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TIM 105: Midterm

Schedule:

Thursday, Nov 1- Receive Midterm

- Look over Midterm
- Plan out schedule
- Review Notes

Friday, Nov 2- Start Midterm Exam

- Begin with Problem Number 1
  - Read Microsoft 1995 Case Study
  - Review Notes and Apply to problem

Saturday, Nov 3- Cont. Midterm Exam

- Begin Problem Number 2
  -Review Lecture Notes and Apply to problem

Sunday, Nov 4- Cont. Midterm Exam

- Begin Problem Number 3
  -Read over HOQ Handout
  -Read the two chapters Given
  -Review Lecture Notes and Apply to problem
  -Finish up the problem

Monday, Nov 5- Review the Midterm

- Check the midterm thoroughly to make sure there were no mistakes
- Submit the midterm

1.1 Technology, Market, and Competitive Strategy for Microsoft

- **1a. Written statement of your framework**

A. Define the problem

As an expert in the field of Management Technology, Microsoft has hired me as a contractor to develop an integrated business, Technology, Product/Market and competitive strategy for the next 3 years. I have to apply systematic analytic framework in this strategy development task.

B. Plan the treatment

1. Read the case Study "Microsoft 1995 case Study"
2. Read the packet. Highlight important points, dates, names, and keep the problem in mind when reading the case Study.
3. Re-read sections that did not make sense or was difficult to understand at the time to better understand the concepts.
4. Go over highlighted important or noted sections.
5. Go over previous lecture notes and handouts to ensure the understanding over steps needed to create this framework.
6. Also, go over the previous Microsoft packers to refresh memory.
7.

C. Execute the plan

technology strategy

Microsoft - a company that has been successful over the years by partnering up with other leading companies to produce a relatively inexpensive and unique product.

- Although Microsoft doesn't have a reputation as Apple, it has state of the art technology that it applies to all of its products to maintain its competitive strategy as a leader of the computer tech industry.

Product/Marketing Strategy

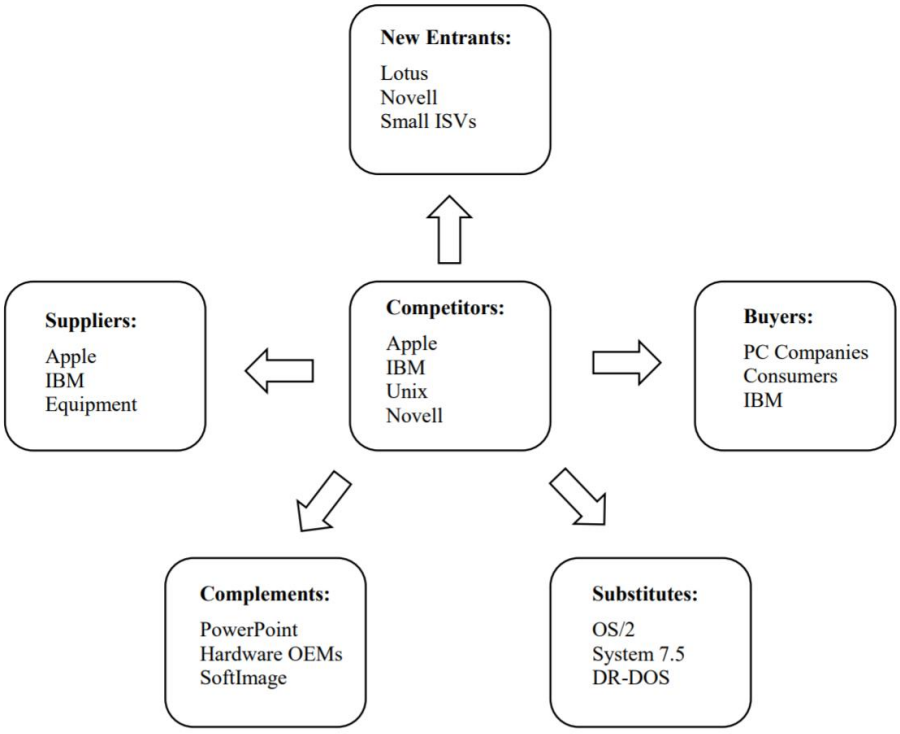
"As a company, and individuals, we value integrity, honesty, openness, personal excellence, constructive self-criticism, continual self - improvement, and mutual respect. We are committed to our customers and partners and have a passion for technology. We take on big challenges and pride ourselves on seeing them through. We hold ourselves accountable to our customers, shareholders, partners. And employees by honoring our commitments. Providing resulting and striving for the highest quality."

