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BUSINESS WORKSHOP – PHASE 2

2 MAR 2019

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SAF MILITARY MEDICINE INSTITUTE

CHAMPS INDUSTRIAL

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PSA The World's Port of Call

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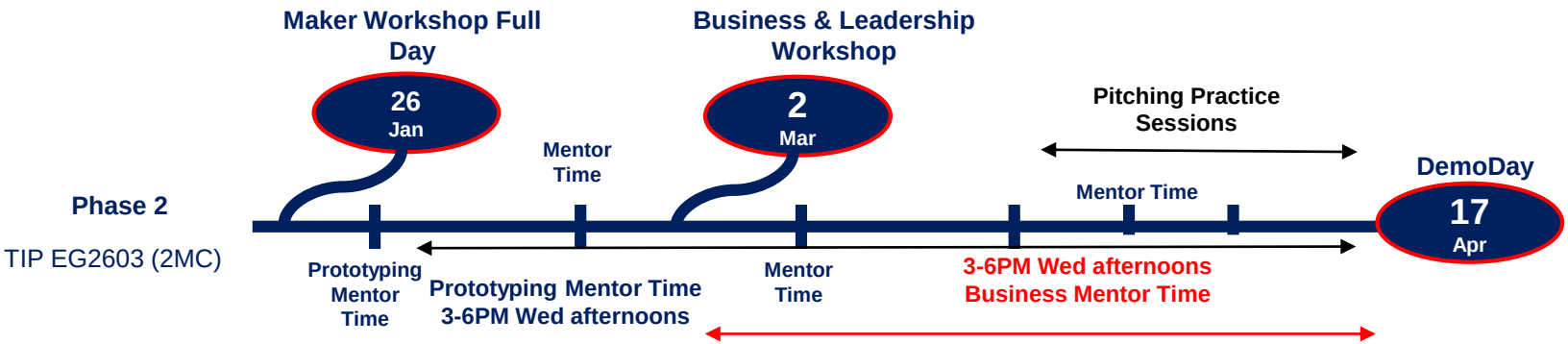
Phase 2: Process



Maker Workshop (Full day):
- Various maker workshops to enhance maker skills

Business & How to Pitch Workshop
- Build on Phase 1 to expand on business models and financing.
- Pitch perfect!

Mentor Time
- Teams meet with Prototyping or Business mentors throughout the process
  - Business - Bi-weekly - Start in March 2
  - Prototyping - Bi-weekly - Start in December

DemoDay:
- Final Pitches to a panel of industry
- Continued support for the promising teams with viable solutions after the competition ends

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Product/Service Value Framework

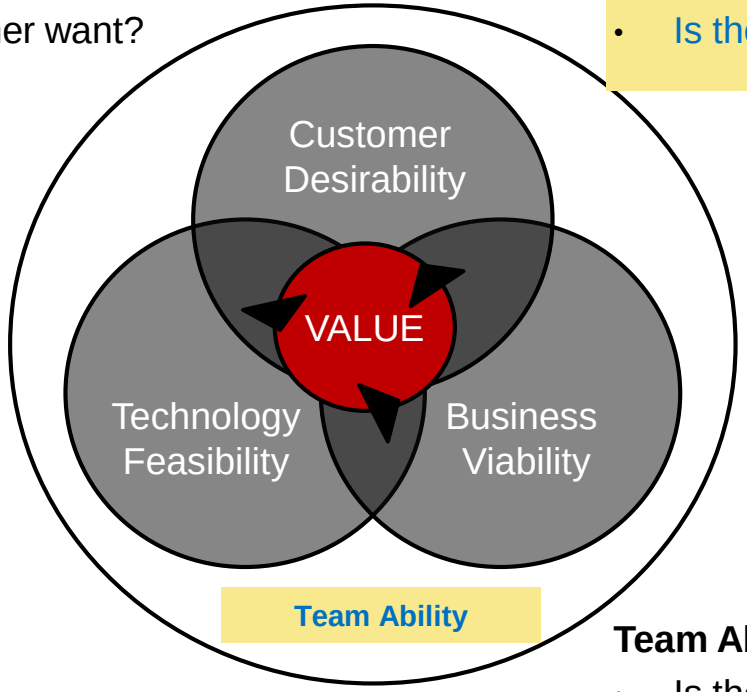
Combined Engineering and Business Perspective

Customer Desirability

- Who is our customer?
- What does our customer want?

Business Viability

- What are the revenue stream(s)?
- Is the business model sustainable?



Technology Feasibility

- Can it be made?
- Is it unique?

Team Ability

- Is there a team?
- Can they execute?

Source: Adapted from IDEO Design Thinking

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Agenda – Business Workshop

Content
Introduction
Pitch on Demo Day April 17 - Deliverables
Business Models - Recap
Tests for Viability – Unit Margin, Market Sizing, **5 Year Plan**
Meet Business Mentors

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DemoDay

- **April 17th (Tuesday)**
- 330-600 PM Pitches
- 6-9 PM (E-Hive & Exhibition)

- Pitch (closed doors to panel and invited guests)
- Poster (at exhibition)
- Demo (at exhibition)

Timings: are approximate will be finalized in the coming weeks.

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E-HIVE – 17 Apr – 6pm - ECubes

NUS' E-HIVE connects innovative and entrepreneurial students, alumni and industry through the exciting possibilities of new ideas & ventures, fulfilling projects, internships in start-ups, and learning through doing. NUS E-HIVE will showcase project presentations from IEL modules, alumni start-ups, and companies sponsoring or supporting projects in IEL's experiential modules.

