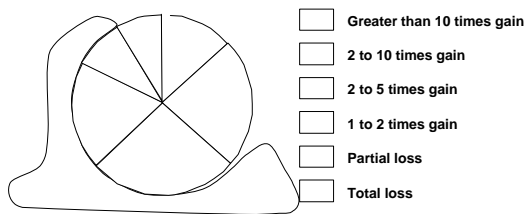


Issues of an Entrepreneur and Entrepreneurial Management

Your Current Position

- You have a new product concept
- You have an understanding of IP & product liability issues
- You have a background in accounting & time value of money
- You have an understanding of marketing
- You know what goes into a business plan

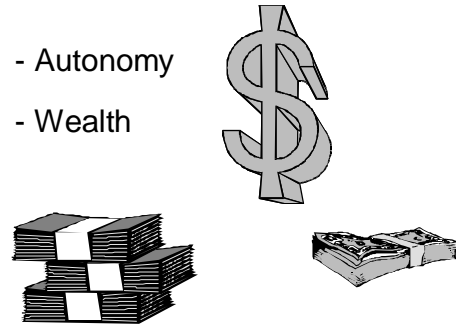
Rates of Return of 200 Venture Capital Backed Ventures 1973 - 1983



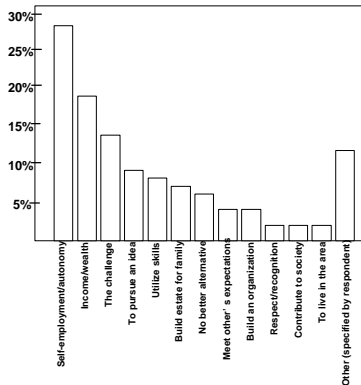
Source: Engineering Your Start-up

Top Two Reasons to Be an Entrepreneur

- Autonomy
- Wealth



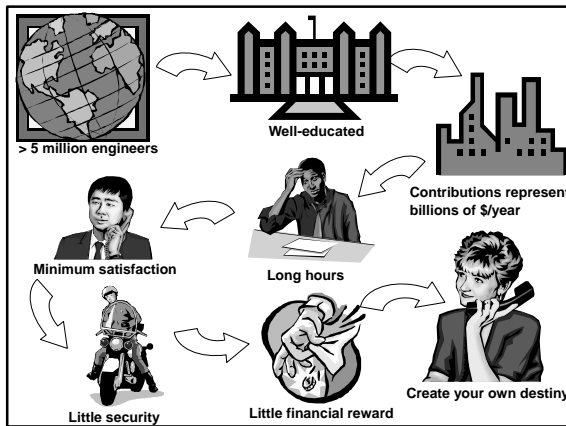
Reasons Cited for Starting One's Own Business



What Do You Call an Unemployed Engineer?

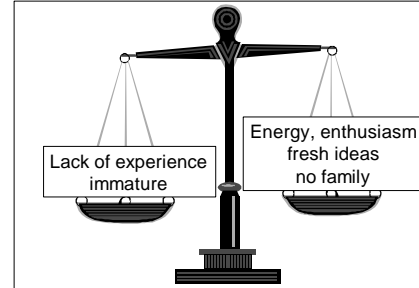


A Consultant



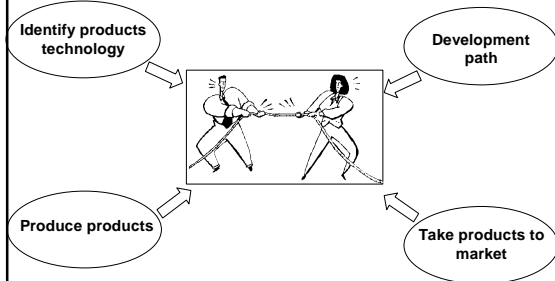
When Do I Start My Own Business?

- Recent College Graduates???

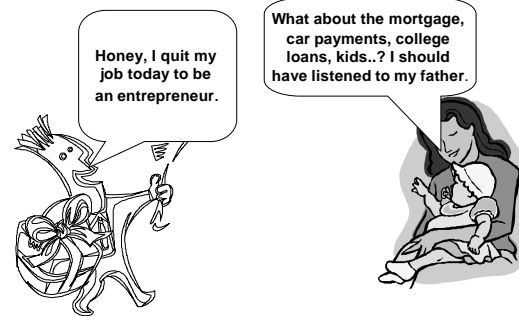


From Technology to Product to Marketing

Can you pull it all together?

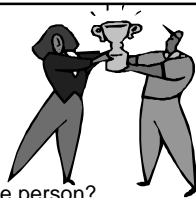


Issues to Consider Before Quitting Your Job



Issues to Consider Before Quitting Your Job

- What are your life goals?
- Are you prepared for hard work, or are you a quality of life person?
- Do you have a chance to succeed?
- What is the quality of life now, how will it change?
- Can you separate the glamour of the president of a start-up company from reality?



Issues to Consider

- Are you prepared to be consumed by your business?
- Many physical and mental challenges... Are you strong and healthy enough to pull this off?
- What are the time demands?
 - 80 hours/week, no weekends perhaps for several years
- Are you ready for extensive travel?
- Are you expecting to be independently wealthy?
- Can you survive without a check during the start-up if you crash and burn?



Issues to Consider

- What about your personal life... wife, kids, significant other?
- Do you thrive on continuous change?
- How old are you? Can you move?

