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# Technology Entrepreneurship Education Theory to Practice

Jerry Engel and David Charron  
*University of California at Berkeley*  
*Lester Center for Entrepreneurship and Innovation*  
with the support of

Intel Corporation

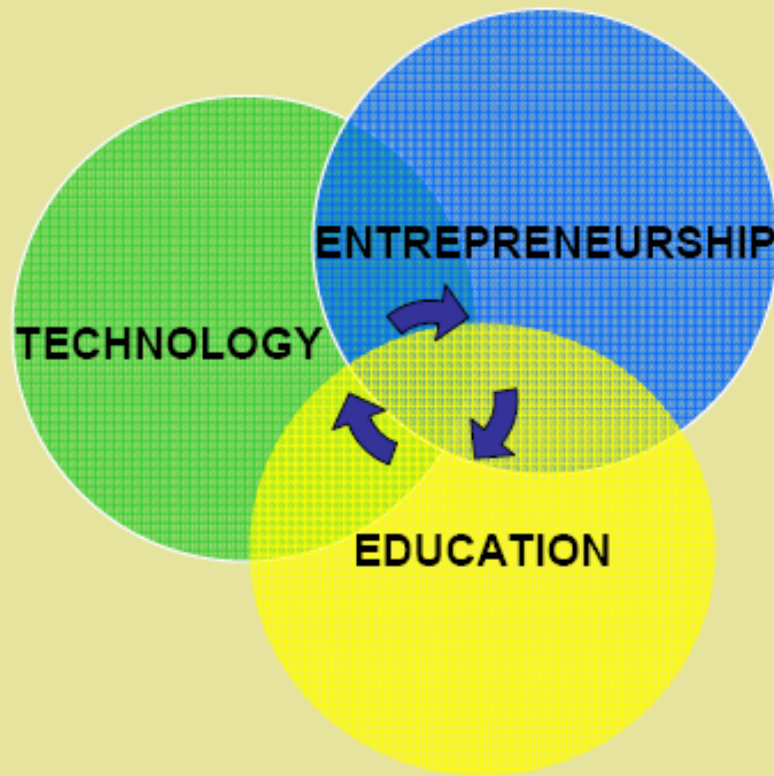


# Slides Selection

- This is a selection of vital slides from a two-day course in Berlin (December 13-14, 2006) by Jerry Engel and David Charron of UC Berkeley
- The course is based on the extensive practical experience
- The course was sponsored by Intel Corporation

# Our Focus in this Seminar

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# Flagship Entrepreneurship Course

SELF

CONTEXT

TEAM

TRUTH

TOOLS

THEORY

Ideas

Nuts & Bolts

Voices of Experience

Student Venture Plans

INVESTORS

CUSTOMERS  
&  
COMPETITORS

COLLEAGUES

1-Getting Started

2-Opportunity  
Recognition

3-Business Models

4-Business  
Models

5-Marketing  
Positioning

6-The Business  
Plan -  
Financial Needs

7-The Team

8-Financing Strategy

9-Venture Capital

10-Finance/  
The Deal

12-IPO and  
M&A

13-Legal and IP  
Strategy

14-Live Cases

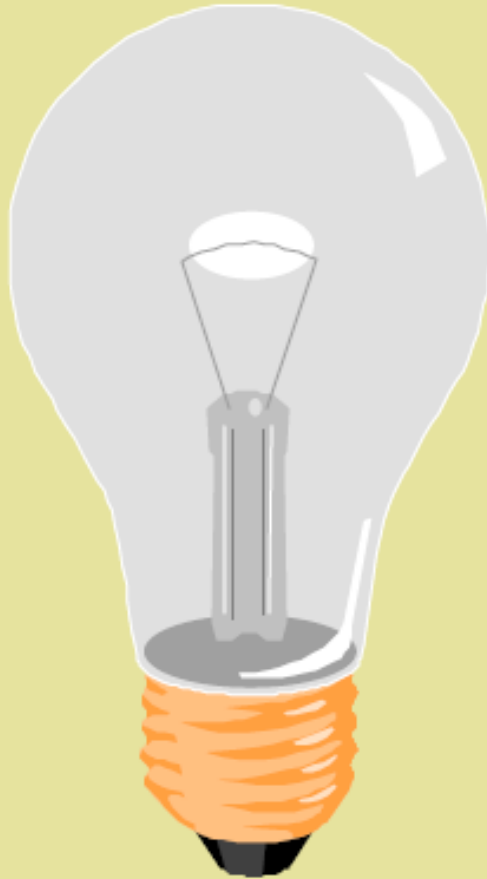
15-Developing a Personal  
Entrepreneurial Strategy

# Entrepreneurship Bridges the Gap



# Who Invented the Light Bulb

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# The Light Bulb Hall of Fame

<i>Date</i>	<i>Inventor</i>	<i>Nationality</i>	<i>Filament</i>	<i>Atmosphere</i>
<b>1802</b>	Davy	English	platinum	air
1840	Grove	English	platinum	air
1841	De Moleyns	English	platinum	vacuum
1845	Starr	American	platinum <i>carbon</i>	air <i>vacuum</i>
1846	Greener	English	carbon	air
1848	Staite	English	platinum	air
1850	Shepard	American	<i>carbon</i>	<i>vacuum</i>
1852	Roberts	English	<i>carbon</i>	<i>vacuum</i>
1856	de Changy	French	platinum	air
1859	Farmer	American	platinum	air
1860	Swan	English	<i>carbon</i>	<i>vacuum</i>
1872	Lodyguine	Russian	carbon	nitrogen
1875	Woodward	Canadian	carbon	N/A
	Kosloff	Russian	carbon	nitrogen
	Konn	Russian	<i>carbon</i>	<i>vacuum</i>
1876	Fontaine	French	<i>carbon</i>	<i>vacuum</i>
1877	Maxim	American	platinum	air
1878	Sawyer	American	carbon	nitrogen
	Maxim	American	carbon	hydrocarbon
	Lane-Fox	English	platinum-iridium	air-nitrogen
	Farmer	American	carbon	nitrogen
<b>1879</b>	Jenkins	American	platinum	air
	Hall	American	platinum	air
	<b>Edison</b>	<b>American</b>	<b>carbon</b>	<b>vacuum</b>