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Deliverables Demo Day

1. Pitch slides (*ONLY Powerpoint*)
2. Separate PPT doc that includes:
    1. Summary slide of the presentation
    2. 1 fun team picture + teamname and names on the picture

Deadline: Submit into IVLE by **16 April; 4pm**

File naming convention

- **Problem statement – Team**
- "Surbana – Team Winners"

Plus: A Poster for the Exhibition

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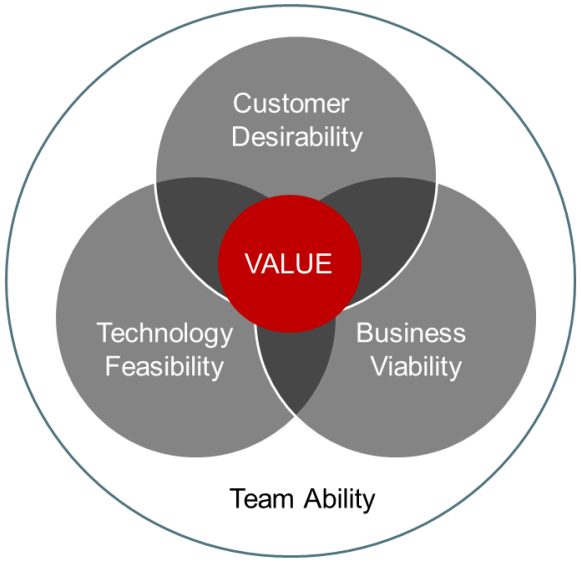
Purpose of **THIS** Pitch?

Gain Trust = Get Support

Customer Desirability
- Found a customer with a need
- Know the customer requirements
- Validation with customers

Technology Feasibility
- A product/service that solves the customer need
- Tech that is unique



Successful Product Framework

Business Viability
- Suitable business model for profitability
- Able to scale

Team
- Necessary skills on board
- Able to deliver the value

Convince the panel that you have an answer for all 4 elements/questions

(Judging Criteria)

Source: Adapted from IDEO Design Thinking

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What you need to Pitch

- A pitch that includes a solution & prototype that is
  - Customer Desirable
  - Technologically Feasible
  - Business Viable and
  - **Validated** with customer feedback
    - More than just the problem statement company

- Prototype demonstration
  - Live or a Video that demonstrates the working of it

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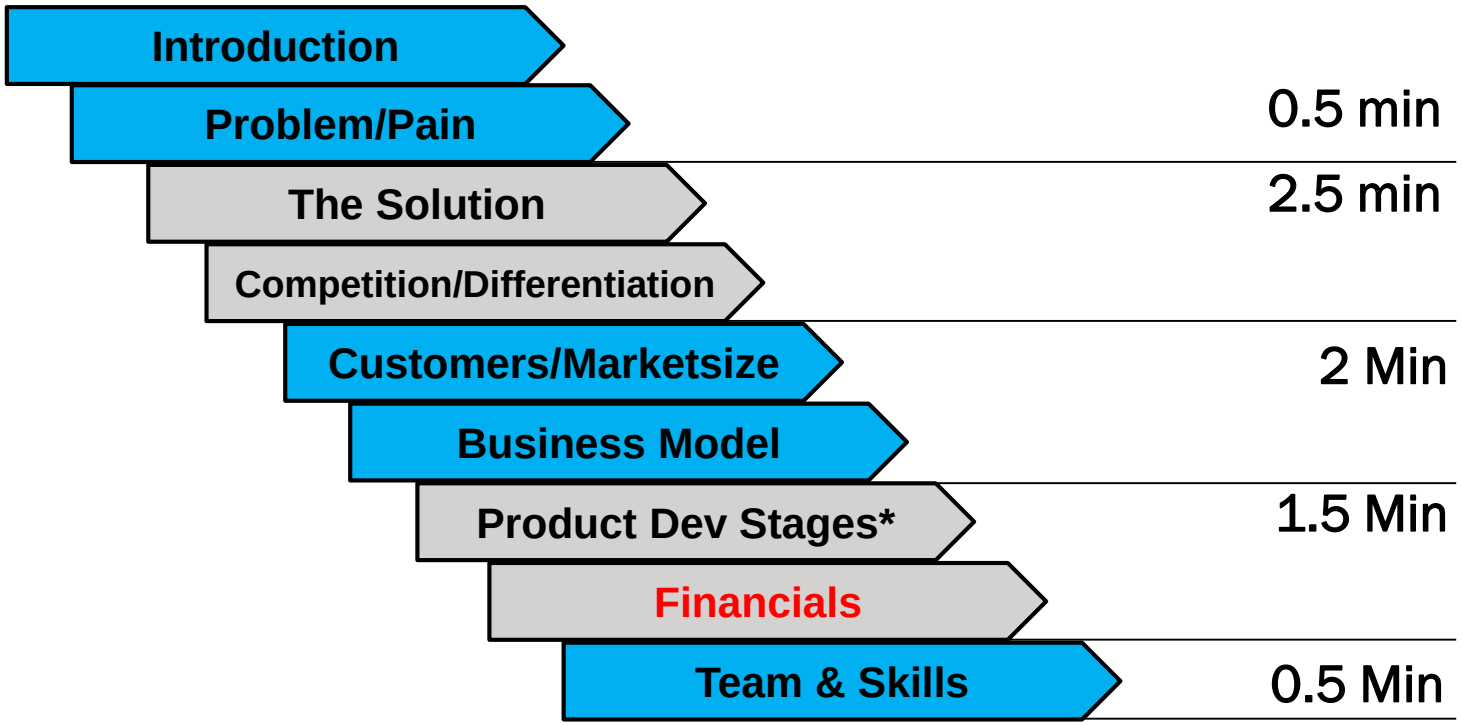
Anatomy of the Pitch (Demo Day)



Provide customer quotes/feedback/comments to back it up.
Show us what you have validated

What's different from IdeaLaunch Pitch:
a) *Product Dev Stages could include 2 to 3 year horizon
b) Financials – is a 5 Year plan

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Financials

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Value to the Customer (Recap)

For a business to thrive it needs to provide value to it's customers

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Economic Value to the Customer

Tech → Product/Service → Value to the Customer

A product/service is only valuable to a customer if it satisfies the “Job-to-be-Done”
The more perceived value, the greater the customer attraction and retainment

Economic Value to the Customer (EVC)

=

Tangible Value the Product/Service Provides

+

Intangible Value the Product/Service Provides

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Value is Relative:

Business to Consumer (B2C)
vs
Business to Business (B2B)

- The value to a Customer in B2C, or a Customer in B2B may be very different

- In B2C the value may remain qualitative
  - "If I get a car, I can pick up my children in half the time compared to on my bike"
    → You're not going to pick up 2x more children
    → You will have **more time** for other activities
    → Difficult to "monetize" the time benefit
  - (You may argue that Time = Money, but that depends on the situation)

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For B2B

(Most) Entities are Driven by Profits

Tangible Value the Product/Service Provides

$

Profits

 Profit =  Revenues -  Costs

"Product X, because of functionality A, allows the doctor to see 3x more patients which will allow him to earn 3x more revenue"

- Translate all your tangible benefits into impact on Profits
- ie. "How does it impact the bottom-line?"

