



# 15.390 New Enterprises

Class Eighteen

April 20, 2011

Bill Aulet

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# 15.390

## Financials

or

*What do I need to know to make a  
great financial section of a  
business plan?*



# Why Do a Financial Plan?

- “The numbers are meaningless”
- “It will all change anyway”
- “They all look the same”
- “The investors are just going to basically ignore it and redo it so what is the point?”



# Financials are Holy Grail of B-Plan

- Demonstrates “proof” that the B-plan will make \$\$\$\$ - puts numbers to your business model theory
- Makes your B-plan come alive for the you and the investor – translates to a financial story
- Demonstrates YOU know your milestones, YOU know your market, and YOU know how to make \$\$\$\$\$\$





# B-Plan Financials – Nuts & Bolts

- The financials determine whether your business plan is viable
- Key components
  - ▶ Income Statement (Profit & Loss)
  - ▶ Cashflow
  - ▶ Balance Sheet
  - ▶ Assumptions Summary
  - ▶ Sensitivity Analysis – high, medium, low probability of key assumptions
  - ▶ Selective market metrics – average revenue per customer, inventory turn, etc.



# B-Plan Financials – Nuts & Bolts

- In the written plan, discuss business model, not just \$\$ - try to get reader to relate to the business by associating with everyday reference points
  - ▶ When and how much do you get paid?
  - ▶ What is the Avg rev per customer and average cost to acquire a customer?
  - ▶ What is your cost structure? Fixed or variable?
  - ▶ Is bus model well established or ground breaking?
  - ▶ Cash burn, time to breakeven, cash needed for breakeven



# Financials Should Reflect Milestones

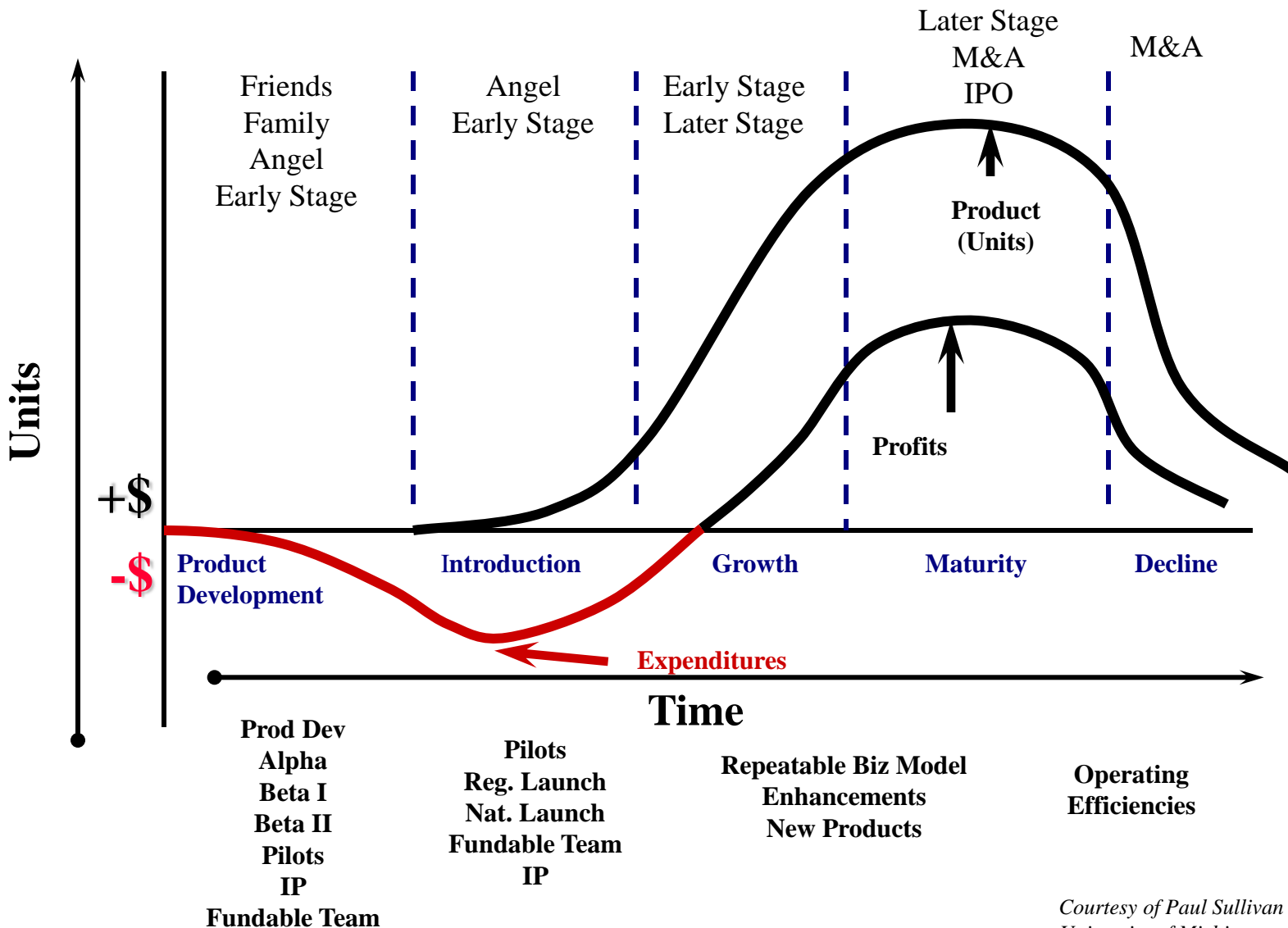
- Align financing needs with milestones – raise enough capital to get you beyond each milestone
- Show what you need to raise to meet each milestone, what it will be used for and how far will it take you