1. Microsoft Marketing strategy success is based on its ability to target its customers and strategize its completive positioning. As one of its priorities Microsoft uses marketing actives to achieve the company's goals.
2. Microsoft also focus on a wide array of product designs to gain a competitive advantage to their competitors.
    - I.E Operating systems, applications, and video game consoles

Competitive strategy

1. Decide whether a given industry is attractive:

Porter five forces



b. New Entrants(low) : Due to Microsoft's size and impact, this creates a huge barrier of entry for new entrants. People have been depended to Microsoft products, due to Microsoft dominating the OS market. Thus, the barriers for entry is high for any new entrants.

c. Suppliers(low): Microsoft has a large customer base and supplier base around the world. Therefore, Microsoft has leverage and high bargaining power.

d. Competitors(low): Being that Microsoft has a near monopoly on the operating system market the risk of competitors is low.

e. Buyers(low): Since Microsoft has a near monopoly on the enterprise market Buyer bargaining power is low there is only 2 other operating systems.

f. Complements: Although there are many compatible products, it's good to have Microsoft as a partner so complements power is high.

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Developmental Goals

"Support long-term computer science research that is not bound by product cycles.

1. In other words, Microsoft does not have a set goal for the future since they are always pushing for innovation and does not limit itself to its already existing product line.

D. Check your work

Since the this based on the notes taken in class and directly from the book itself. My assumptions should be clear and represent a realistic solution to the problem at hand.

E. Learn and Generalize

When given a case study to base information off of, it is important that you read the case study and keep in mind the important concepts because they will be made turning points that made the situation that Microsoft found itself in. Also, I learned that by creating charts and figures. A visual model makes it much easier to see what the impact of different factors can have on a situation.

1.2. Apply my Framework to their existing and proposed technologies and products

A Define the Problem

Perform the necessary fact-based analyses, drawing conclusions and making appropriate recommendations to apply my framework to these existing and proposed technologies and product.

B Plan the treatment of the problem:

- Use the information applied in the first step of the problem to the frame work that could actually be applied to solve the problem at hand. Perform all the of the steps to gain a better understanding of the company.
- Perform a fact-based analysis to determine what would help improve the company
    - From this info draw conclusions to make appropriate recommendations

C Execute the plan

I. During the year of 1995 Microsoft had undergone numerous technological advancements that have left competitors in the dust. At first, things weren't moving along as smoothly as they wanted; their competitors had a larger share of consumers and Microsoft was unable to get niche on the industry until IBM came to Microsoft and asked them to develop an operating system for them.
    a. From that point, Microsoft's prowess captures a large consumer base. Although MS expansion into the video game industry wasn't created until 2001, it shows the diversity MS was capable of undergoing when it came to both software and hardware.

II. Another aspect is Microsoft had a powerful asset. Bill Gates, his ambition and goals to create software that would be universal has defined the goals that her achieved.
    b. Since Bills Gates goals were clearly defined it allowed him to develop a strategy that would lead to the ultimate production of the end product.

III. Some Technologies that can be approved upon (1995) would have to be performance of the operating system. At this point Microsoft is the leading OS and as a product there is much to improve on.
    c. Since the OS is what the user untimely uses to perform Microsoft could focus on the efficiency of its functions, the simplicity of its user interface or many other aspects.

D. Check your work

Similar to the previous step, all my assumptions are based off the case study and previous articles I had read online. In this problem, it asks to perform a fact-based analyses so my answer primary consists of facts rather than options.

E.Learn and Generalize

Since most of the learning was done in the previous step. I was able to utilize the knowledge that I learned before to create assumptions and recommendations that could be applied in the real world**.**

1.3.Create a clearly structured report for Microsoft for the next year with recommendations

A. Define the problem:

Microsoft would like you to provide them with a clearly structured report that must include 3-5 specific strategic recommendations for what their business, technology, and product/market strategic focus should be.

i. Your justified recommendations would help the company decide which products and technologies it should develop, and which markets it should target, ect.