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Business Models

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What is a Business Model?

- Tool that tells you **how** your business is going to make revenues by looking at the COMPLETE business

- Business Model describes all activities to make, promote, sell, deliver and support your *revenue generating* product/service

- Business Model describes the rationale of **how** an organization creates, delivers and captures value"

  Alex Osterwalder, "Business Model Generation"

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All Starts With: Revenue Streams

- Method by which your company earns revenues
- One company (product or service) can have multiple revenue streams as well as add-on revenue streams
- Based on the revenue stream, you can design your business
- Revenue streams/business models can change over time

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Which One Provides the Greatest Revenues?

Types of Business Models (Selection…)

- Sell
- Lease
- Rent out
- Service Model: Delivery
- Service Model: Taxi driver
- Advertisement on car
- Data (gps)
- …

Each business model requires other activities to:

"make, promote, sell, deliver and support your revenue generating product"

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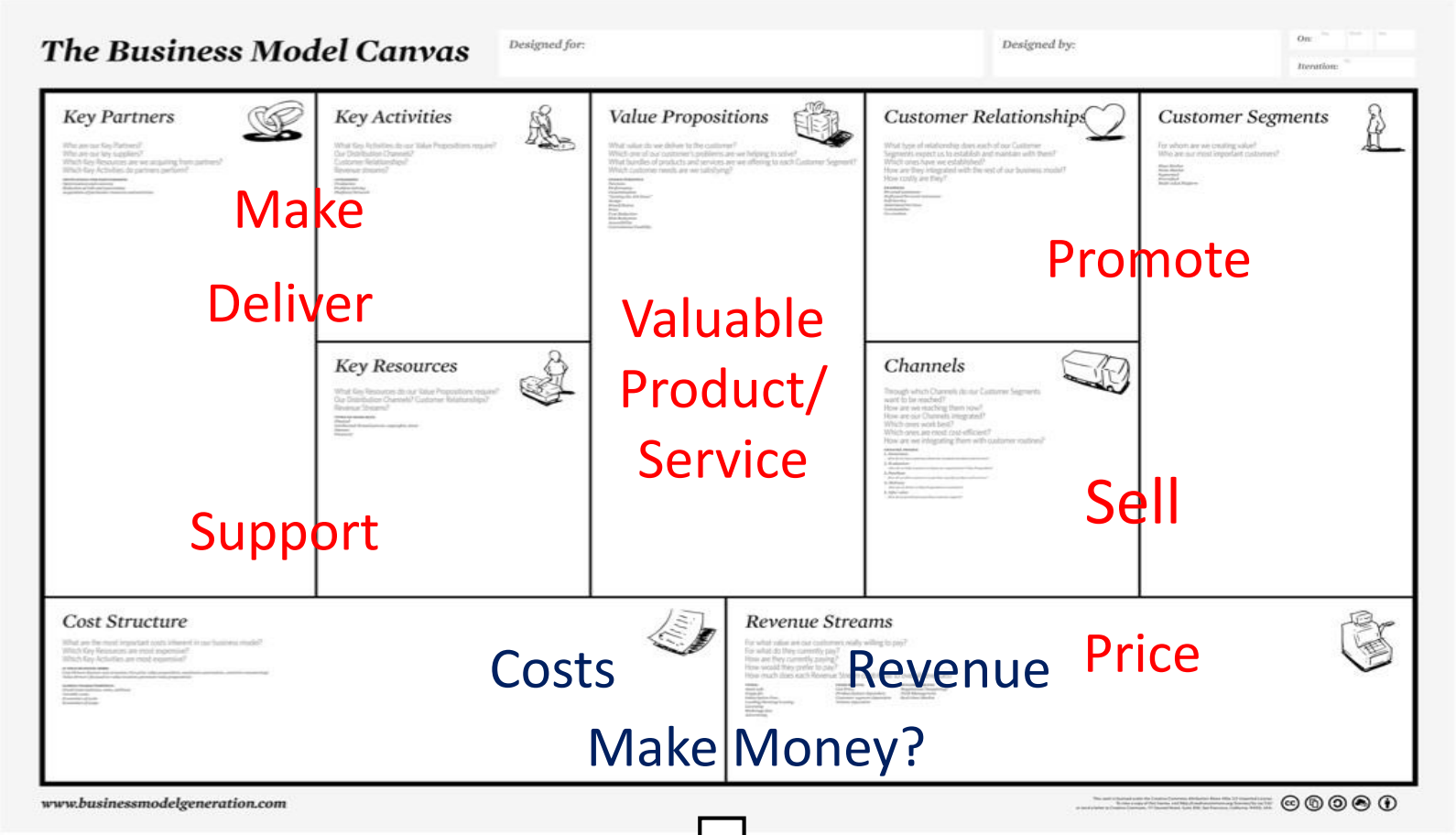
The Business Model Canvas



VIABLE BUSINESS

Qualitative to Quantitative Model

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Business Models Can Change Over Time

Nestlé®

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The Business Model Canvas

Designed for: **Coffee Machines**

Designed by:

On:

Iteration:

Key Partners

Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

- Coffee Machine Factory

Key Activities

- Supply to Resellers
- R&D
- Advertisement
- Sales

Key Resources

What Key Resources do our Value Propositions require?
Our Distribution Channels? Customer Relationships?
Revenue Streams?

- Patent
- Coffee Knowledge

Value Propositions

What value do we deliver to the customer?
Which one of our customer's problems are we helping to solve?
What bundles of products and services are we offering to each Customer Segment?
Which customer needs are we satisfying?