# Financing Milestones

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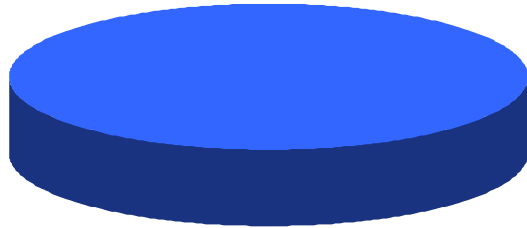


# Financials Must Relate to Market Assumptions

- Sales Growth should track with Addressable Market
- Market share should make sense with competitors' share
- Pricing should be relevant to market
- Costs should compare with market
- Economics should be compelling

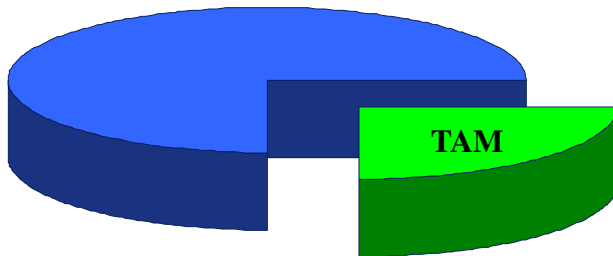


# Addressable Market Review



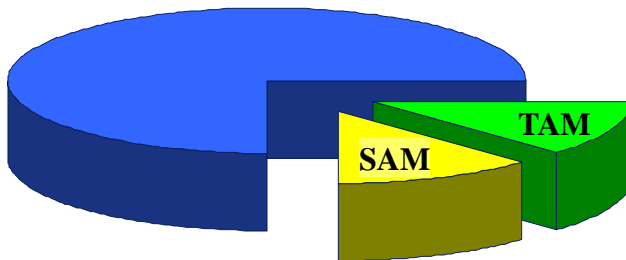
## Total Market

The full set of opportunities that might be satisfied by our products or services



## Total Addressable Market (TAM)

The subset of the total market whose needs are now satisfied by products/services offered by us and direct and indirect competitors. Applications where we have the ability and desire to serve, but are not currently serving, should be included in TAM



## Served Addressable Market (SAM)

The subset of TAM that we and/or our direct competitors actually serve, or present industry sales to this segment

## Market Share

Your share of the market



# How to build a financial model

1. Get the top line model built
  - A. Assumptions Clear
  - B. Flexible
  - C. Show ties to milestones
2. Build up your COGS
3. Build up your costs in general
4. Build a P&L Statement (a/k/a Profit & Loss, Income)
5. Cash Flow is what matters
6. Graphical summary
7. Sensitivity
8. Make all major assumptions clear



