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T.I.M 105 HW#7

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Schedule:

Review the homework -(5 minutes)

Brainstorm-(5 minutes)

Work on structure problem solving-(120 minutes)

Define the problem-(5 minutes)

Plan the treatment of the problem-(10 minutes)

Execute the plan-(30 minutes)

Check your work-(10 minutes)

Learn and generalize-(20 minutes)

Total time-(200 minutes)

1. R&D and Product management at Microsoft(continued form the midterm)

Define the problem

For each presentation, extract at least three key lessons which are relevant to (1) topics covered in TIM 105 , and (2) your analysis of Microsoft in Problem1 of the midterm exam, Present your results in the form of a suitable table(of your own design).

Plan the Treatment of the problem

- Review “managing innovation at silicon valley” and take notes on the presentation
- Review “goal alignment at Microsoft” and take notes on the presentation
- Review “Microsoft Office: Delivering World Class Software” and take notes on the presentation
- Go over notes and present ideas in a table of key lessons taken away and a why I believe them to be a key lesson taken.

Execute the plan

Goal alignment at Microsoft

Lesson learned	Why it's key lessoned taken away
1. Investment in employees and setting common goals will result in a better company.	Its has been proven though management theory is based on people and the current focus on high technology firms choosing to invest in employs through Development programs are companies learning and accepting Human Relations movement which focuses on common Goals and Commitment setting throughout the organization. Overall employees are people not machines and productivity improve when their needs and moral is realized.

2. Goals must be strategically chosen and realistic. Management must set stretch goals and realistic goals.	Management by Objectives (MBO) which the dominant form of management to this day is a process of setting agreed upon objectives within an organization. MBO is achieved through setting targets (known as stretch goals). Objectives must be SMART (Specific, Measurable, Achievable, Relevant, and time specific). These goals are set within the organization so management won't have to deal with unethical employees who will distort the system to make themselves stand out,
3. Commitments must be expected and set within the organization	Commitment form employees Guilds their behavior. People under a unified understanding of the task at hand will outperform those not under a common goal. Commitments can also be used for employee performance reviews. By setting commitments we have a barometer to measure employees and much like a lost person a man with a plan will be more driven and provide more value to an organization.

Microsoft Office: Delivering World Class Software

Lessons learned	Why is it a lesson learned
1. Values/culture for a cooperation is important to make universal within the organization	For a product manager common values and culture within the organization is important. Common agreed upon values will help any group be on common ground and work towards a common goal. Corporate culture and fit is paramount for hiring and should be make clear for productivity reasons.
2. Product Management is presentation	Being in a position of product management presentation of oneself is key to maintain group cohesion. Any slight of arrogance will break productivity. We all heard of horrible bosses which shouldn't have been able to achieve their position but to maintain productivity one must think outside themselves and have commitment and common understanding of the task and project at hand.
3. The future of business applications will continue to be Microsoft office	Microsoft office is a high-tech company and since it has a firm grasp on Business applications. The future standard of business applications will continue to be Microsoft office.

Managing innovation at silicon valley

Lessons learned	Why it is a lesson learned
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1. Guild your research on the task at hand	University research is focused on broad topics small companies are focused on short-term and big companies focusses on long-term research
2. Hire and retain talent world wide	For a company it is very important to not only hire but also retain talent. This talent is important for the prosperity of the organization. Talent can be accurized world/university wide.

Problem 2 Agile Product Management at Cisco and Seagate

Define the problem

- Go what are the two main project management mythologies used a Cisco? Briefly describe each methodology, including the pros and cons for each.
- What kind of agile development methodology is used at Seagate? How is it different than the traditional waterfall project development methodology? what are the advantages of an agile development methodology?
- Compare and contrast the agile development methodology used at Cisco to the agile development methodology used at Seagate
- Relate the agile development used at Cisco and Seagate to the project management and prototyping methods discussed in class and in the U&E text.

Plan the treatment

- Go to canvas and locate the following presentations
- Take notes on Project Management at Cisco
- Takes notes on an agile approach for implementing Enterprise Software
- Answer the questions pertaining to the problem

Execute The plan

- What are the two main project management methodologies used at Cisco? Briefly describe each methodology, including the pros and cons for each, and also indicate the type of projects for which each method is best suited.