B. Plan the treatment:

i. Use notes and all knowledge gained from the previous sections to create recommendations for the problems/weaknesses to either improve them or get rid of them.
   - Use the appropriate maps, facts, and data to support each one of your recommendations.

C. **Execute the plan:**

Recommendation:	Reason:
Create a more customizable user interface.	As a producer of an OS that is run in almost every computer, Microsoft should invest in a more personalized system in order to capture consumer interest and shift its focus from a company that wants money, into a company that wants customer happy
Microsoft should partner with other businesses	Based on the fact that Microsoft gained a huge benefit from partnering with IBM, they should see the potential that they could gain if they had also partnered with other buyers.
Expand its diversity of products	As a company that is dominating its industry, Microsoft has an edge in expansible capital to try new business. As a result, Microsoft should take this advantage to gain a niche on

Check your work:

Like the previous steps, info has been based of the notes taken in class or directly from the book itself, my assumptions should clearly represent a realistic solution to the problem. My assumptions are based on faces found in the article

Learn and generalize:

By using the data gathered from the previous parts. It made me incredibly easier for me to produce a few recommendations for Microsoft to make. Gathering knowledge should be a priority when it comes to foreseeing future results and ultimately creating a system in which the company will make a priority.

1.4 Identify the initiative actually taken but Microsoft and compare to my recommendations.

What did Microsoft actually do?

i. Partnered with NBC in 1995 to create a 24-hour cable news television station, MSNBC.
ii. Continued expanding on MSN and online services, making the Internet Gaming Zone in 1996
iii. Partnered with Apple in 1997, expands Microsoft office and Internet Explorer
iv. Bundled internet Explorer along with Windows computers.

Microsoft did end up expanding the usage of the internet. They entered into a more media related marked with MSNBC and the internet Gaming Zone. As for the application marketplace its looks like that won't come until a few years after still. Nowadays, Microsoft t has moved from purely software and operating system company to also creating hardware along with their own products, such as their own personal computers, laptops, tablets, smartphones, video games consoles, and much more.

2.1 Aggregate project plan for Enterprise Software

A. Define the Problem**:**

- Five project options: R&D E1,E2,P1,P2

- Total capital budget is $95M
- Pose the associated integer-programming optimization problem to choose the project mix that will maximize expected monetary value(EMV)
- Solve the integer-programming problem via "Table-lookup" to determine which projects should be selected.
- What is the return on investment(ROI) on each project?
- How much cash is there left after the project selections are made? What should management do with this cash?

B. Plan the treatment:

i. Look though table 1: Potential Development projects
ii. Perform Decision analysis for each project to calculate EMV
iii. Use integer programing to compare the projects
iv. Calculate the total cash remaining afterwards
v. Figure out what management should do with leftover cash

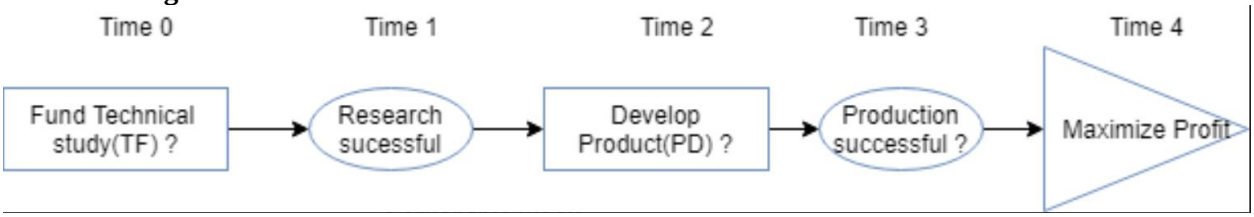
Table 1: Potential Development Projects

Project/product	Is product technically feasible (F?)		Will product development (D) be successful?		Time to market (months)	NPV of expected Profit ($M)
	Cost ($M)	p(F)	Cost ($M)	p(D)		
R&D	4.5	0.7	50/year	0.8	20	650
P1	1.25	0.85	25	0.9	12	250
P2	1.25	0.7	20/year	0.75	15	450
E1	0.75	0.85	10	0.98	6	60
E2	0.75	0.9	10	0.9	8	75