# Explain the Top Line

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>Total Rev</b>	<b>\$410K</b>	<b>\$4.35M</b>	<b>\$9.2M</b>	<b>\$23M</b>	<b>\$54M</b>	<b>\$90M</b>	<b>\$250M</b>
<b>Units</b>	40	305	610	1,500	4,500	9,000	35,000
<b>Average Price</b>	\$10K	\$12.5K	\$12.5K	\$12.5K	\$10K	\$8K	\$6K
<b>Rec Rev Stream</b>	\$10K	\$534K	\$1.6M	\$4.2M	\$9.3M	\$17.5M	\$40.5M
<b>Gross Margin</b>	70%	78%	79%	80%	75%	69%	58%
<b>Net Cash Flow</b>	-\$2.8M	-\$3.7M	-\$3.7M	+\$3.5M	+\$13.7M	+\$20.1M	+\$73M
<b>Product Plan</b>	Version 1	Ver 2 & 3	Ver 4 & 5	Ver 6 & 7	Ver 8 & Lite	Ver 9 & Lite 2	Ver 10 & Lite 3



# Income Statement Assumptions

- Revenue = Units x Price
  - ▶ What is your sales unit (device, subscription, royalty, etc)
  - ▶ How are you determining price
- Cost of Revenue = Units x Cost to Produce
  - ▶ How much does it cost to produce a sales unit
    - Materials, Labor or both
- Operating Expenses
  - ▶ Salaries, Commissions & Benefits
  - ▶ Rent & Utilities
  - ▶ Marketing, Tradeshow, Advertising
  - ▶ Insurance
  - ▶ Travel & Entertainment
  - ▶ Research & Development
  - ▶ Recruiting
  - ▶ Shipping
  - ▶ Repairs & Maintenance
  - ▶ Fees
  - ▶ Office Expense
  - ▶ Website



# Cost of Goods Sold

- What is your cost of goods sold?
  - ▶ Only costs directly associated with producing your product or service
    - BOM - Bill of Material
    - Direct Labor
    - Other Direct Costs
  - ▶ Not fixed costs – Insurance, telephone, etc.
  - ▶ Not marketing costs



# Cash is King

- Cash (not Accounting) P&L is what matters
- Track and Project Monthly < 2 years
- Project Quarterly > 2 years



# Cash Flow Statement

**TABLE 17.5 Cash flow statement.**

<b>Year 1</b>													
Month	1	2	3	4	5	6	7	8	9	10	11	12	Year total
<i>Operating activities</i>													
Net profit (loss)	(\$12,897)	(\$12,897)	(\$1,935)	(\$839)	\$366	\$1,690	\$3,152	\$4,761	\$6,523	\$8,469	\$10,607	\$12,954	\$19,954
Add: Depreciation	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	12,000
Add: Increase in royalties payable			2,160	216	238	261	288	316	348	383	421	463	5,094
Cash flow from operations	(11,897)	(11,897)	1,225	377	1,604	2,951	4,440	6,077	7,871	9,852	12,028	14,417	37,048
<i>Investing activities</i>													
Purchase of long-term assets	(48,000)												(48,000)
<i>Financing activities</i>													
Bank loan	100,000												100,000
Owners' cash contributions	140,000												140,000
Increase (decrease) in cash	180,103	(11,897)	1,225	377	1,604	2,951	4,440	6,077	7,871	9,852	12,028	14,417	229,048
Beginning cash balance	0	180,103	168,206	169,431	169,808	171,412	174,363	178,803	184,880	192,751	202,603	214,631	0
Ending cash balance	\$180,103	\$168,206	\$169,431	\$169,808	\$171,412	\$174,363	\$178,803	\$184,880	\$192,751	\$202,603	\$214,631	\$229,048	\$229,048
<b>Year 2</b>													
Month	1	2	3	4	5	6	7	8	9	10	11	12	Year total
<i>Operating activities</i>													
Net profit	\$10,570	\$13,411	\$16,535	\$19,979	\$23,760	\$27,926	\$32,503	\$37,536	\$43,081	\$49,174	\$55,880	\$63,251	\$393,606
Add: Depreciation	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	24,000
Add: Increase in royalties payable	509	560	616	678	746	820	902	992	1,093	1,200	1,321	1,453	10,890
Cash flow from operations	13,079	15,971	19,151	22,657	26,506	30,746	35,405	40,528	46,174	52,374	59,201	66,704	428,496
<i>Investing activities</i>													
Purchase of long-term assets	(48,000)												(48,000)
Increase (decrease) in cash	(34,921)	15,971	19,151	22,657	26,506	30,746	35,405	40,528	46,174	52,374	59,201	66,704	380,496
Beginning cash balance	229,048	194,127	210,098	229,249	251,906	278,412	309,158	344,563	385,091	431,265	483,639	542,840	229,048
Ending cash balance	\$194,127	\$210,098	\$229,249	\$251,906	\$278,412	\$309,158	\$344,563	\$385,091	\$431,265	\$483,639	\$542,840	\$609,544	\$609,544