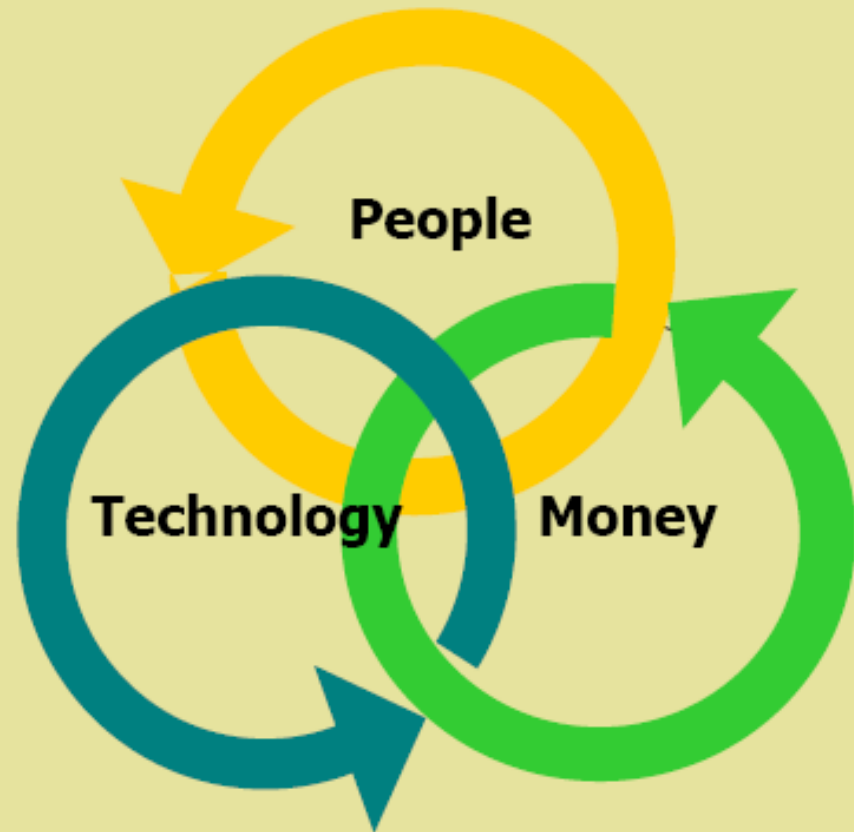
## Strategies For

### Entrepreneurs:

- Incrementalism
- Complete Solution
- Innovation rather than Invention

# The Entrepreneur's Task....

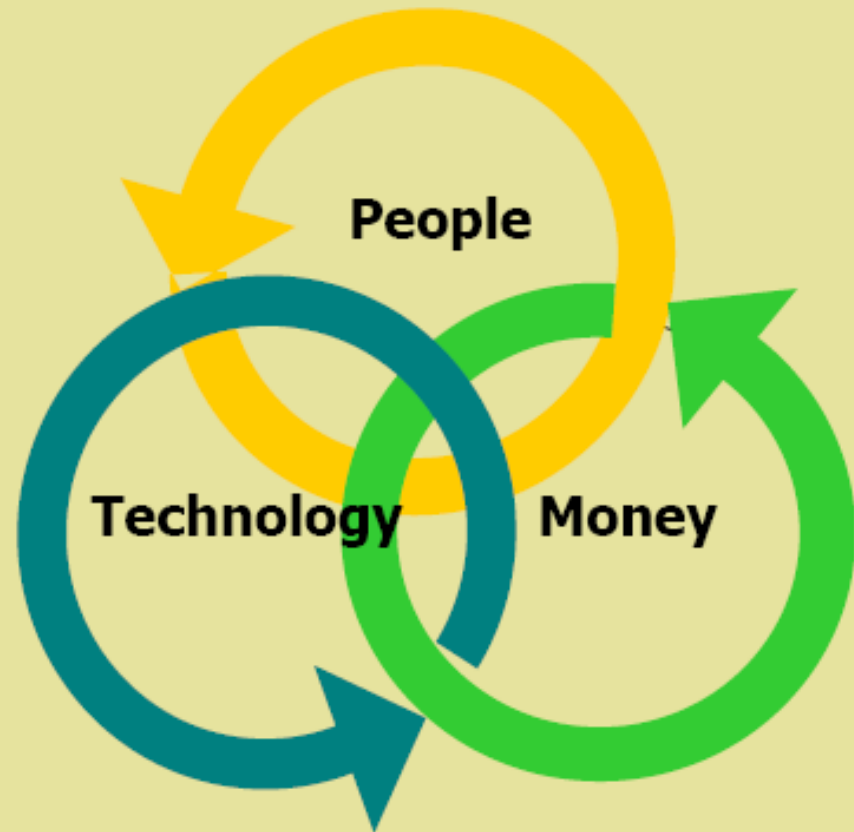
- Key Resources
  - Technology
  - Money
  - People





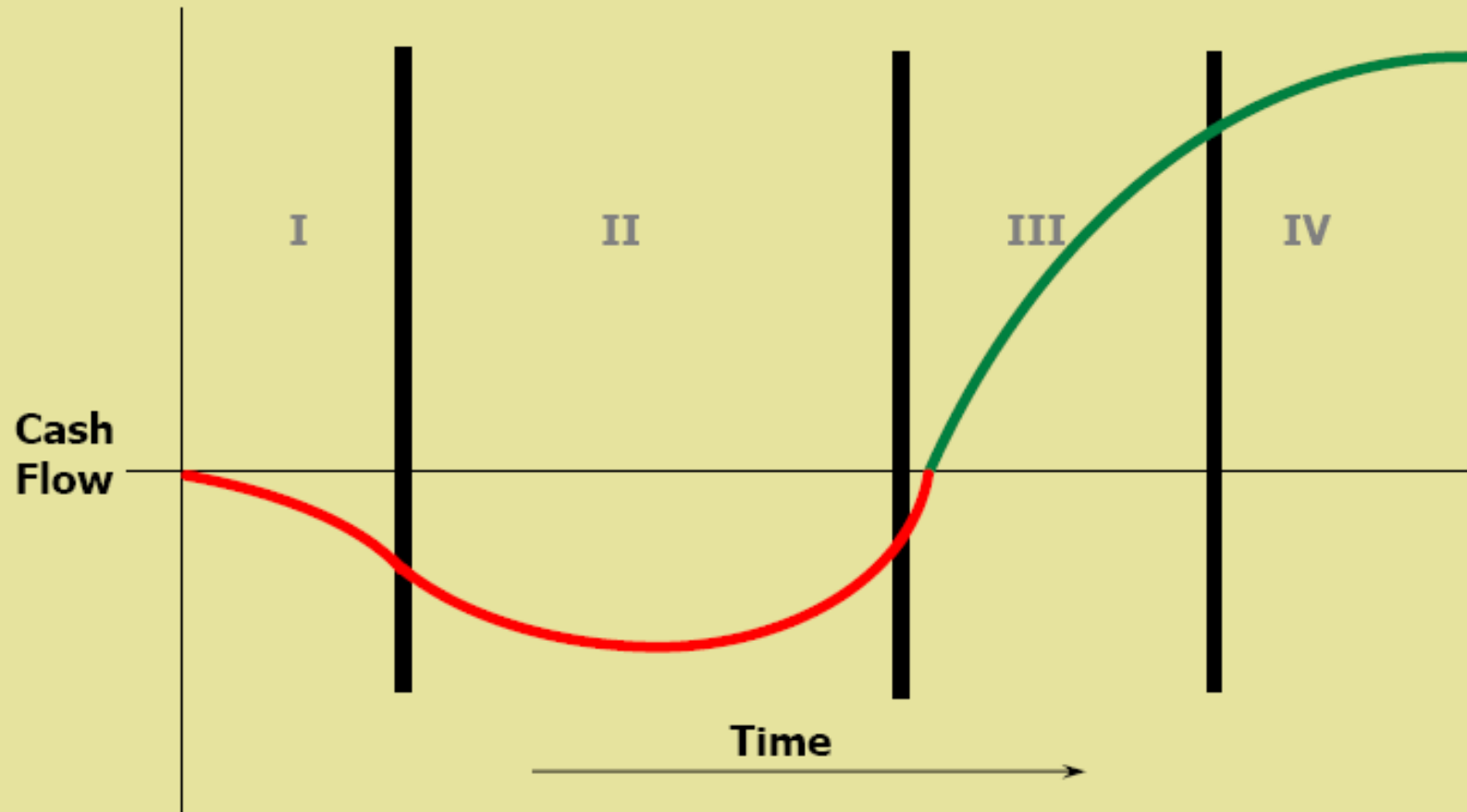
# The Entrepreneur's Task....