Cisco Methodology

Methodology 1: Waterfall (Linear) Project Manager Program Manager Product Manager Conceptual- Planning- Execution- Deployment- Maintenance	
Pros	Cons
Plan Driven Fixed scope, variable resources	Concept through deployment phases can take years Any delays directly impact project schedule Minimal feedback loops Change is disruptive Slow Learning
Types of projects- F35 Project Delayed by Software Problems \$143 Billion over budget At least another year late	
Methodology 2: Agile (Iterative) Incremental delivery in timed-boxed iterations to target systems Iterations 1, 2, 3, 4, release 1, iteration 5,... release n Individuals and Interactions over Processes and Tools Working Product over Comprehensive Documentation Customer Collaboration over Contract Negotiation Responding to change over Following a plan	
Pros	Cons
Small Teams Collocated Cross Functional Capable of delivering products in 2 weeks Self Managed	Project Managers not needed Project Managers communicate with customers differently Managers no longer command and control Program Managers coordinate multiple scrum teams across product
Type of projects- Saab JAS 39E Gripen All systems radically improved Cheaper than previous version Cost \$43M	

Just won in Brazil
Agile development using Scrum

- What kind of agile development methodology is used at Seagate? how is different than the traditional Waterfall project development methodology? What are the advantages of an agile development methodology?

Waterfall Project	Seagate
Plan driven Fixed scope, variable resources Any delay directly impact project Schedule Minimal feedback Slow learning Certifications – Minimal work experience Process 2-day class/exam	Value driven Short cycles Eliminate Waste Emphasis on change Inspect and adapt Certifications – Associated degree / bachelors Lots of work experience

Advantage – The advantage of developing an agile method is that it is more value driven. Although there are less work experience and easier process than waterfall methodology, agile development is more determined. Agile values delivery with increased flexibility, reduces time to value, and reduced risk of failure.

- Compare and contrast the agile development methodology used at Cisco to the agile development methodology used at Seagate.

Cisco	Seagate
Value driven Fixed time Short cycles Inspect and adapt Embrace change Eliminate waste	Use SCUM Focus on delivering the highest business value in short time Allow repeatedly inspect actual working software Business sets the priorities team self-organized

- Relate the agile development methodologies used at Cisco and Seagate to the project management and prototyping methods discussed in class and in the U&E text

Cisco & Seagate	U&E
Cisco – Organize structure and constraints come into play Cultural and mindset changes are challenges High impact on business and operations Seagate – Cost and schedule fixed, and the team works to implement the highest value features as defined by the customer, so the scope remain flexible	Types of prototypes- Nature of prototypes Scope of prototypes Develop a prototyping strategy in the prototype space Critical visual prototypes correlated with experimental data is useful After good functional prototypes- Product Architecture

Cisco and Seagate project management and prototyping methods relate to the U&E text because they are well organized. There is a structure process on how to do all the prototyping strategy. All the cost and scheduled are fixed and the team work together to create a good function prototype.

Check your work

The work is correct to my knowledge

Learn and Generalize

After working on this problem, you have a better understanding of Seagate and Cisco. I have learned about their product management and the differences between all the methodologies. These methodologies allow me to learn on how product management and prototype for my group.

Homework #7: Problem 3

1. Problem

- a. Conduct a group meeting in order to develop a comprehensive project plan for the remaining weeks of our project.

2. Plan

. Schedule a time to meet for the purpose of creating a detailed project plan for your company's proposed new product. (before the group meeting) Assess the current state of the work done by the group and identify any backlog (e.g., conceptual design) from the previous stages. Bring your assessment to the group meeting.

- a. Conduct a group meeting (2-3 hours) to develop (in a time-efficient manner) a comprehensive project plan

- i. Activities Matrix, GANTT, PERT, and CPM

- ii. Product platform/line strategy, economic/financial analysis, and failure modes and effects analysis.
- iii. may choose to include some supporting “pieces” such as a prototyping strategy, and integration.
- iv. plan should also include any backlog (e.g., conceptual design) from Phase II. Lastly, assign roles and responsibilities to each group member for completing all of the tasks in the project plan
- v. Turn in a concise, well-written “problem solution” documenting all the work done and by whom. This solution should include your problem-solving process and clearly show its implementation.