# Key Info for Financial Summary

- Cash in Bank
- Monthly Burn Rate
- Top Line Growth
- Gross Margin and Operation Margin %'s
- As a % of Sales: M&S, R&D, G&A
- Bookings
- Headcount



# Breakeven Analysis

- “Breakeven is defined when total sales equal the total costs”
- Is that what really matters?
- Cash flow breakeven is what really matters!



# Sensitivity Analysis

- Probable
- Worst Case
- Best Case
- Don't necessarily have to show this but have them ready and do them for your own sanity

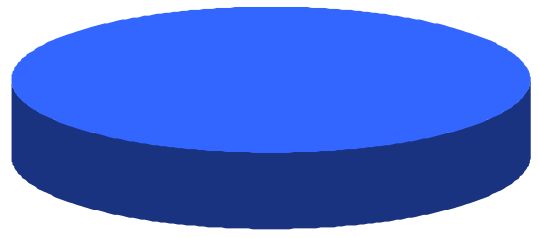


# GO Wheels Case Study

- Elevator Pitch
  - ▶ Go Wheels has developed solar powered tires that can increase your HIGHWAY MPG to up to 100 MPG
- Key Considerations
  - ▶ Will only improve HIGHWAY MPG
  - ▶ Solar powered, so best success in sunny climates
  - ▶ Retail price at \$1,600 for a set of 4 tires, cost per tire is \$400
  - ▶ Wholesale price to tire distributor is \$300 per tire
  - ▶ All 4 tires must be replaced every 2 years, regardless of mileage driven
  - ▶ All production and shipping outsourced to China for flat fee per unit
- Milestones
  - ▶ Regional launch Jan 2011
  - ▶ National launch Jan 2012

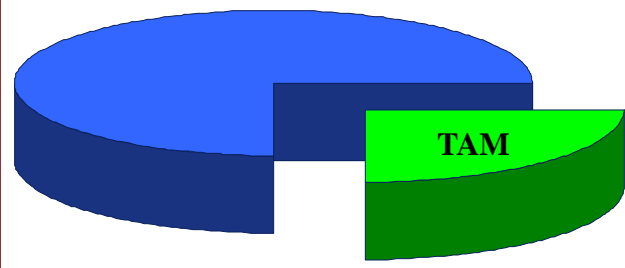


# GO Wheels Market Review



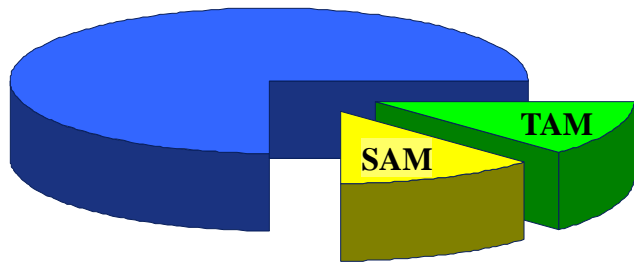
## Total Market

All vehicles that drive on highways worldwide



## Total Addressable Market (TAM)

Total vehicles that drive on highways 50 degrees north and south of the equator



## Served Addressable Market (SAM)

Total vehicles that drive more than 15,000 miles per year on US highways

## Market Share

GO Wheels market share by 2015 = 10%





# Go Wheels Customer Payback

replace regular tires every 40,000-45,000 miles			
regular cars means replace every 3 years			
		<b>Regular</b>	<b>Go Wheels</b>
cost of set of 4 tires	\$ 400	\$ 1,600	
avg years of car ownership	7	7	
tires bought during car lifetime	8	12	
<b>total tire cost</b>	<b>\$ 800</b>	<b>\$ 4,800</b>	<b>\$ (4,000)</b>
		<b>Regular</b>	<b>Go Wheels</b>
avg miles per gallon highway	30	100	
avg miles per gallon city	20	20	
avg miles driven per year	20,000	20,000	
avg miles driver city per year	5,000	5,000	
avg miles driven highway per year	15,000	15,000	
avg gallons bought per year	750.00	400.00	
avg price per gallon	\$ 3.00	\$ 3.00	
avg cost of gas per year	\$ 2,250	\$ 1,200	
<b>total gas purchase during ownership</b>	<b>\$ 15,750</b>	<b>\$ 8,400</b>	<b>\$ 7,350</b>
<b>Net Savings from GO Wheels</b>			<b>\$ 3,350</b>