C. Execute:

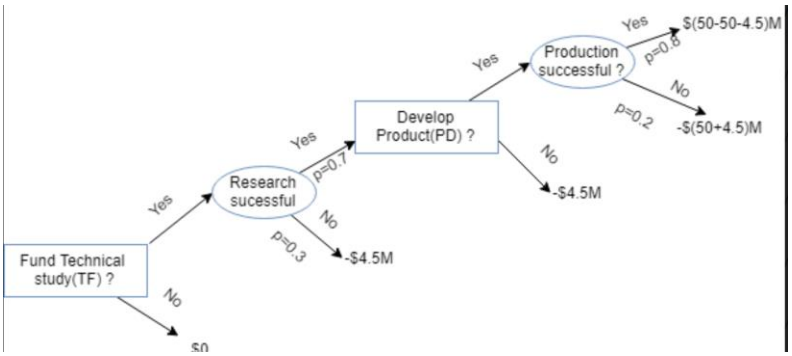
building blocks

influence diagram



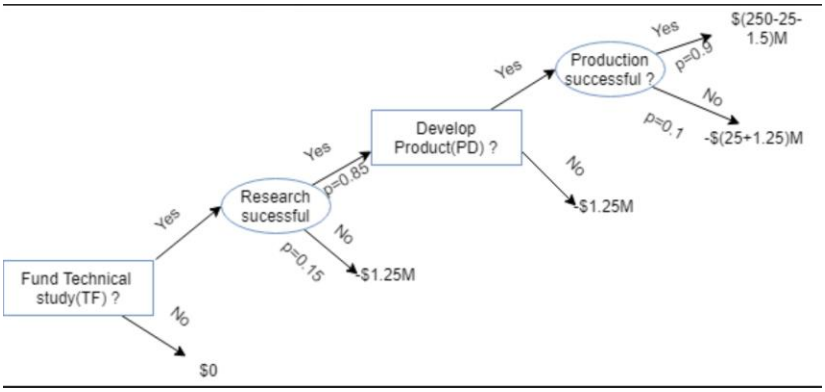
Decision tree

R&D



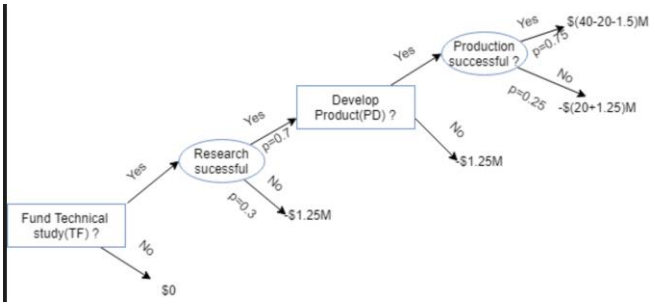
Calculate Profits:
Production successful: 0.8($595.5)M + 0.2(-$54.5)M = **$465.5M**
Develop Product: $465.5>-$4.5M -> **$465.5M**
Research successful: 0.7($465.5)M +0.3(-4.5)M= **$324.5M**
Fund Technical Study: $324.5M>$0 -> **$324.5M EMV**

P1:



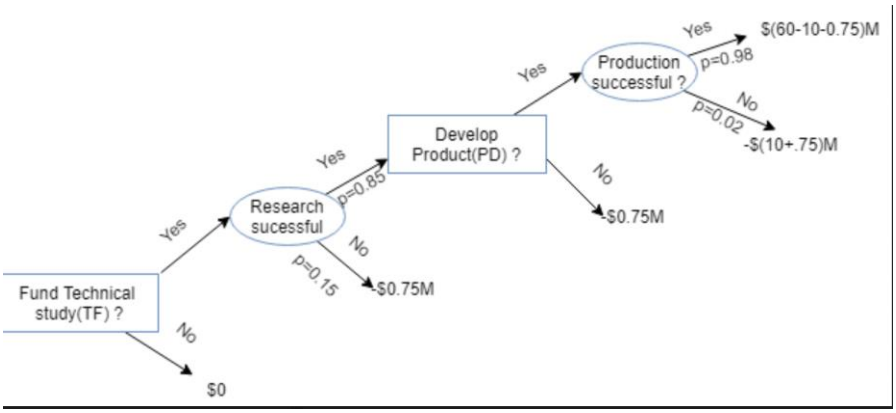
Calculate Profits:
Production successful: 0.9($223.75)M + 0.1(-$26.25)M = **$198.75M**
Develop Product: $198.75>-$1.25M -> **$198.75M**
Research successful: 0.85($198.75)M +0.15(-1.25)M= **$168.75M**
Fund Technical Study: $168.75M>$0 -> **$168.75M EMV**