3. *Execute*

- a. Schedule a time to meet:

i. Meeting times: Tuesday November 20, 2018 @ 1:30PM

- b. Accesses the current state of the work done by the group and identify any backlog:
After meeting up with the TA on November 14th, to go over our Phase II, we were told that we needed to make a few more changes to our Phase II. We needed to make our FAST diagram more detailed and have more information and our alternatives derived from the morphological matrix should be described. We need to include a PERT diagram into our Phase II as well.
- c. Activities Matrix, GANTT, PERT, and CPM (Critical Path Method) for the product we are developing.

Activities Matrix:

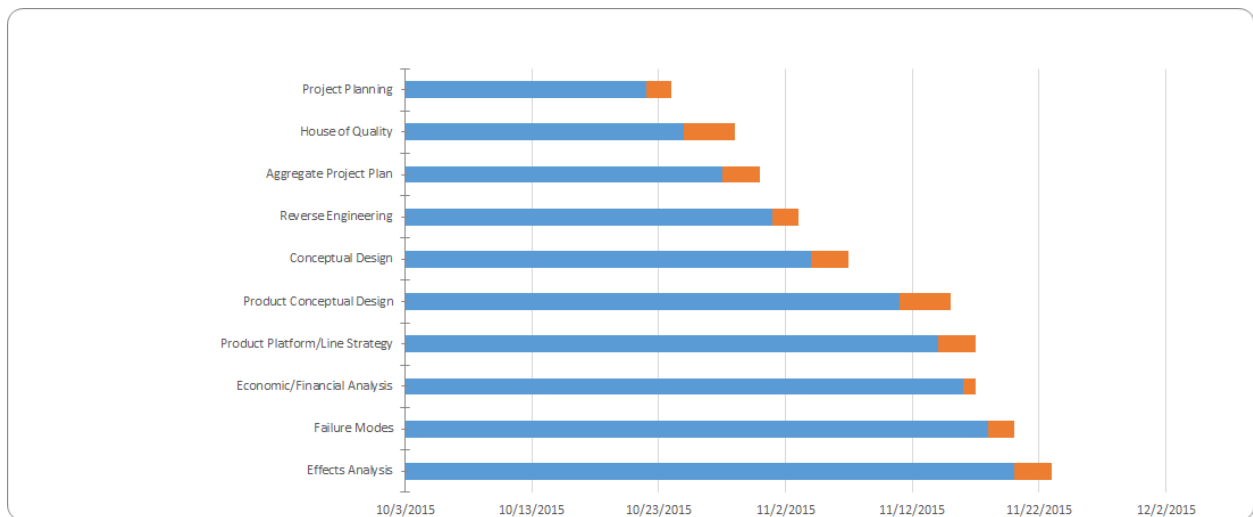
- A, B, & C are sequential tasks
- D&E are coupled tasks
- F&G are independent of each other and therefore can be done in parallel

	A	B	C	D	E	F
A	A					
B		B				
C			C			
D				B		
E					E	
F						F

GANTT

Task	Start Date	Duration	End Date
Project Planning	10/22/2018	2	11/13/2018

House of Quality	10/25/2018	4	11/13/2018
Reverse Engineering	10/28/2018	3	11/13/2018
Conceptual Design	11/1/2018	2	11/13/2018
Product Conceptual Design	11/4/2018	3	11/24/2018
Product Conceptual Design	11/11/2018	4	11/24/2018
Product Platform/Line Strategy	11/14/2018	3	11/24/2018
Economic/Financial Analysis	11/16/2018	1	11/24/2018
Failure Modes	11/18/2018	2	11/24/2018
Effects Analysis	11/20/2018	3	11/24/2018