- Compelling Purchase for Target Market
  - ▶ Even at higher tire price, saves owners \$3,000 in gasoline over the life of their car





# Go Wheels Assumptions

15.390 New Enterprises, Aulet/Anderson

	2010	2011	2012	2013	2014	2015
Addressable Vehicles		20,000,000	20,000,000	20,000,000	20,000,000	20,000,000
Penetration Rate		0.0060%	0.0120%	0.0240%	0.6000%	10.0000%
Vehicles with GO Wheels		1,200	2,400	4,800	120,000	2,000,000
Units Sold		4,800	9,600	19,200	480,000	8,000,000
Price per Unit		\$ 300	\$ 300	\$ 400	\$ 400	\$ 400
Cost per Unit		\$ 250	\$ 250	\$ 200	\$ 200	\$ 150
Headcount						
R&D		4	10	12	24	24
S&M		9	18	29	49	59
G&A		3	8	11	23	23
Total		16	36	52	96	106
Tires per Sales Person		533	533	662	9,796	135,593
Sales Cost Per Tire		\$ 603	\$ 301	\$ 222	\$ 19	\$ 16
Breakeven Tires		~19,200				



# Go Wheels Summary Financials

15.390 New Enterprises, Aulet/Anderson

	2010	2011	2012	2013	2014	2015
<b>\$ in '000</b>						
Revenue	\$ -	\$ 1,440	\$ 2,880	\$ 7,680	\$ 192,000	\$ 3,200,000
Gross Margin	\$ -	\$ 240	\$ 480	\$ 3,840	\$ 96,000	\$ 2,000,000
GM%		17%	17%	50%	50%	63%
R&D		\$ 548	\$ 993	\$ 572	\$ 690	\$ 690
Sales & Marketing		\$ 2,893	\$ 4,258	\$ 1,586	\$ 8,989	\$ 126,409
G&A		\$ 892	\$ 1,571	\$ 1,528	\$ 2,998	\$ 2,829
Total Opex		\$ 4,332	\$ 6,822	\$ 3,685	\$ 12,678	\$ 129,928
Operating Income	\$ (1,200)	\$ (4,092)	\$ (6,342)	\$ 155	\$ 83,322	\$ 1,870,072
Operating Margin %		NA	NA	2%	43%	58%
Net Income	\$ (1,200)	\$ (4,096)	\$ (6,346)	\$ 151	\$ 54,107	\$ 1,122,041
Investment Needed		\$ 5,000	\$ 8,000	\$ -	\$ -	\$ -
Cash EOP	\$ 40	\$ 1,072	\$ 2,452	\$ 2,699	\$ 52,556	\$ 1,049,359
Total Assets	\$ 60	\$ 1,168	\$ 2,624	\$ 3,134	\$ 63,226	\$ 1,227,136





# Go Wheels Case Study

- What are the sensitivities?
  - ▶ Vehicle penetration rate
  - ▶ Price per unit
  - ▶ Cost per unit
    - Single source foreign vendor
  - ▶ Sales and operating efficiencies
- What would you add/change?
  - ▶ Graphical presentation of numbers
  - ▶ Use of Funds Chart
  - ▶ Hockey stick sales growth
  - ▶ What else?