- Key Resources
  - Technology
  - Money
  - People



# The Entrepreneurial Venture

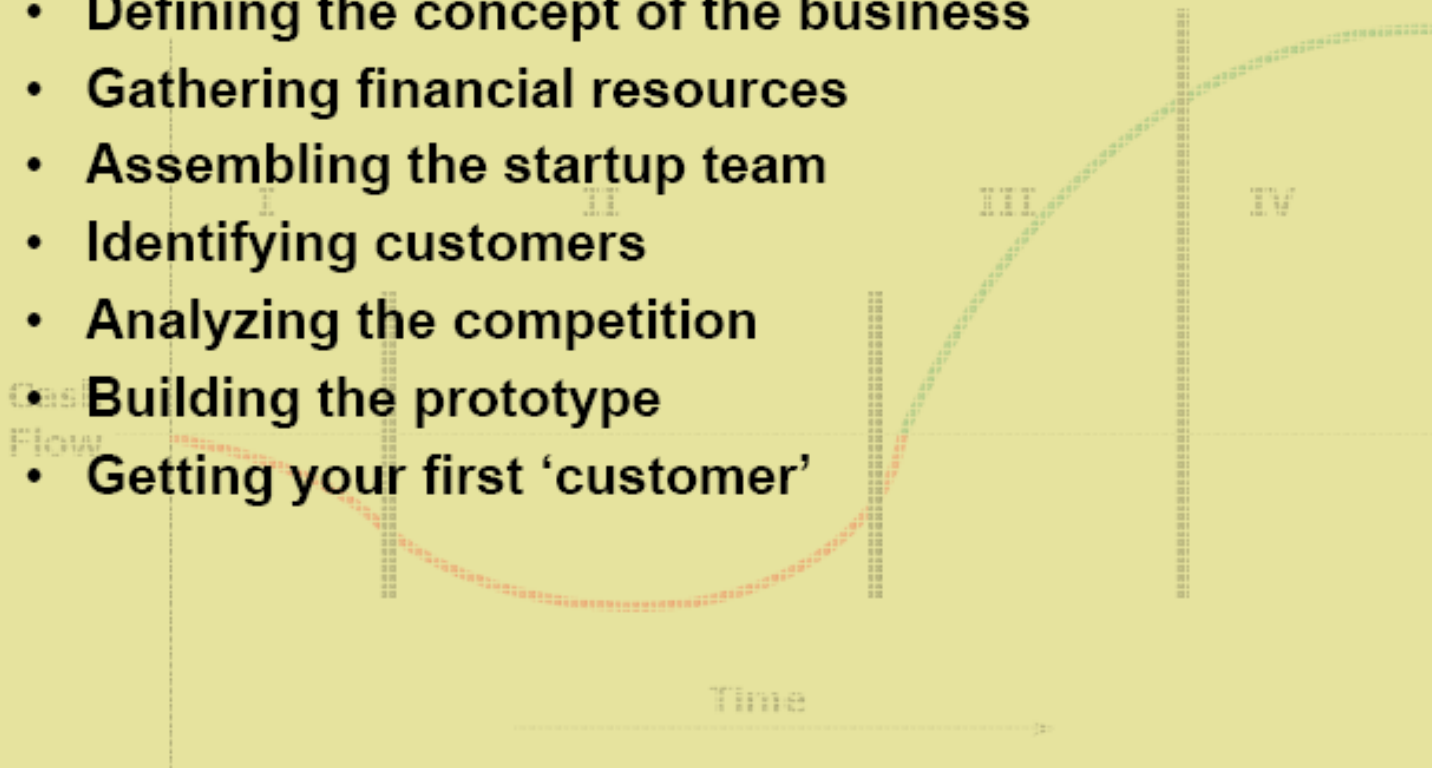
A Lot of Models to Follow



# The Entrepreneurial Venture

## PERIOD I: “Pure Entrepreneurship”

- Defining the concept of the business
- Gathering financial resources
- Assembling the startup team
- Identifying customers
- Analyzing the competition
- Building the prototype
- Getting your first ‘customer’



