Will the project as planned meet the October 25th deadline?
   Answer: Analysis of preliminary data shows that the project will not complete until December 21, 2010.

2. What activities lie on the critical path?
   Answer: The following activities define the critical path: 1, 4, 10, 16, 18, 20, 21, 22, 23, 24, 25, 27, 28, 29, and 30.

3. How sensitive is this network?
   Answer: The network, as planned, is not considered sensitive due to the fact that it has one critical path.

Part-B

1. Is it possible to meet the deadline?
   Answer: Yes, incorporating both crash activities and lags will allow the company to meet the project deadline constraint.

2. If so, how would you recommend changing the original schedule (Part A) and why? Assess the relative impact of crashing activities versus introducing lags to shorten the project duration.
   Answer: Introducing all suggested schedule lags moved the schedule up to 11/15. Still behind deadline, but low (no) cost.

3. What would the new schedule look like?

Answer: Crash Analysis

Activity	Description	Crash Time	Crash Cost	Slope
5	voice recognition	5	15,000.00	3,000.00
10	database	5	35,000.00	7,000.00
19	document design	5	25,000.00	5,000.00
3	external specificaions	6	20,000.00	3,333.33
20	procure prototype components	5	30,000.00	6,000.00
25	order stock parts	5	20,000.00	4,000.00
		Total $	145,000.00	

        = critical path

Analysis: crashing these three activities on the CP brings the completion date to 11/30/10.

MS Project 2010 Schedule Combined

Task Mode	Task Name	Duration	Start	Finish	Predecessors
Auto Scheduled	Architectural decisions	10 days	Mon 1/4/10	Fri 1/15/10	
Auto Scheduled	Internal specifications	20 days	Mon 1/18/10	Fri 2/12/10	1
Auto Scheduled	External specifications	18 days	Mon 1/18/10	Wed 2/10/10	1
Auto Scheduled	Feature specifications	15 days	Mon 1/18/10	Fri 2/5/10	1
Auto Scheduled	Voice recognition	15 days	Mon 2/15/10	Fri 3/5/10	2,3
Auto Scheduled	Case	4 days	Mon 2/15/10	Thu 2/18/10	2,3
Auto Scheduled	Screen	2 days	Mon 2/15/10	Tue 2/16/10	2,3
Auto Scheduled	Speaker output jacks	2 days	Mon 2/15/10	Tue 2/16/10	2,3
Auto Scheduled	Tape mechanism	2 days	Mon 2/15/10	Tue 2/16/10	2,3
Auto Scheduled	Database	35 days	Mon 2/8/10	Fri 3/26/10	4
Auto Scheduled	Microphone/soundcard	5 days	Mon 2/8/10	Fri 2/12/10	4
Auto Scheduled	Pager	4 days	Mon 2/8/10	Thu 2/11/10	4
Auto Scheduled	Barcode reader	3 days	Mon 2/8/10	Wed 2/10/10	4
Auto Scheduled	Alarm clock	4 days	Mon 2/8/10	Thu 2/11/10	4
Auto Scheduled	Computer I/O	5 days	Mon 2/8/10	Fri 2/12/10	4
Auto Scheduled	Review design	10 days	Mon 3/29/10	Fri 4/9/10	5,6,7,8,9,10,11,12,13,14,15
Auto Scheduled	Price components	5 days	Mon 3/29/10	Fri 4/2/10	5,6,7,8,9,10,11,12,13,14,15
Auto Scheduled	Integration	15 days	Mon 4/12/10	Fri 4/30/10	16,17
Auto Scheduled	Document design	35 days	Mon 4/5/10	Fri 5/21/10	16SS+5 days
Auto Scheduled	Procure prototype components	15 days	Mon 5/3/10	Fri 5/21/10	18
Auto Scheduled	Assemble prototypes	10 days	Mon 5/24/10	Mon 6/7/10	20
Auto Scheduled	Lab test prototypes	20 days	Tue 6/8/10	Tue 7/6/10	21
Auto Scheduled	Field test prototypes	20 days	Wed 7/7/10	Tue 8/3/10	19,22
Auto Scheduled	Adjust design	20 days	Wed 7/28/10	Tue 8/24/10	23SS+15 days
Auto Scheduled	Order stock parts	10 days	Wed 8/4/10	Tue 8/17/10	24SS+5 days
Auto Scheduled	Order custom parts	2 days	Wed 8/4/10	Thu 8/5/10	24SS+5 days
Auto Scheduled	Assemble first production unit	10 days	Mon 8/30/10	Mon 9/13/10	25FS+8 days,26FS+13 days
Auto Scheduled	Test unit	10 days	Tue 9/14/10	Mon 9/27/10	27
Auto Scheduled	Produce 30 units	15 days	Tue 9/28/10	Mon 10/18/10	28
Auto Scheduled	Train sales representatives	10 days	Tue 10/12/10	Mon 10/25/10	29FS-5 days,28SS+5 days

4. What other factors should be considered before finalizing the schedule?
   Answer: Incorporating the three crashed activities with all suggested schedule lags meets the schedule deadline.
   Stays below $100,000 cap also.

Conclusion:

After the project team analyzed the project requirements, and then incorporated to activities into a schedule, they noted that the current project schedule did not meet the date of completion constraint. Further, analysis reveals that outsourcing activities is not an option, because most of the work was developmental in nature. Altering features would comprise quality and possibly undermine the product credibility within the marketplace. The project team opted to accelerate the project, crashing activities at higher overall cost to complete the project deliverables.
The team also, concentrated efforts on changing the relationship some activities from Finish-Start to Start-Start to create lag within the project, thereby gaining valuable time and cost savings.