# B-Plan Financials - Red Flags

- 🚩 Financial model doesn't support B-Plan assertions
  - 🚩 Revenue & Cost Models Lack Detail
  - 🚩 Contradicts total servable market assumptions
  - 🚩 Time to profitability unrealistic
  - 🚩 Assumptions, Gross & Operating Margins in outer years not in line with industry standards
  - 🚩 Growth is hockey stick on steroids
    - 🚩 Not based on industry trends but on gut instinct
    - 🚩 Growth does not support follow on rounds
  - 🚩 Seasonality not reflected
  - 🚩 Financial Metrics Not Relevant



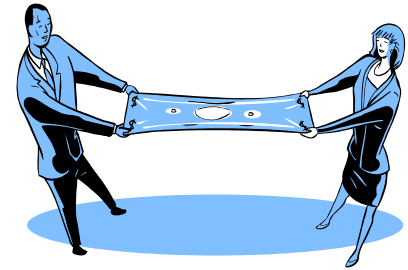
# B-Plan Financials - Red Flags

- 🚩 Financial statements don't link
  - 🚩 i.e. Balance Sheet doesn't balance or tie to cashflow
- 🚩 Salaries are out of line
- 🚩 Capital expenditures understated
- 🚩 Payables, Receivables and Inventory turnover stats unrealistic
- 🚩 Financing needs not linked to milestones
- 🚩 Valuation is primary focus of financial discussion
- 🚩 Presenting "old" versions of models
- 🚩 Presenting overly conservative numbers



# Valuation Dance

- Entrepreneur concerns
  - ▶ Loss of control of the company
  - ▶ Future capital needs and Dilution
  - ▶ Stock forfeiture if terminated
  - ▶ Adequacy of financing
  - ▶ Investors you can deal with
- Investor concerns
  - ▶ Accuracy of valuation
  - ▶ Ability to achieve liquidity/exit
  - ▶ Level of risk
  - ▶ Ability to participate in later rounds
  - ▶ Control over management and strategic direction





# Ownership Discussion/Section for Class Project

- This is not a legal document but rather an academic exercise
- We want you to go through the exercise even if you make up the numbers to start
- Learn how dilution happens and ownership gets split up
- Remember, this is just an learning exercise and is in no way binding

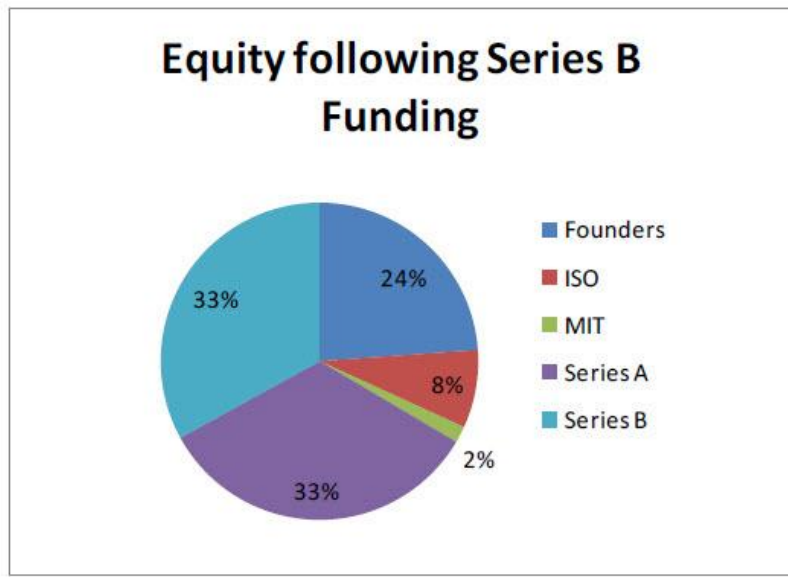
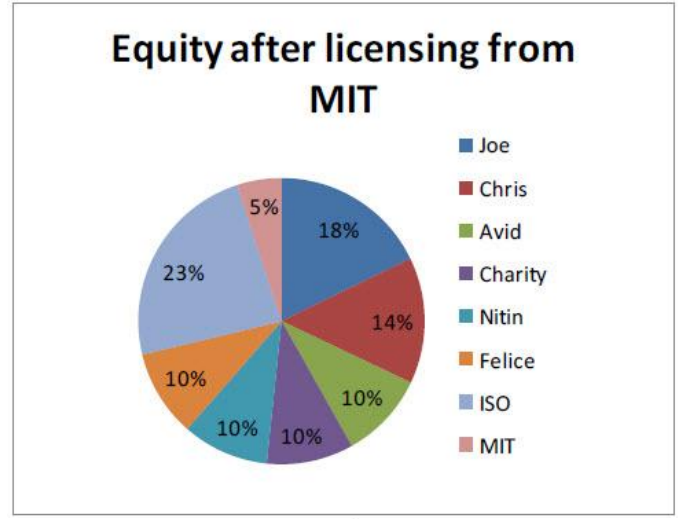
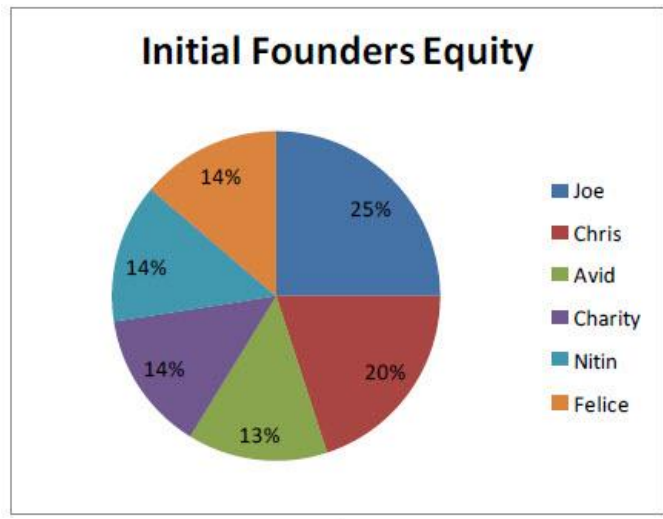