P2:



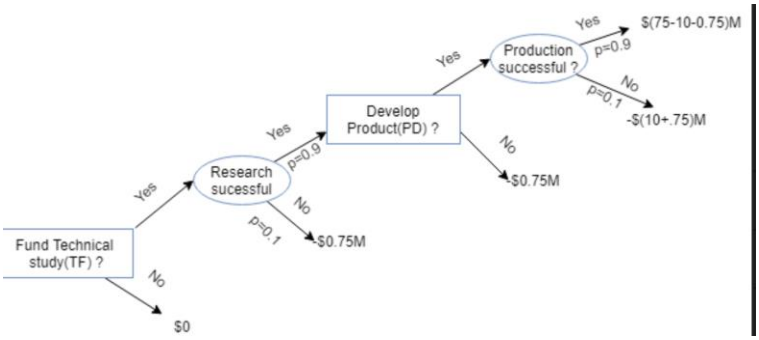
Calculate Profits:
Production successful: 0.75($378.75)M + 0.25(-$21.25)M = **$278.75M**
Develop Product: $278.75>-$1.25M -> **$278.75M**
Research successful: 0.7($278.75)M +0.3(-1.25)M= **$194.75M**
Fund Technical Study: $194.75M>$0 -> **$194.75M EMV**

E1:



Calculate Profits:
Production successful: 0.98($49.25)M + 0.02(-$10.75)M = **$48.05M**
Develop Product: $48.05>-$0.75M -> **$48.05M**
Research successful: 0.8($48.05)M +0.15(-0.75)M= **$40.73M**
Fund Technical Study: $40.73M>$0 -> **$4.73M EMV**

E2:



Calculate Profits:
Production successful: 0.9($64.25)M + 0.1(-$10.75)M = **$56.75M**
Develop Product: $56.75>-$0.75M -> **$56.75M**
Research successful: 0.9($56.75)M +0.1($0.75)M= **$51M**
Fund Technical Study: $51M>$0 -> **$51M EMV**

2.2 Table lookup

Project	Total cost($M)	EMV($M)
R&D	54.5	324.5
P1	26.25	168.75
P2	21.25	194.75
E1	10.75	40.73
E2	10.75	51

- 32 possible combinations for the five projects
- Zeros left blank in the table below Budget
- Underlined EMV is the highest EMV without exceeding Budget Constraint

Project mix					Project Cost					Project EMV's					Total Cost	Total EMV
R&D	P1	P2	E1	E2	c(R&D)	c(P1)	c(P2)	c(E1)	c(E2)	V1	V2	V3	V4	V5	TC	TV
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				1					10.75					51	10.75	51
			1					10.75					40.73		10.75	40.73
			1	1				10.75	10.75				40.73	51	21.5	51.48
		1					21.25					194.75			21.25	194.75
		1		1			21.25		10.75			194.75		51	32	245.75
		1	1				21.25	10.75				194.75	40.73		32	235.48
		1	1	1			21.25	10.75	10.75			194.75	40.73	51	42.75	286.48
	1					26.25					168.75				26.25	168.75
	1			1		26.25			10.75		168.75			51	37	219.75
	1		1			26.25		10.75			168.75		40.73		37	209.48
	1		1	1		26.25		10.75	10.75		168.75		40.73	51	46.75	260.48
	1			1		26.25	21.25				168.75	194.75			46.5	363.5
	1	1		1		26.25	21.25		10.75		168.75	194.75		51	58.25	414.5
	1	1	1			26.25	21.25	10.75			168.75	194.75	40.73		58.25	404.23
	1	1	1	1		26.25	21.25	10.75	10.75		168.75	194.75	40.73	51	69	455.23
1					54.5					324.5					54.5	324.5
1				1	54.5				10.75	324.5				51	65.25	357.5
1			1		54.5			10.75		324.5			40.73		65.25	365.23