- Coffee Machine

Customer Relationships

- Cut-out coupons
- Retail
- Advertisement

Channels

Through which Channels do our Customer Segments want to be reached?
How are we reaching them now?

- Resellers

Customer Segments

For whom are we creating value?
Who are our most important customers?

- Homeowners
- Small office

Cost Structure

What are the most important costs inherent in our business model?
Which Key Resources are most expensive?

- Rent
- Advertisement
- Manufacturing

Revenue Streams

For what value are our customers really willing to pay?
For what do they currently pay?
How are they currently paying?
How would they prefer to pay?
How much does each Revenue Stream contribute to overall revenues?

- One-time sale of coffee machine

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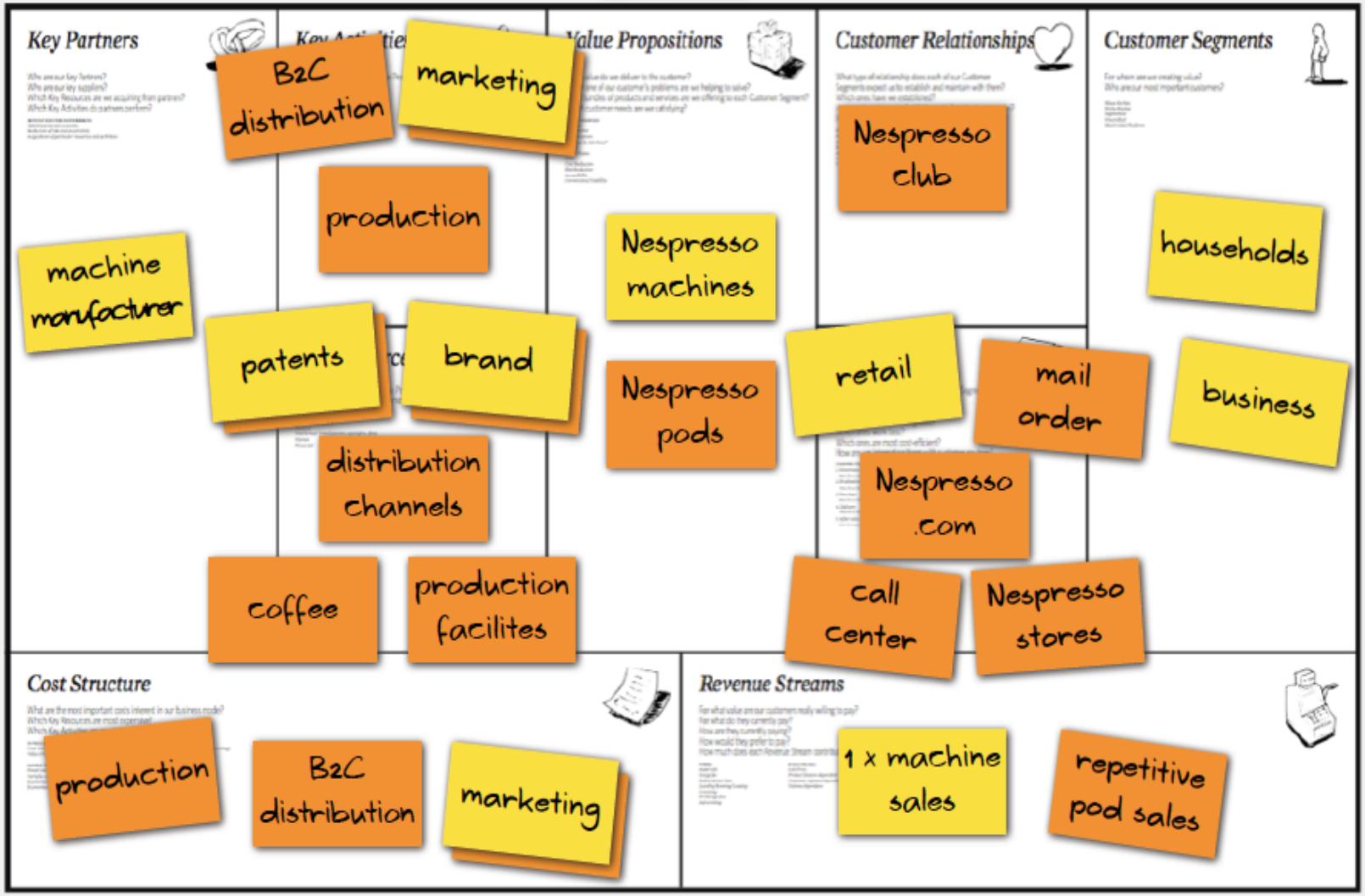
The Business Model Canvas

Designed for:

Designed by:

Date:

Iteration:



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Another Example

Rolls-Royce

Manufacture and sell units

"Power by the Hour"

Greater responsibility for maintenance and repair

"They aren't selling engines, they are selling hot air out the back of an engine"

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How to Find Your Best Business Model

- Step 1: Design a business around the product/service
  - Come up with at least 3-5 revenue streams for your product/service (the more the better)
  - Design the business models (use the canvas) to get a good understanding of all activities
- Step 2: Test for Business Viability (Fin. Model)
  - Test Scalability (Market Sizing)
  - Test Profitability (Unit Margin)
- Step 3: Select the BEST Business Model based on Step 2

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Tests for Business Viability

1. Market Sizing
2. Unit Margin

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Market Sizing

- **Purpose**: Find out how many units you can sell (Quantity)

- Top-Down Approach
  - “”Find it” using
    - Online searches using the right search terms
    - University databases (http://libguides.nus.edu.sg/c.php?g=145559&p=954989)

Market Research

LexisNexis®
FACTIVA

Newspaper Databases

FROST & SULLIVAN
Passport
Gartner

Company Info

osiris

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Bottom-Up Market Sizing Table

Column	A	B	C	D	E
	Who am I selling to? (List categories)	Per category: how many customers?	Price of your product/ service	Market Size Per Customer Category (# of customers * price)	**Total Market Size per Year**
Year 1	Certain age group				
	Certain profession				
	Certain geography				
Year 2					
Year 3					
Year 4					
Year 5					

Talk to customers, competitors, channel partners, manufacturers!!!