# Ownership – Cap Stock Table

	Founders	Start	ISO+MIT	Series A	Series B
Joe	25%	18.8%	17.8%	8.9%	6.0%
Chris	20%	15.0%	14.3%	7.1%	4.8%
Avid	13.8%	10.3%	9.8%	4.9%	3.3%
Charity	13.8%	10.3%	9.8%	4.9%	3.3%
Nitin	13.8%	10.3%	9.8%	4.9%	3.3%
Felice	13.8%	10.3%	9.8%	4.9%	3.3%
ISO		25.0%	23.8%	11.9%	8.0%
MIT			5.0%	2.5%	1.7%
<b>Series A</b>					
VC 1				25.0%	16.8%
VC 2				25.0%	16.8%
<b>Series B</b>					
VC 1					11.0%
VC 2					11.0%
VC 3					11.0%



# Ownership Pie





# What is Your Venture Worth?

15.390 New Enterprises, Aulet/Anderson

	<u>Year 0</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Cash from Sales		349	3,759	8,483	21,047
Cash Out for COGS		111	874	1,835	4,333
Gross Margin		238	2,885	6,649	16,714
Cash Out for M&S		217	1,263	2,824	6,052
Cash Out for R&D		800	1,800	3,150	4,950
Cash Out for G&A		150	450	1,025	1,645
Total Cash Out for OpEx (includes capital expenditures)		1,167	3,513	6,999	12,647
Cash Flow from Operations		(930)	(628)	(350)	4,067
Interest		-	-	-	
Tax (@ 40%)*		-	-	-	864
Cash Flow		(930)	(628)	(350)	3,203
Net Present Value of C-Flow	\$	131			
Discount Rate		20%			







# Example: Terminal Value

	<u>Year 0</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Sales		349	3,759	8,483	21,047
Cash Flow from Operations		(930)	(628)	(350)	4,067
Cash Flow After Tax		(930)	(628)	(350)	3,203

## ▶ What Industry Category?

- ▶ Computer Peripheral (Logitech)
- ▶ CAD/CAM (SolidWorks, Dassault, PTC) or Design Software (Alias/Wavefront)
- ▶ Other – Virtual Reality Companies (Cybernet, Immersion), Intellectual Property

## ▶ Multiple of Earnings/Free Cash Flow

- ▶ Requires multiple data points – Public Companies & M&A transactions
- ▶ Explain each one
- ▶ Triangulation

## ▶ Multiple of Revenue

- ▶ Same as Earnings/FCF

***Result: Justify 2-3 Multiple of Revenue → \$50M at end of Yr 4***



# More on Terminal Value

- ▶ Can be other important metrics
  - ▶ Install base – e.g. eyeballs
  - ▶ Intellectual Property
  - ▶ Strategic Partnerships
  
- ▶ Growth is extremely important consideration
  
- ▶ Gross Margin is extremely important
  
- ▶ Most common as company gets bigger is EBITDA
  - ▶ EBITDA or FCF Multiple 6-12x but usually 8-10x
  - ▶ Forward looking not trailing
  