# The Entrepreneurial Venture

## PERIOD II: "Strategic Focus"

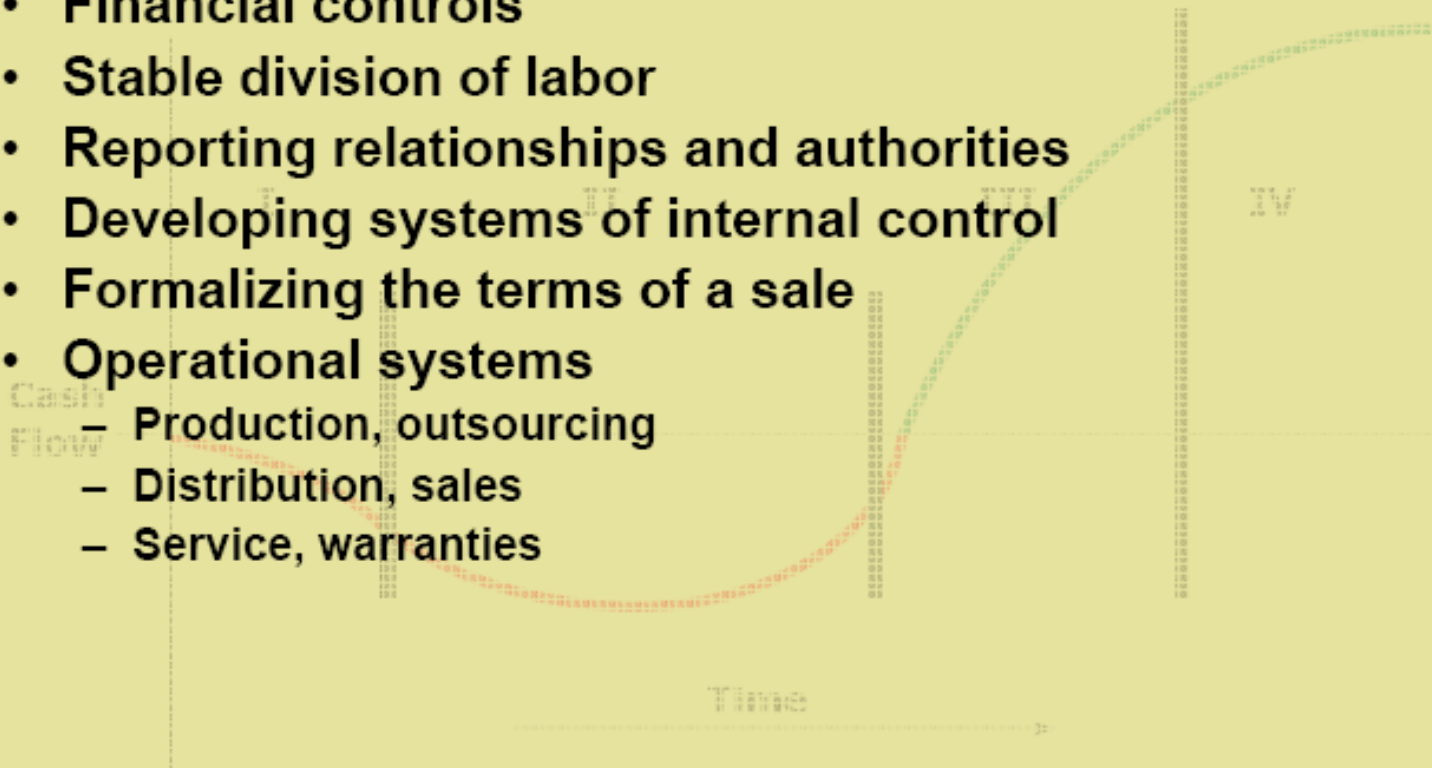
- What business aren't we in?
- **IMPLEMENTING** the business we are in!
- Knowing better than **ANYONE** else:
  - What will people pay
  - How many will they buy
  - How to distribute
  - How to service the customer
- Identifying strategic partners
- Developing relations with suppliers
- Going beyond the prototype to a truly scaleable product
- Recruiting a complete team
- Raising 'institutional' money



# The Entrepreneurial Venture

## PERIOD III: "Systems Building"

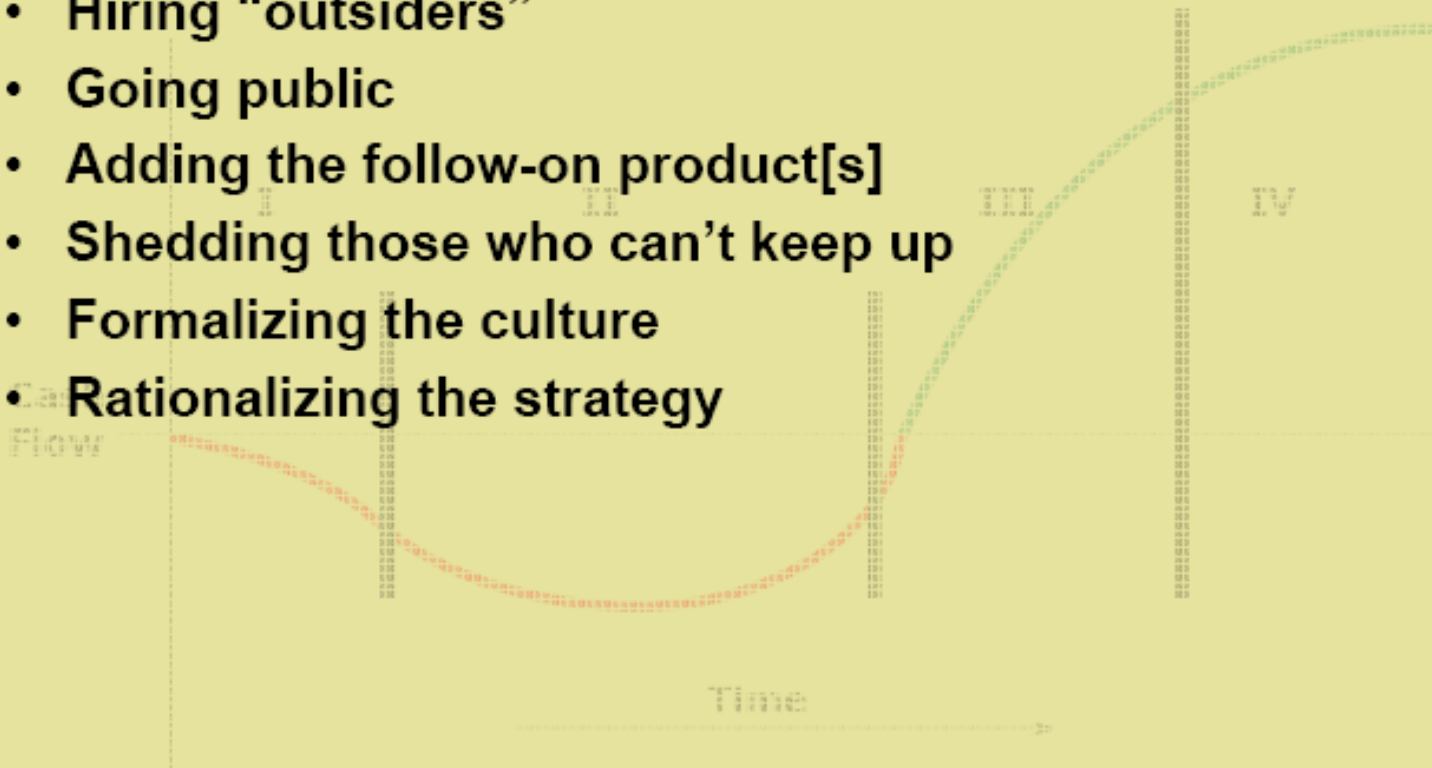
- Financial controls
- Stable division of labor
- Reporting relationships and authorities
- Developing systems of internal control
- Formalizing the terms of a sale
- Operational systems
  - Production, outsourcing
  - Distribution, sales
  - Service, warranties