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Share of the Market

- Do your own calculation of market share

$$\frac{\text{Bottom Up market size}}{\text{Top Down market size}} = \text{Share of the Market}$$

- Reality check: is it too large (aggressive) or too small (slow?)

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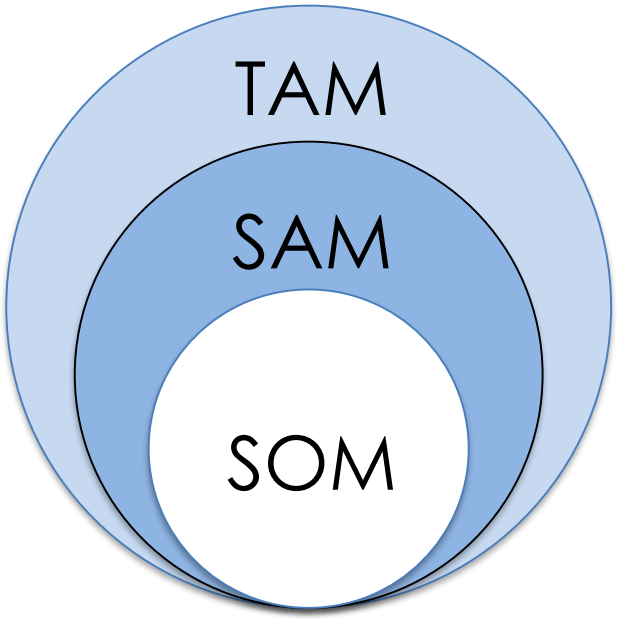
Visualization



Total Available Market
- Total possible demand for your product/service

Serviceable Available Market
- Applicable for your tech
- Based on current business model
- First focus
- Segment of TAM

Serviceable Obtainable Market
- What is the realistic market share you are going for?
- Your realistic goal as part of SAM

Example:
TAM: Total LED Market - 1billion
SAM: LEDs for homes - 500million
SOM: realistic % of LED in homes – 20% = 100 million

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Unit Margin

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Costs

A company has many costs, broadly separated in 2 categories:

Direct Costs

Costs involved in **MAKING** the product

- Manufacturing Costs
  - Incl. labor to make it
- Supplier Costs
- Logistics Costs
- Parts

Indirect Costs

Costs involved to **RUN** your business

- Most business related positions (marketing, sales, finance etc)
- R&D costs
- Sales, discounts, marketing
- Free samples and trial products

Phase 1: we focused on the DIRECT COSTS only

Unit Margin ("Engine of Growth")

Before we start building the company, we should know whether or not we are able to **make money** by simply **selling** the **produced** product (ignoring all business costs)

Price - Direct Costs = Profit or Loss

Example

Price	-	Direct Costs	=	Profit		Unit Margin
10	-	6	=	4		40%

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Formulae

Unit Margin = Unit Price – Unit Direct Cost

(Produce 1 unit)

Unit Margin = $\frac{\text{(Revenue – Direct Costs)}}{\text{Number of Units Sold}}$

(Produce several units)

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Approaches for Pricing

"**Loss Leader" Price**: cheap or free to get business

- "Freemium" is a special version of this**"**

Survival" Price: just covers your costs (Skip!)

"Fair" Price: covers costs, funds growth, builds value

"**Value" price**: based on perceived/real value

- May be higher than "Fair" price
- Based on the benefits that you derive from your solution
- (Relook your benefits analysis!)

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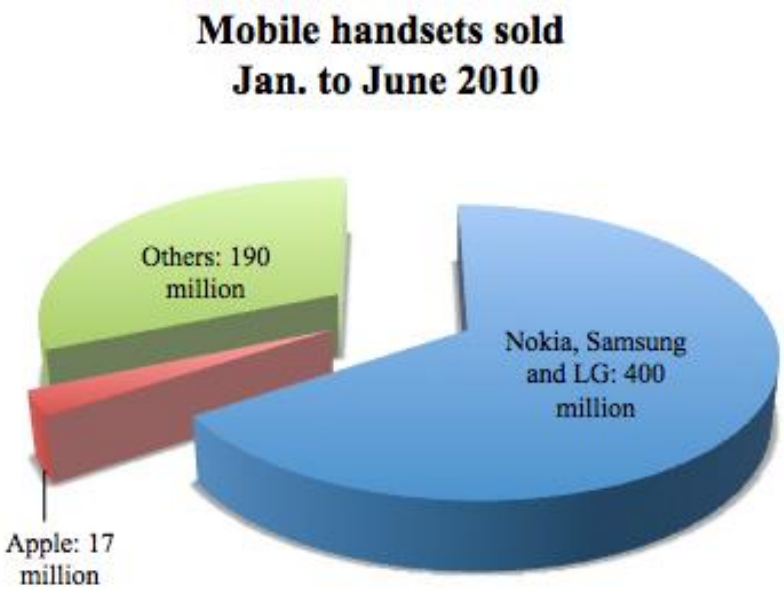
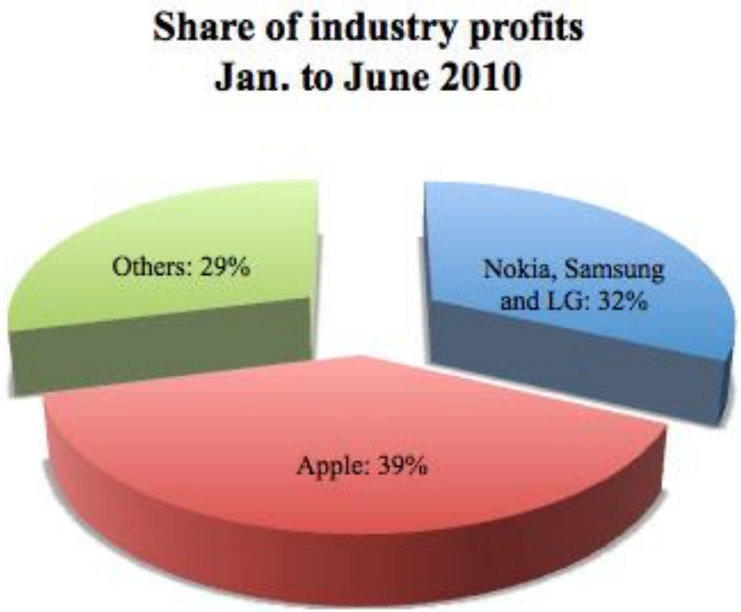
Iphone – "Value Pricing"





Example – Value Pricing

Item: Identical Hatchback (Car)  Vs. 