- ▶ When big company is looking at you, they will redo financials eliminating G&A to calculate new Operating Contribution and then use their multiples to value



# Rate of Return (or IRR) Calculation

## ▶ Assumptions:

- ▶ \$50M Terminal Value (V)
- ▶ Discount Rate Used by Investors = 50% (r)
- ▶ Timeframe of 4 Years (t)

## ▶ Post Money Valuation at Year 0

- ▶ Formula  $\rightarrow V/(1+r)^t$
- ▶  $\$50M/(1.5*1.5*1.5*1.5)=\$50K/5.625=\$9.876M$
- ▶ Definition: Post Money Valuation – Pre Money Valuation plus Investment

## ▶ Ownership

- ▶ Assumed \$3M in Financials
- ▶ % Ownership for Investors =  $\$3m/\$9.876M = 30.38\%$
- ▶ Assume 5 million shares  $\rightarrow$  approx. 1.519 m shares to investors



# Additional Notes on Valuation

## ▶ It is a lot simpler:

- ▶ Valuations are rounded to millions
- ▶ Investor has a % in mind they want to own
- ▶ Venture Capital investor has in mind an amount of money they want to put to work
- ▶ Recognition that valuation is an imprecise science

## ▶ It a lot more complicated

- ▶ There is much more than valuation
- ▶ Type of stock – Terms and Conditions
- ▶ Multiple rounds of fundraising need to be forecasted

## ▶ Don't get obsessed on valuation

- ▶ Need a holistic view
- ▶ Address in a rational way



# Financing – 10,000 Foot View

- Financial slides must be readable & logical
- Don't BS on numbers
- Be upfront with problems, issues
  - ▶ Saying "I don't know" is better than digging yourself in a hole
- Align cash burn to milestones
  - ▶ Try to raise at least one year's worth of cash burn
- Anticipate each round will take 6-12 months to close
- Don't obsess on pre-money valuation



# Final Thoughts

- The Financial Section of the B-Plan is the “happy ending” to your story – the Scoreboard
- Understand the Mentality of the Investor Mantra - “Show Me the \$\$\$” (i.e., IRR)
- Reality gets funded – great test of your credibility



[Suzanne Oakley](#)  
Owner/Founder  
Experience Chocolate

Home

## Entrepreneur In Residence: Suzanne Oakley



### Background:

Suzanne graduated from Georgetown University in Business Administration *cum laude*. She later received an MBA from MIT Sloan School of Management. In the intervening years she won the MIT \$10K Competition (1995), oversaw a number of successful Telecom Services IPOs, coached young female entrepreneurs at the Center for Women & Entrepreneurship, and founded a Chocolate Events company Experience Chocolate.

### Entrepreneurial Passion:

Suzanne believes, on a macro level, that 80% of the economy is fueled by small and medium sized businesses and that supporting those businesses supports the economic well-being of the country. In addition, innovation keeps us competitive in a world economy, and it is important to invest capital (both time and money) in innovation. Lastly, she believe that anyone with a good idea has a right to make a go of it and make their dream come true. On a micro level, she enjoys working with people who have a great vision. As a finance professional, she enjoys helping ground those visions on solid financial and operational footing.

### Additional Personal and Professional Interests:

Suzanne is a member of the Appalachian Mountain Club, a volunteer for Literacy Volunteers, the owner of Experience: CHOCOLATE, a mentor at the CleanTech Open 2010, and an advisor at Hub Angels.

Please email [Elliot Cohen](mailto:Elliot Cohen) at [elliotc@mit.edu](mailto:elliotc@mit.edu) to apply to the program and schedule time with Suzanne.

### Suzanne has experience in?

- Energy
- Web Applications and Services
- Mobile & Wireless Communication
- Enterprise Software
- BioTech & Pharma
- Medical Devices
- NanoTechnology
- Manufacturing

Other: Chocolate/Events, Financial Services, CableTV, Telecom & Broadband Services

### Suzanne has expertise in?

- Company Formation
- Market Selection
- Initial Market Validation
- Raising Seed Capital
- Product Development/Launch
- Sales/Marketing
- Finance
- Enterprise Scaling



# 15.390 New Enterprises

## Class Seventeen

### April 20, 2011

Bill Aulet

Howard Anderson

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