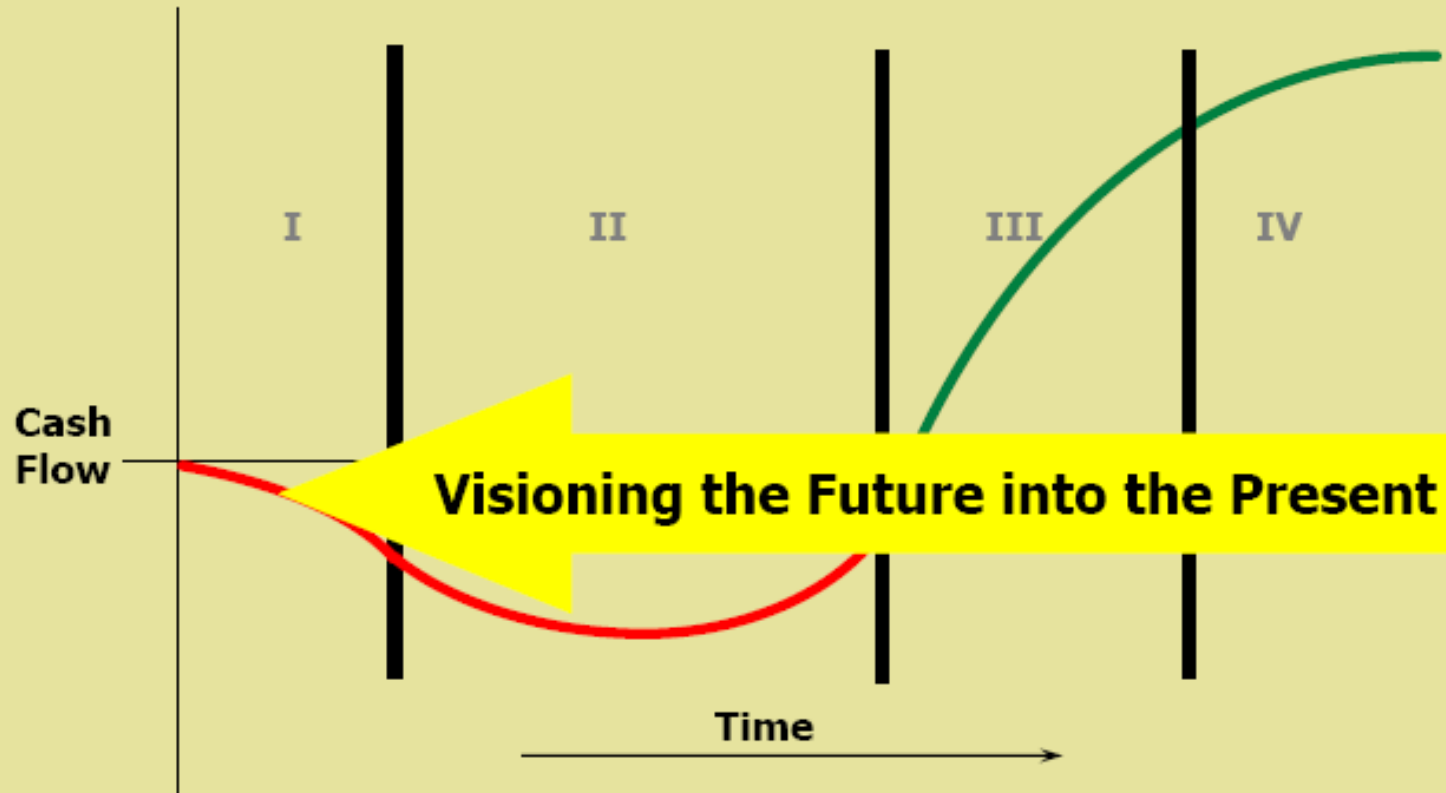
# The Entrepreneurial Venture

## PERIOD IV: "Corporate Management"

- Hiring "outsiders"
- Going public
- Adding the follow-on product[s]
- Shedding those who can't keep up
- Formalizing the culture
- Rationalizing the strategy



# The Professional Entrepreneur



# Who is the Professional Entrepreneur?

## Personal Entrepreneurship Styles

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- Entrepreneurship is a team sport
  - Many can play – even if they are not ‘born’ entrepreneurs
- Three modes
  - Lead
  - Follow
  - Execute
- Three functions
  - Create
  - Manage
  - Innovate
- Which role is right for you?





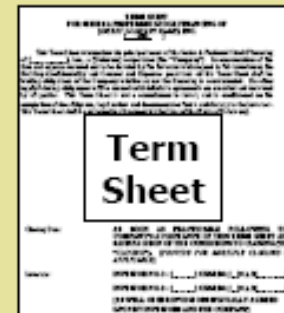
# ... on your way to "The Deal"



- IP: patents, licenses, copyrights, trademarks
- Name registrations



- Leases
- Vendor contracts
- Banking
- Employment/HR
- Etc.



- Valuation
- Shareholder rights
- Board representation
- Major transaction approvals
- Governance
- Other



- Entity
- Governance
- Etc.



- Dividing the pie
- Founders' Rights
- Buy-Sell
- Employment agreements
- Other



# Startup Company Valuation Model: The Expanding Value Pie\*

\* [or not confusing ownership with value]



# Company Formation

Founders A, B and C each purchase 1M shares of Common Stock at a purchase price of \$.001 per share.



Person	Shares	% Total	Value
Founder A	1,000,000	33.3%	\$1,000
Founder B	1,000,000	33.3%	\$1,000
Founder C	1,000,000	33.3%	\$1,000
<b>totals</b>	<b>3,000,000</b>	<b>100%</b>	
Post-Money Valuation			<b>\$3,000</b>



# Hiring a President/CEO

## Creation of an Option Plan

The company hires a chief executive officer who purchases 1M shares of Common Stock at a purchase price of \$.01 per share. Additionally, in order to attract additional key employees, the Company establishes an employee stock option plan and reserves 1M shares of Common Stock for issuance under this plan. The pre-financing valuation is \$30,000.