1			1	1	54.5			10.75	10.75	324.5			40.73	51	76	416.23
1		1			54.5		21.25			324.5		194.75			75.75	519.25
1		1		1	54.5		21.25		10.75	324.5		194.75		51	86.5	570.25
1		1	1		54.5		21.25	10.75		324.5		194.75	40.73		86.5	559.98
1		1	1	1	54.5		21.25	10.75	10.75	324.5		194.75	40.73	51	97.25	610.98
1	1				54.5	26.25				324.5	168.75				80.75	492.25
1	1			1	54.5	26.25			10.75	324.5	168.75			51	91.5	544.25
1	1		1		54.5	26.25		10.75		324.5	168.75		40.73		91.5	533.98
1	1		1	1	54.5	26.25		10.75	10.75	324.5	168.75		40.73	51	102.25	584.98
1	1	1			54.5	26.25	21.25			324.5	168.75				102	688
1	1	1		1	54.5	26.25			10.75	324.5	168.75	194.75		51	112.75	739
1	1	1	1		54.5	26.25	21.25	10.75		324.5	168.75	194.75	40.73		112.75	728.71
1	1	1	1	1	54.5	26.25	21.25	10.75	10.75	324.5	168.75	194.75	40.73	51	123.5	77.73

-the optimal project mix is R&D, P1, and E
- they provide a profit of $570.25M at the cost of $86.5M
- $6.5M leftover after the project selection process

2.3 Conclusion:

- The best project is R&D, P1, E1
- Regarding the leftover $6,5M, I suggest the company saves it and adds it the next fiscal year budget. $6.5M cannot fund another project. It can be distributed to other departments.

D. Check your work:

Based on the information given and under the assumption that I did not make any mathematical error I am certain my suggestions for which project to take on are correct.

E. Learn and generalize:

- In real life companies make decisions similar to this to determine the profitability of their actions. Since the question asked to determine the set of options that would be most profitable. Under the specific budget constraint, its clear that some options have large estimated monetary than others.
- In addition, since combination mixes usually leave a remainder of money to be allocated elsewhere, its very god to manage the money properly to help expand another field or system.

3.1 House of quality (HOQ) for video games consoles

Define the problem:

- Identify the competitors in the video game consoles market in the 1990's and they key game console products associated with each competitor.
    - Use the Function Analysis system Technique(F.A.S.T) to disset one of these competing video game consoles.
- Make a FAST diagram and use it to make a list of the key consumer needs and product specifications for a generic video game console.
- Provide and implement a step-wise process for developing a HOQ for any product, and implement it with the proposed "Exbox" game console.
- Develop a list of target specifications for customer needs, and a list of target technical specifications for the proposed "Exbox" console in the late 1990s.

Plan the Treatment:

- Research and list out the successful and popular video game consoles in the 1990s and choose one to dissect using FAST.

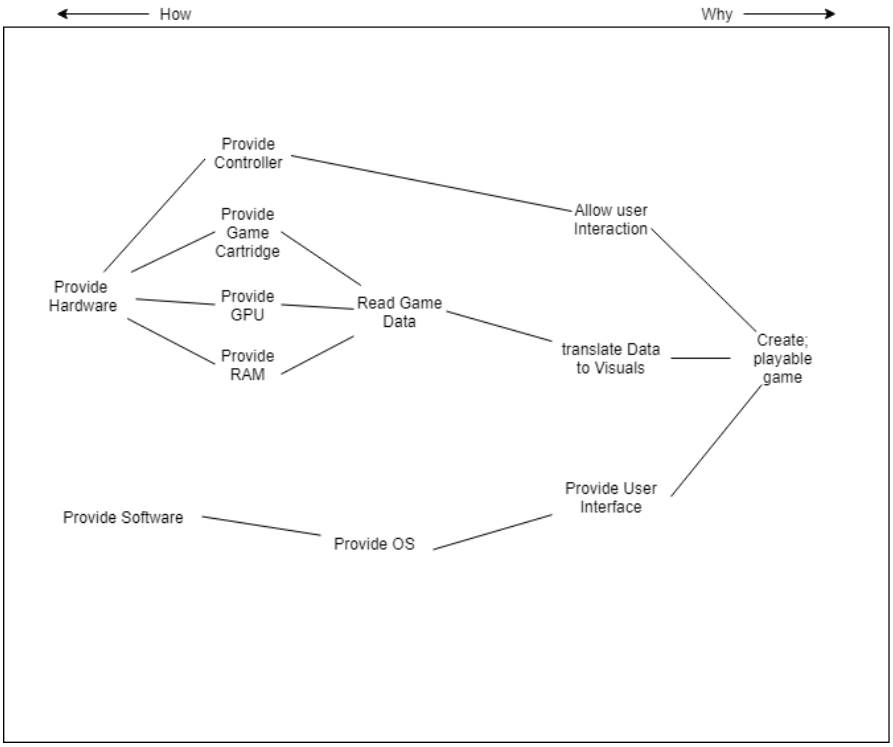
- Create a diagram using the FAST Technique
    - Understand how the product works
    - Identify the primary function of the product
    - "Why" on the right, and "how' on the left
    - Fill in the diagram with sub-systems and functions