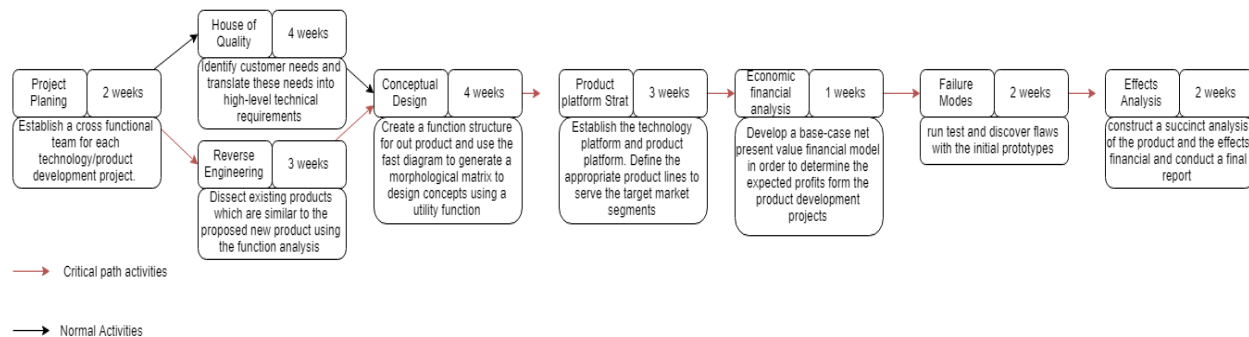
Project/Program Evaluation and Review Technique (PERT)



After completing the PERT chart, the best critical path matrix we should follow is $1 > 3 > 4 > 5 > 6 > 7 > 8$. This is because this path takes the least amount of time to complete. Subtask 3 is one week faster than Subtask 4 (3 weeks vs. 4 weeks)

Critical Path Method(CPM)

Critical Path method



Define the Problem

Produce a “base-case” financial analysis in the “Product Development Economics” chapter of the text. Then do the following:

- Determine the sensitivity analyses with respect to development cost, development time, unit manufacturing cost and sales volume for the “Product Development Economics”?
- Name at least one specific trade-off law, e.g. tradeoff between development cost and NPV.
- If manufacturing costs increases to \$500/unit, what sales volume would be required to yield the same NPV?
 - What actions would be necessary to increase the sales volume

Plan the Treatment of the Problem

1. Using Excel, setup and then reproduce the “base-case” financial analysis in the “Product Development Economics” chapter of the text
2. Perform a sensitivity analyses with respect to development cost, development time, unit manufacturing cost, and sales volume
3. Provide at least one specific trade-off law, tradeoff between development cost and NPV
4. Solve for the sales volume if required to yield the same NPV and create actions necessary to increase sales volume

Execute the Plan

1. Establish the cash flows, present and future associated with product development and commercialization

Base Case

Development Costs	\$5 million
Ramp-up Costs	\$2 million
Marketing and Support Costs	\$1 million/year

Unit Products Costs	\$400 per unit
Sales and Production Volume	20,000 units/year
Unit Price	\$800 per unit

Development Costs

	Year 1			
Values in thousands	Q1	Q2	Q3	Q4
Development costs	-1,250	-1,250	-1,250	-1,250
Period Cash Flow	-1,250	-1,250	-1,250	-2,250
PV Year 1, $r = 10\%$	-1,250	-1,220	-1,190	-2,089

Project NPV: 8203

Development Time

	Year 1			
Values in thousands	Q1	Q2	Q3	Q4
Development costs	-1,250	-1,250	-1,250	-1,250
Period Cash Flow	-1,250	-1,250	-1,250	-2,250

PV Year 1, r = 10%	-1,250	-1,220	-1,190	-2,089
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Project NPV: 8203

Unit Manufacturing cost

	Year 2			Year 3				Year 4			
Values in thousands	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Production cost	-2000	-2000	-2000	-2000	-2000	-2000	-2000	-2000	-2000	-2000	-2000
Volume	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Unit cost	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Period Cash Flow	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
PV Yr1, r = 10%	1547	1509	1472	1436	1401	1367	1334	1301	1269	1239	1208

Project NPV: 8,203

Sales Volume

[illegible]

Unit cost	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Period Cash Flow	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
PV Yr1, r = 10%	1547	1509	1472	1436	1401	1367	1334	1301	1269	1239	1208