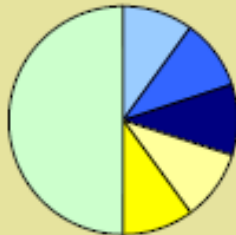


Person	Shares	% Total	Value
Founder A	1,000,000	20.0%	\$10,000
Founder B	1,000,000	20.0%	\$10,000
Founder C	1,000,000	20.0%	\$10,000
President	1,000,000	20.0%	\$10,000
Option Plan	1,000,000	20.0%	\$10,000
totals	5,000,000	100%	
Post-Money Valuation			\$50,000



# Initial Venture Capital Round

\$5,000,000 venture capital financing at a purchase price of \$1 per share, representing a pre-financing valuation of \$5,000,000 (5M shares with a value of \$1 per share). The new shares are typical venture capital Series A Preferred Stock, with each share of Series A Preferred Stock being convertible into one share of Common Stock.



Person	Shares	% Total	Value
Founder A	1,000,000	10.0%	\$1,000,000
Founder B	1,000,000	10.0%	\$1,000,000
Founder C	1,000,000	10.0%	\$1,000,000
President	1,000,000	10.0%	\$1,000,000
Option Plan	1,000,000	10.0%	\$1,000,000
Series A Inv	5,000,000	50.0%	\$5,000,000
<b>totals</b>	<b>10,000,000</b>	<b>100%</b>	
Post-Money Valuation			<b>\$10,000,000</b>

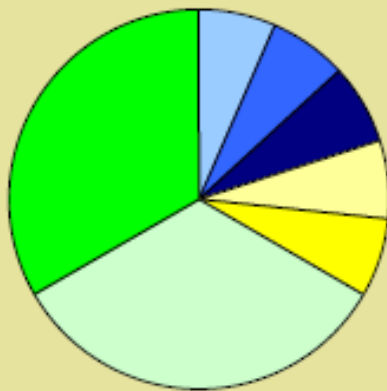


# Stock (Shares)

- **Common Stock (Shares)** - Capital stock that is secondary to preferred stock in the distribution of dividends and often of assets.
  - **Preferred Stock (Shares)** - Capital stock having priority over a corporation's common stock in the distribution of dividends and often of assets.
- 
- **Callable Preferred Stock (Shares)** - A type of preferred stock that carries the provision that the issuer has the right to call in the stock at a certain price and retire it. Also known as "redeemable preferred stock".
  - **Convertible Preferred Stock (Shares)** - Preferred stock that includes an option for the holder to convert the preferred shares into a fixed number of common shares, usually anytime after a predetermined date.
  - **Prior Preferred Stock (Shares)** - Preferred stock with a higher claim on assets and dividends than other issues of preferred stock.
  - **Participating Preferred Stock (Shares)** - A type of preferred stock that, under certain conditions, gives holders the right to receive earnings payouts over and above the specified dividend rate.

# Series B Preferred Financing

\$10,000,000 Series B Preferred Stock financing at a purchase price of \$2 per share, representing a pre-financing valuation of \$20,000,000 (10M shares with a value of \$2 per share). Like the Series A Preferred Stock, each share of Series B Preferred Stock is convertible into one share of Common Stock.

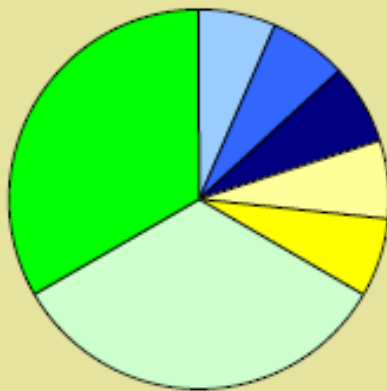


Person	Shares	% Total	Value
Founder A	1,000,000	6.7%	\$2,000,000
Founder B	1,000,000	6.7%	\$2,000,000
Founder C	1,000,000	6.7%	\$2,000,000
President	1,000,000	6.7%	\$2,000,000
Option Plan	1,000,000	6.7%	\$2,000,000
Series A Inv	5,000,000	33.3%	\$10,000,000
Series B Inv	5,000,000	33.3%	\$10,000,000
totals	15,000,000	100%	
Post-Money Valuation			\$30,000,000



# Series B Preferred Financing

\$10,000,000 Series B Preferred Stock financing at a purchase price of \$2 per share, representing a pre-financing valuation of \$20,000,000 (10M shares with a value of \$2 per share). Like the Series A Preferred Stock, each share of Series B Preferred Stock is convertible into one share of Common Stock.



Person	Shares	% Total	Value
Founder A	1,000,000	6.7%	\$2,000,000
Founder B	1,000,000	6.7%	\$2,000,000
Founder C	1,000,000	6.7%	\$2,000,000
President	1,000,000	6.7%	\$2,000,000
Option Plan	1,000,000	6.7%	\$2,000,000
Series A Inv	5,000,000	33.3%	\$10,000,000
Series B Inv	5,000,000	33.3%	\$10,000,000
<b>totals</b>	<b>15,000,000</b>	<b>100%</b>	
Post-Money Valuation			<b>\$30,000,000</b>

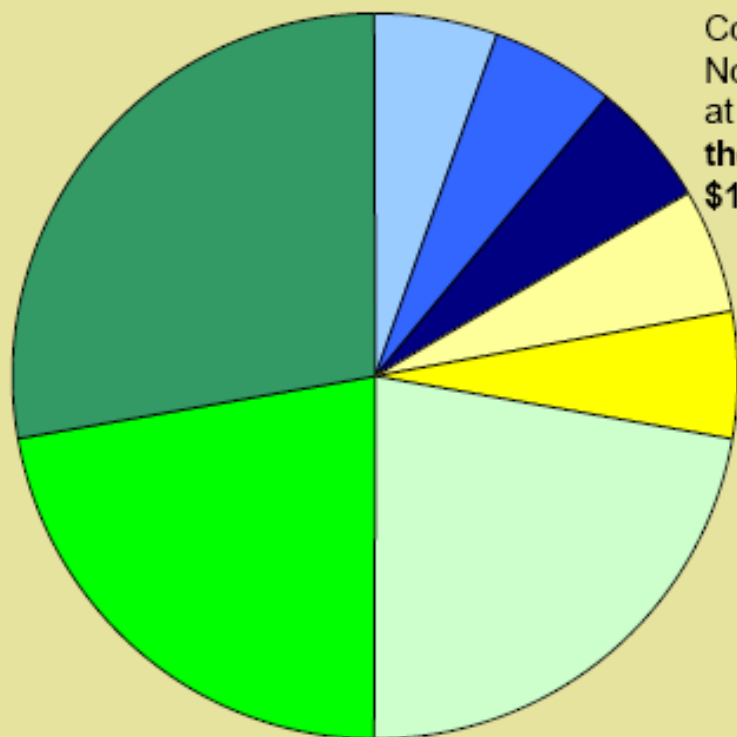




# Initial Public Offering (IPO)

A total of 5M shares to be sold in the offering, including 3M shares sold by the Company and 1M shares sold by each of the Series A and Series B investors. Shares will be sold at a price of \$10 per share, representing a pre-financing valuation of \$150,000,000 (15M shares with a value of \$10 per share.)