Car cost	90,000 (equal to competitor price)
Superior durability	7,000
Superior reliability	6,000
Superior service	5,000
Longer warranty	2,000
Superior value	110,000
Discount	-10,000
Final price	100,000

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Example: Unit Margin Calculation

Assumptions		At Ramp	Per Year	
Price per unit		$ 432		
Number of units		1000		
		Per Unit	Total	% of sales
Sales		$ 432	$ 432,000	100%
Cost of Goods Sold (COGS)		$ 240	$ 240,000	56%
Gross Profit	(Unit Margin)	$ 192	$ 192,000	44%
Cost of Good Sold	(Direct Costs)			
Supplies			$ 48,000	
Manufacturing			$ 102,000	
Product Delivery			$ 15,000	
Direct Labor			$ 75,000	
	Total		$ 240,000	
Unit cost			$ 240	

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Working out Unit Margin

Work on your unit margin

Refer back to your business model canvas and your assumptions

Step 1: **Estimate the costs involved in making your product/delivering your service**

- Component costs (all parts together)
- Labor costs
- Do you need to outsource particular activities?
- What do you need to integrate it with?
- What other parts do you need?

Step 2: Figure out the price per unit

- Start by looking at competitor prices
- What extra benefits/value are you providing? How can that be reflected in the price?

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Profitability

(Integrating all the “loose” pieces)

Business Model

- Business Model describes all activities to make, promote, sell, deliver and support your *revenue generating* product or service

Market Size

- Indicates if you have a large enough (scalable) opportunity
- Bottom-up / Top-Down = Marketshare

Unit Margin

- Reflects if you can make revenue based on the production and selling of the product or providing the service alone (Price & Direct Costs are known)

Together, the pieces/parameters will tell us if the business will be profitable

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Questions?

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5 Year Plan

- Add Indirect Costs
- Work out Funding needed

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Costs

A company has many costs, broadly separated in 2 categories:

Direct Costs

Costs involved in **MAKING** the product

- Manufacturing Costs
  - Incl. labor to make it
- Supplier Costs
- Logistics Costs
- Parts

Indirect Costs

Costs involved to **RUN** your business

- Rental of space (office, lab, storage, etc)
- Most business-related positions (marketing, sales, finance etc)
- R&D
- Sales, discounts, marketing
- Free samples and trial products

We previously ignored these costs for the unit margin calculations

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Capital Expenditures

- Your company may require (**large) equipment, property, building** expenditures in the beginning that you will use for a long period of time

- These fall under the Capital Expenditure costing

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5 Year Plan

	Year 1	Year 2	Year 3	Year 4	Year 5
Price per unit	$ 432	$ 432	$ 432	$ 432	$ 432
Number of units	50	200	1,000	10,000	100,000
Sales	$ 21,600	$ 86,400	$ 432,000	$ 4,320,000	$ 43,200,000
Cost of Goods Sold (COGS)	$ 88,150	$ 97,600	$ 240,000	$ 564,500	$ 1,452,000
Gross Profit	$ (66,550)	$ (11,200)	$ 192,000	$ 3,755,500	$ 41,748,000
Unit cost	$ 1,763	$ 488	$ 240	$ 56	$ 15
Selling, General & Admin Expenses					
Marketing	$ 85,000	$ 95,000	$ 110,000	$ 170,000	$ 230,000
Sales	$ 70,000	$ 140,000	$ 210,000	$ 700,000	$ 1,050,000
R&D	$ 230,000	$ 230,000	$ 230,000	$ 470,000	$ 470,000
Overhead	$ 67,000	$ 67,000	$ 67,000	$ 97,000	$ 122,000
Total SG&A	$ 452,000	$ 532,000	$ 617,000	$ 1,437,000	$ 1,872,000
Earnings (EBITDA)	$ (518,550)	$ (543,200)	$ (425,000)	$ 2,318,500	$ 39,876,000
Capital expenditures	$ 300,000	$ 200,000	$ -	$ 500,000	$ -
Annual Funding Required	$ 818,550	$ 743,200	$ 425,000	$ -	$ -
Total Funding Required	$ 1,986,750				

✓ Pricing

✓ 5 year market sizing

✓ **Direct costs** from the Unit Margin calculations

➡ **Indirect Costs** to be added

➡ “Profitability”

➡ Capital expenditures

➡ What you will ask from investors/company to start

- Much like the Business model Canvas, the 5 year plan is a model based on assumptions for you to validate
- All the individual components are knobs which you can alter to find out which combination works best for your company

Note on Indirect Costs

- Initial years: it is common to spend more than revenue
  - One way of looking at it : It's an investment to learn the mechanics of the market i.e How it works? How would the value be charged and paid for? What else does the market need? …
  - R&D expenditure as % of revenue would be higher if the Product is evolving and being developed for future revenues. Product Development Stages.

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Estimating Indirect Costs

- If your business model is similar to a public listed company in a similar industry:
  - Look at their public financial reports to get an estimate of how much they spend in Marketing, R&D etc as a percentage of Revenue to get a gauge
  - It is only a gauge, you'll need then tweak it for your circumstances
    - E.g: you may spend more/less in the intial years depending on the stage of the company.