Project NPV: 8,203

Based off the chart, we see that incr

4. Assign roles and responsibilities to each group member for completing all of the tasks in the project plan

Team Member	Role
Qizhang Chen	Creating PERT & CPM
Wan Fong	Product Strategy, Economic/Financial Analysis
Eric Hong	Product Strategy, Economic/Financial Analysis
Caleb Jones	Product Strategy, Economic/Financial Analysis
Antoine Rocha	Economic/Financial Analysis
Yu Chen Shih	Economic/Financial Analysis
Monique Van	Phase II Backlog, Economic/Financial Analysis

5. Check: Looking back at the work done (adding in a PERT chart, assigning roles, etc.) our work is entirely correct.,

6. Learn: Throughout all our work shown above, we have learned to conduct a market analysis, platform/line strategy, and economic/financial analysis onto our modular product by means of graphs and diagrams.

Problem 4: Financial modeling for new Nroduct Development

Define the problem:

Complete the first two steps in the tutorial and submit a well-structed and clear write-up of your implementation of steps 1 and 2 in the tutorial. Your write up must include the relevant excel spreadsheets as supporting evidence.

Problem Definition

Use the following Base Case scenario parameters:

- (a) The total project length is four **(4)** years.
- (b) The total Development Cost is \$25,000,000.
- (c) The average sales price (wholesale) is \$2,500 **per unit**.
- (d) The average production cost is \$1,250 **per unit**.
- (e) The total Ramp-up costs are estimated at \$2,500,000.
- (f) Ongoing market and support costs are \$200,000 **per month**.
- (g) Development time is 12 months.
- (h) Production ramp-up time is 6 months.
- (i) Ramp-up starts 9 **months** after the start of product development and continues for 6 **months**.
- (j) Ongoing "market and support" starts one **quarter** before Production (of the product) and selling ("sales" of the product) start.
- (k) Production (of the product) and selling ("sales" of the product) occur immediately after the end of the ramp-up period, and concludes at the end of year **4 (four)**.
- (l) Assume that you could sell 35,000 **units per year**.
- (m) The **annual** discount factor is 10% (i.e., 2.5% **per quarter**).

Answer the following questions:

- (1) What is the NPV of the Base Case scenario?
- (2) What is the maximum development cost beyond which the development of the product cannot be justified? (i.e., what is the development cost which makes $NPV=0$). Use the *Solver Add-In* to answer this question. Show your work.
- (3) Explain the trade-off law for NPV versus development cost.
- (4) Explain the trade-off law for NPV versus sales volume.
- (5) Create a graph of the trade-off law relationship for the (Change in NPV, \$) (y-axis) versus (Change in Development Cost, %) (x-axis). What is the equation of the Regressed *trendline*? Give the answer in the standard form for an equation of a line: $y=mx+b$.
- (6) Create a graph of the Trade-off law relationship for the to the (Change in NPV, \$) (y-axis) versus (Change in Sales Volume, %) (x-axis). What is the equation of the Regressed *trendline*? Give the answer in the standard form for an equation of a line: $y=mx+b$.
- (7) If there is a 10% increase in development cost, by how much does the sales volume need to increase, to compensate for the drop in NPV?

Plan the treatment:

- Go to the relevant website and follow the two-step tutorial.
- Take relevant screen shots of the excel screen shots as proof of the implementation of steps 1 and 2.

Treatment

1. Build a Base Case NPV Scenario
2. Use the Base Case to create: +/- 10%, +/- 20%, +/- 30% Development Cost analysis
3. Use the Base Case to create: +/- 10%, +/- 20%, +/- 30% Sales Volume analysis
4. Create a worksheet with summary tables
5. Graph the results to determine the slope of the line using Regression Analysis *trendline*.
6. Use the *Solver Add-In* to automate the determination of the *Maximum* development cost for the project at which the project is no longer economically practical (i.e., $NPV=0$).
7. Follow Ulrich's (2) method (p.320) to determine the impact of 10% increase in development cost on NPV and the sales volume needed to compensate for the drop.
8. Check the work.
9. Copy and Paste content into MS Word.
10. Label each Figure (i.e., *Figure #: Title*) and Table (i.e., *Table #: Title*).
11. Explain each Figure and Table.
12. Explain the Results.
13. Discuss the Conclusions.

Execute