Series A and Series B Preferred Stock automatically converted into Common Stock. All shares sold in offering will be Common Stock. Note that the interest of each founder has decreased from 33.33% at the Company's formation to 5.55% following the IPO. However, **the value of the interest of each founder has increased from \$1,000 to \$10,000,000.**



Person	Shares	% Total	Value
Founder A	1,000,000	5.6%	\$10,000,000
Founder B	1,000,000	5.6%	\$10,000,000
Founder C	1,000,000	5.6%	\$10,000,000
President	1,000,000	5.6%	\$10,000,000
Option Plan	1,000,000	5.6%	\$10,000,000
Series A Inv	4,000,000	22.2%	\$40,000,000
Series B Inv	4,000,000	22.2%	\$40,000,000
Public IPO	5,000,000	27.8%	\$50,000,000
<b>totals</b>	<b>18,000,000</b>	<b>100%</b>	

Post-Money Valuation **\$180,000,000**





# Investor Ownership Expectations

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**How much ownership will the investor want/require?**

$$\text{Ownership required} = \frac{\text{Investment}}{\text{Expected PV (discounted at required ROI)}}$$

$$\text{Expected PV} = \frac{\text{Future Value}}{(1 + \text{Necessary ROI})^{n(\text{years})}}$$

$$\text{Future Value} = \text{Net Income}_{(\text{year } n)} \times \text{PE}$$

PV – Present Value

ROI – Return On Investment

PE – Price/Earnings ratio

NI – Net Income



# Investor Ownership Expectations

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## A VERY Simple Example


### ASSUMPTIONS

#### Company:

NI in Year 5	\$2.5M
P/E	15 times NI

#### Investor:

Investment	\$2.0M
ROI	50%
Holding Period	5 years



# How much ownership will the investor want/require?

$$\begin{aligned} & \text{FUTURE VALUE (FV) (Year 5)} \\ & \text{NI X P/E} = (\$2.5\text{M} \times 15) = \$37.5\text{M} \end{aligned}$$

$$\frac{\text{(FV)}}{(1+i)^n} = \frac{\text{PRESENT VALUE (PV)}}{(1 + .50)^5} = \$4.93\text{M} \quad \text{Post Money Value}$$

## OWNERSHIP REQUIRED

A \$2M investment would require ownership of:

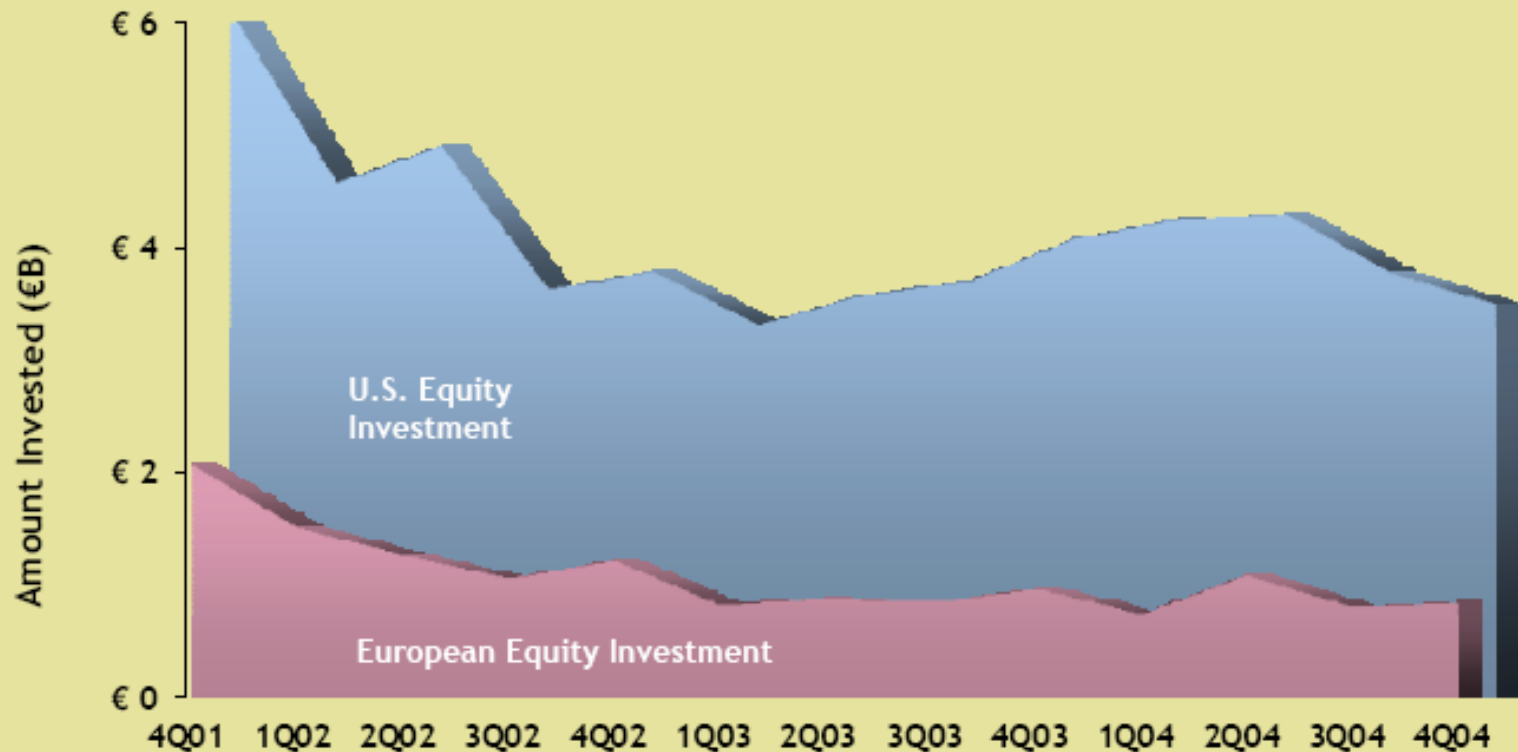
$$\frac{\text{Investment}}{\text{(PV)}} = \frac{\$2\text{M}}{\$4.93\text{M}} = 41\%$$