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What does a 5 year plan demonstrate

- Profitability
  - Able to make money
- Scalability
  - Can reach an audience and serve them
  - Business model fits the purpose

	Year 1	Year 2	Year 3	Year 4	Year 5
Price per unit	$ 432	$ 432	$ 432	$ 432	$ 432
Number of units	50	200	1,000	10,000	100,000
Sales	$ 21,600	$ 86,400	$ 432,000	$ 4,320,000	$ 43,200,000
Cost of Goods Sold (COGS)	$ 88,150	$ 97,600	$ 240,000	$ 564,500	$ 1,452,000
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Annual Funding Required	$ 818,550	$ 743,200	$ 425,000	$ -	$ -
Total Funding Required	$ 1,986,750				

- It is also a roadmap with sign posts to check against and to course correct if needed. “Better to have a plan then none at all.”

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Demo Day Pitch: Financials slide

- Over a 5 year period, be able to indicate how you will earn revenues & profits. **Display in a graph**

- Highlight:
  - ❑ Revenues
  - ❑ Units sold
  - ❑ Unit Margin at Ramp

- List your assumptions clearly
- **Do NOT present your spreadsheet.**

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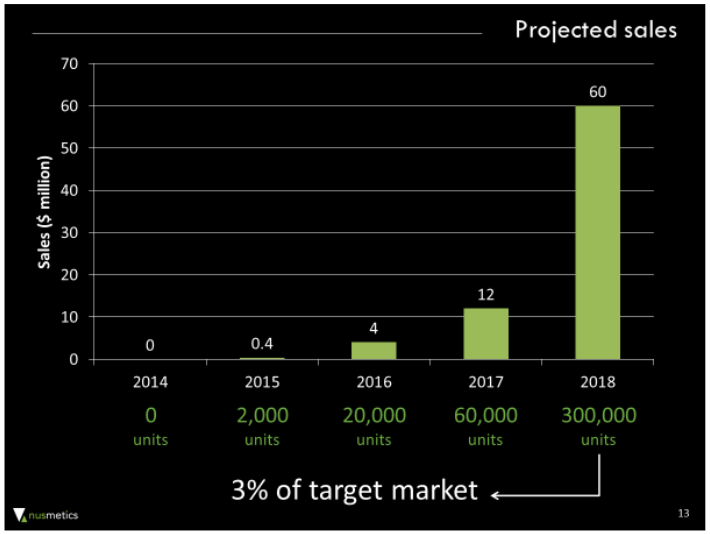
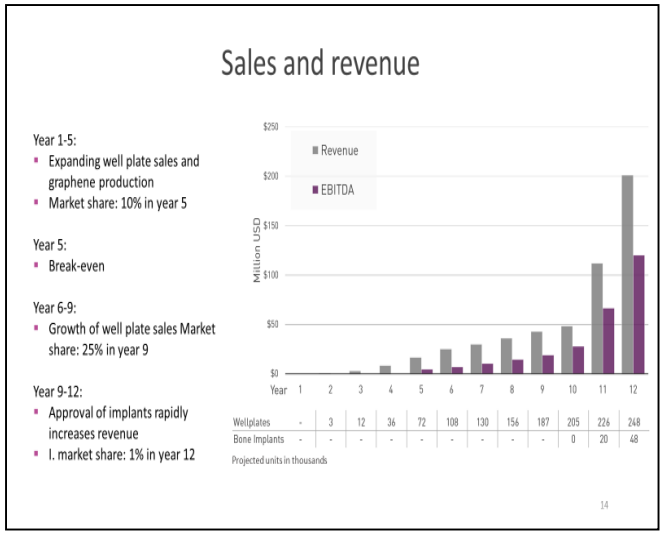
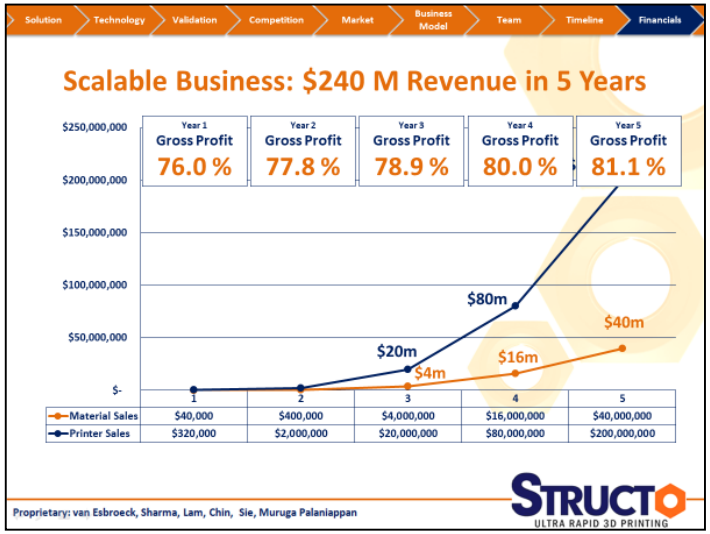
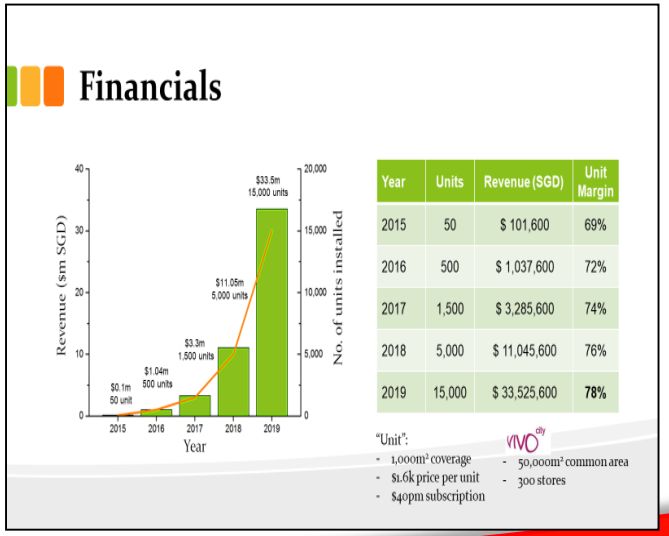
Example: Financials









Tips:

This is your quantitative model as a visual

Only highlight important elements in pitch

Must reflect business model

List major assumptions

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Financing

- Indicate
  - ❑ How much you are looking to raise
  - ❑ What the raised funds will be used for in the time period specified