- List customer needs
- List out technical metrics
- Assign importance value to metrics
- Correlate the customer needs to the metrics using a convenient scale
- Correlate the technical metrics to each other
- Correlate the customer needs to the metrics
- Benchmarking assess a set of competing products
- Set Targets for customer needs and technical metrics for the new product.

Execute:

- Competing video game consoles in the 1990s:
    - Nintendo - Super Nintendo Entertainment System(1990)
        - Nintendo 64(1996)
    - Sony - PlayStation(1994)
    - Sega - Sega Saturn (1994)
- Dissect one of the above consoles: Nintendo 64
    - Main function:
        - Create and project a playable video game
    - Sub-Functions:
        - A controller is used to interact with the game
        - A game cartridge is needed to load the game
        - Various components required to read the game

Fast Diagram



- List out **Customer needs**:

Customer Needs	Importance
Easy to Use	7/10
Performance	8/10
Video Output	6/10
Game Storage	7/10
Affordable	6/10

- List out **technical metrics**:

Technical Metrics	Importance
CPU Clock speed	7/10
GPU	9/10
RAM speed	9/10
Memory/Storage space	7/10

Operating System	8/10
Weight	5/10

- Correlate the customer needs and metrics using a convenient scale:
  ♔: strong correlation
  ♡: moderate correlation
  –: negative correlation
  : no correlation

Correlation	CPU spd.	GPU spd.	RAM spd.	Storage	OS	Weight
CPU spd	♔	♡	♔	♡	♔	♡
GPU spd.		♔	♔	♡	♡	♡
RAM spd.			♔	♡	♔	♡
Storage					♔	♡
Weight						♔

- Customer needs **Benchmarking**

	Exbox	Nintendo 64	PlayStation	Sega Saturn
Ease of use	4/5	4/5	3/5	4/5
Performance	5/5	5/5	4/5	3/5
Video Quality	4/5	4/5	5/5	5/5
Storage	5/5	4/5	5/5	4/5
Affordable	3/5	5/5	3/5	2/5

- **Technical metrics** benchmarking

	(units of Measurement)	Nintendo 64	PlayStation	Sega Saturn
CPU spd.	(MHZ)	93.75	33.9	28.6
GPU spd.	(Hz)	63.5		
RAM spd.	(Mib)	4	2	16
Weight	(lbs)	2.42	3.2	3.5

Review:

- Above is the data for competing video game consoles of the 1990's
- Seems the most important customer needs are being met
  - Nintendo 64 leads in performance
  - PlayStation is more efficient
  - Sega Saturn is the most convenient but least affordable

- Develop **target specifications** for **customer needs and technical metrics**

	Target Specifications
Easy to Use	9/10
Performance	8/10
Video Quality	9/10
Storage	10/10
Affordable	7/10
CPU spd	50 MHz
GPU spd	60 Hz
RAM speed	9 Mib
Weight	3.19 lbs

Check your work:

Although most information is based of online resources and my own knowledge of the given product, I believe my assumptions are correct and can accurately be used to represent a solution at hand. In addition, the technical metrics should be accurate it may require additional information.

Learn and generalize:

After creating a FAST diagram and a house of Quality Assessment, I understand why it is crucial to do the steps developing a product. Creating the Fast diagram allows to understand the product better. The HOQ allows you to understand the technical criteria's needed as well as target customer specifications. It's clear the companies should focus on technical metrics that have a positive correlation with other metrics.

(Source: howstuffworks.com)