(i = ROR, n = year)

ROR - Return On Revenue

# Perspective on European Market

*Equity Investment in Venture-Backed Companies, US vs. Europe (€)*



Source: Dow Jones VentureOne/Ernst & Young

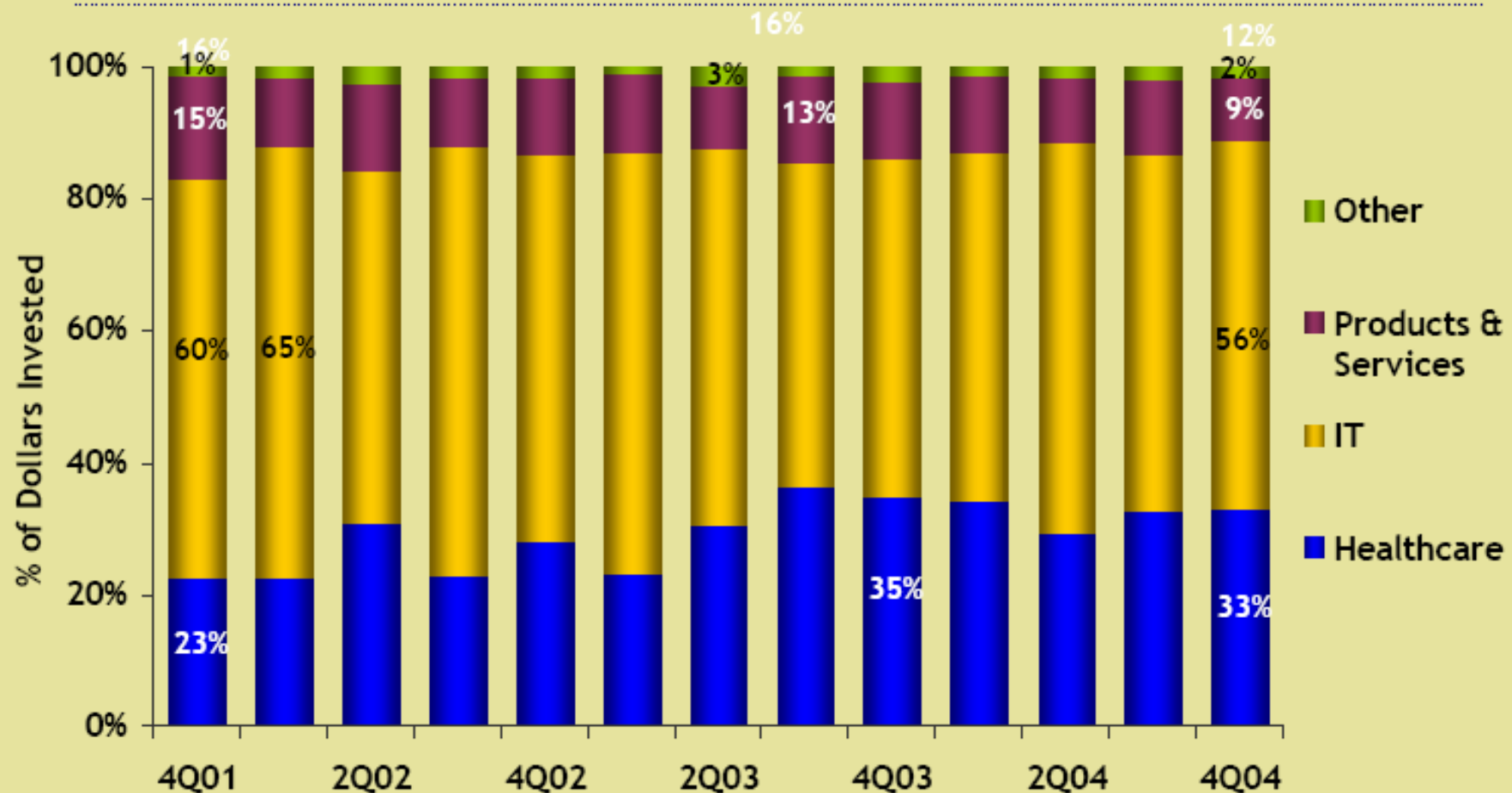


The Lester Center for Entrepreneurship and Innovation  
Haas School of Business, UC Berkeley

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# United States IT Takes Largest Share

*Investment Allocation by Industry Sector in 4Q'04*



Source: Dow Jones VentureOne/Ernst & Young



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# Top European Investors

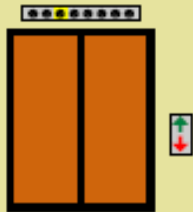
*Number of Equity Investments in European Venture-Backed Companies, 4Q'04*

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3i Group (United Kingdom)	20
Teknologisk Innovation (Denmark)	8
SPEF Venture (France)	8
Sofinnova Partners (France)	6
ACE Management (France)	6
XAnge Private Equity (France)	5
SEB Foretagsinvest (Sweden)	5
Deutsche Venture Capital (Germany)	5
Advent Venture Partners (United Kingdom)	5



# The building blocks of your business planning pitch . . .



## Elevator Pitch

- 30-second/1 minute synopsis of your venture: core idea, market, potential, analogy, etc.



## "Chalk Talk"

- 2-10 minute summary of key venture elements
- Informal "on the fly" media: white board/flipchart/etc.



## Power Point\*

- 10-30 minute formal rehearsed presentation of your venture
- Allow >50% available time for Q&A
- Handouts/leave behinds



## Demo

- Brief demonstration of prototype/example/illustrative transaction/model/etc. that makes your venture "real" if this is feasible



## Business Plan

- 20-40 page professional explanation of your venture, with all relevant supporting analyses
- Lays out your case: why your team/why this venture/why now/why this strategy/etc.





# Outline of a Business Plan

## ...not the 'magic'

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- Executive Summary (2-3)
- Company/Business (4-5)
- Market Analysis (1-2)
- Competition/Competitive Advantage (1-2)
- Marketing/Key Customers (2-3)
- Technology (2-3)
- Operations (1-2)
- Management (1)
- Financial Summary (1-2)
- Funds required and uses (.5-1)
- Appendices