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Exercise 1

Work on your 5 year plan

- Fill in Price
- Fill in Units sold per year (based on your market sizing)
- Fill in Direct costs (based on Unit Margin calculations)
- Fill in Indirect costs
- Fill in Capital expenditures

	Year 1	Year 2	Year 3	Year 4	Year 5
Price per unit	$ 432	$ 432	$ 432	$ 432	$ 432
Number of units	50	200	1,000	10,000	100,000
Sales	$ 21,600	$ 86,400	$ 432,000	$ 4,320,000	$ 43,200,000
Cost of Goods Sold (COGS)	$ 88,150	$ 97,600	$ 240,000	$ 564,500	$ 1,452,000
Gross Profit	$ (66,550)	$ (11,200)	$ 192,000	$ 3,755,500	$ 41,748,000
Unit cost	$ 1,763	$ 488	$ 240	$ 56	$ 15
Selling, General & Admin Expenses					
Marketing	$ 85,000	$ 95,000	$ 110,000	$ 170,000	$ 230,000
Sales	$ 70,000	$ 140,000	$ 210,000	$ 700,000	$ 1,050,000
R&D	$ 230,000	$ 230,000	$ 230,000	$ 470,000	$ 470,000
Overhead	$ 67,000	$ 67,000	$ 67,000	$ 97,000	$ 122,000
Total SG&A	$ 452,000	$ 532,000	$ 617,000	$ 1,437,000	$ 1,872,000
Earnings (EBITDA)	$ (518,550)	$ (543,200)	$ (425,000)	$ 2,318,500	$ 39,876,000
Capital expenditures	$ 300,000	$ 200,000	$ -	$ 500,000	$ -
Annual Funding Required	$ 818,550	$ 743,200	$ 425,000	$ -	$ -
Total Funding Required	$ 1,986,750				

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Questions?

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- This is a chance to meet them to review your business plans as they stand today
- Setup next and subsequent meetings.
- Suggestion is the next meeting have an outline of your pitch ready as well.

Mentor/Programme Lead

Adjunct Associate Professor Vinod Vasnani

Vinod has over 20 years of experience as an entrepreneur and an intrapreneur having started his career at Emerson Process Management in R&D. Subsequently, he was involved in Product Management where he was involved in R&D and the roll out of its market leading DeltaV control systems in Asia Pacific. In late 1999, he joined Accellion soon after it was founded. There he built and worked with a diverse team of engineers to deliver market leading secure distributed file transfer used by thousands of enterprises today. Vinod is currently a co-founder of Qryptal which is focused on developing a platform for document security and integrity.

At NUS he works and coaches teams through IEL initiatives: InnoVenture, TechLaunch and Enterprise Development. He has a keen interest in Innovation, Leadership and Technology. He is interested in what drives the learning to increase human capability and performance in teams and organizations.

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Business Mentor

Professor Hang Chang Chieh

Following a stint in Shell, he entered the NUS Faculty of Engineering as an academic and was subsequently appointed as Vice-Dean, Head of Electrical Engg, and NUS's Deputy Vice-Chancellor (research). In parallel, he became the founding Deputy Chairman of the National Science and Technology Board (NSTB) from 1991-2000. During 2001 to 2003, Prof Hang was seconded to NSTB (renamed A*STAR) as its Executive Deputy Chairman. He pioneered the establishment of the Grow Enterprise with Technology Upgrade Programme to transfer know-how and manpower from A*STAR research institutions to small-and-medium enterprises. His own area of expertise is in digital control systems. In addition to serving on the Boards of several local enterprises, he has recently co-founded EMF Innovation in Singapore and India to develop and commercialize disruptive, frugal digital motors for transportation and other industrial applications.

Business Mentor

Adjunct Professor Lim Soon Hock

Prof Lim has more than 30 years of experience as a board member, CEO, technopreneur and private investor, across various highly competitive industries in a global environment. He is best known as the former Vice President and Managing Director of Compaq Computer Asia Pacific, for taking the company to US$1 billion from under US$30m – in just seven short years. Mr Lim is currently the Founder and Managing Director of PLAN-B ICAG Pte Ltd, a boutique corporate advisory firm, which he set up in 1996. He has been a member of the panel of judges for various business plan's competitions, for example Start-Up Singapore, Singapore Prestige Brand Award, SMU's Master of Innovation Programme's Final Capstone Presentations, SiTF Awards 2016 and Raffles Business Symposium, to name a few. Mr Lim is also on the mentorship panels of the Singapore Business Federation and DBS Business Class and SMU's Final Capstone Project Presentations.

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Business Mentor

Dr Soon Hwee Ping

Innovative scientist, who has gained 7.5 years experiences in industrial research. With a unique combination of scientific and business approaches, she has successfully attracted funding from business and government sectors to drive her research ideas in lab to several marketable products in air pollution sensing and purification technologies for homes and automotive. Having understood the importance of both technical and business competencies in future fast-changing work environment, she is also enthusiastic in contributing to the new university curriculums that prepare students for the great challenges in a VUCA world.

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Business Mentor

Tan Kim Seng has over 30 years of experience in fund management, banking, entrepreneurship, engineering and training. He is the CEO and co-founder of 3V SourceOne Capital, a regional growth equity firm. He is currently an Adjunct Associate Professor at the NUS Department of Industrial Systems and Engineering Department. He previously served as the Honorary Treasurer and chaired the Industry Development and Valuation Committees of the Singapore Venture Capital and Private Equity Association. Singapore.

He was an Executive Director of UOB Venture Management responsible for direct investments in China, USA and ASEAN. His portfolio included IT, biomedical, cleantech, F&B, consumer goods and real estate companies. He has 5 years of experience in engineering, automation and new product introduction with Texas Instruments and Northern Telecom. Kim Seng is a member of the Investment panel of Enterprise Singapore SEEDS Capital and also the Nanyang Technological University's Strategic Research Innovation Fund. He holds a M.Sc. (Industrial Eng.) and a B.Eng. (EE) (Hons) degree from the National University of Singapore. He is an alumnus of the US Venture Capital Institute and Institute of Banking & Finance.