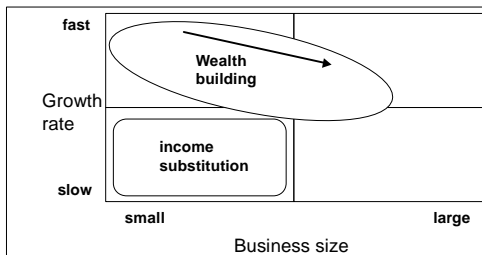


The Basic Trade-Off

Long hours, time, stress, hard work

PAYOFF

\$\$\$\$, reputation



- Income substitution - do not want to work for someone else (lawn mowing business, independent contractor, etc.)
- wealth building - high growth objective grow technology and employee count

Is Taking Risks in Your Personality?

- In Kindergarten, 25% of students show the need to take risk, but in high school, this number is reduced to 3% -- (UCLA study)

According to Baird, there are four ways to financial independence

- You can marry it.
- You can inherit it.
- You can steal it.
- You can earn it in your start-up -- this is in your control



The Technology-Oriented Professional as Company Founder

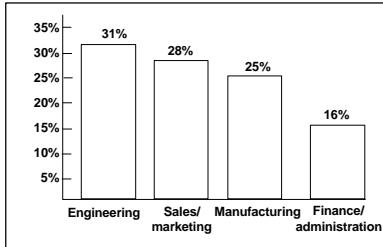
As the founder of a company, your duties will cover everything from managing your business, signing checks, emptying trash cans...also legal issues such as IP, incorporating, etc.

You will do just about everything until you have finances to hire a competent staff.



Allocation of Effort

How engineer founder allocate this effort during the first six months



Five Basic Elements of a Start-up

- Creating your management team & board of directors
- Evaluating markets and target customers
- Defining an developing your product
- Writing a business plan
- RAISING FUNDS



Profile of an Entrepreneur

- Long felt desire to run my own business
- I had a self-employed parent
- I have a college degree
- I am willing to work on something that is important to me
- I always think I can do the job better
- I have a lot of relevant personal job experience
- I have published more papers and patents than my colleagues at the same stage of their career



Profile of an Entrepreneur con't

- I like applied, hands-on work
- In my career, I have risen to managerial levels
- At the time of the start-up, I have only a moderate need for financial reward
- In my current position, I feel challenged and find satisfaction
- Although an engineer, I enjoy business
- I read business newspapers/magazines



Life in Your Start-up Statistics

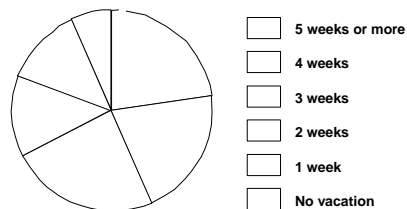
- Less than half of the entrepreneurs who start companies that survive 5 years or more remain with their start-up
- if your company is funded , becomes successful, goes public you will earn an average of \$6 -7 million in five years
- only 10% of venture funded capital go IPO
- 60% of venture funded start-ups go bankrupt
- founders of high tech companies own <4% of company after IPO



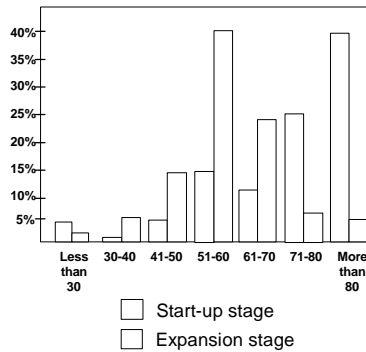
Life in Your Start-up

Vacation and time off

Be prepared to be totally consumed for the first few years



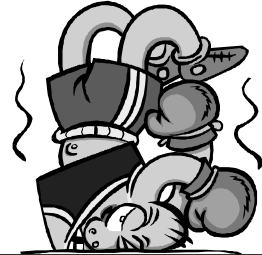
Life in Your Start-up - Long Hours



Life in Your Start-up

Divorce

- Start-up entrepreneurs have a high divorce rate
- pressure and stress of a start-up tarnishes a relationship over time
 - long working hours



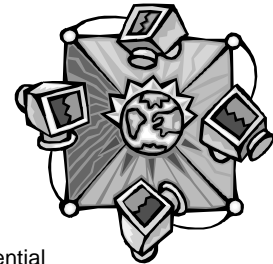
More Statistics

- Of the 700,000 new corporations each year, there are <300 IPO's - 0.04%
- "Take Your Company Public" by Field
- 1% rate of engineering related start-ups successfully complete IPO
 - "Going Public" by Malone

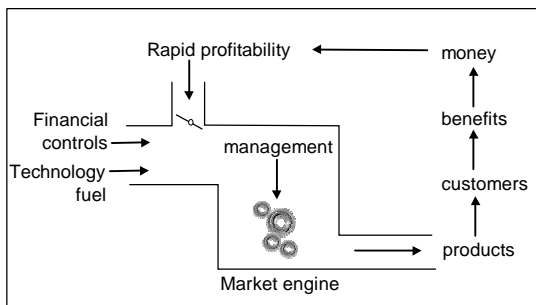


How Do You Grow Your Start-up

- For an engineering start-up, technology is an essential element
- Don't be foolish and think technology will sell itself -- it won't
- Understanding and exploiting markets is perhaps even more essential



Market and Customer-Driven Technology Fueled Start-up



Market Positioning in Your Start-up

New market	II market driven (new use for an existing product)	I missionary sales technology push
	III face entrenched competition	IV market-driven, technology-fueled, market pull
Existing product		New product

WHERE DOES YOUR IDEA FALL?

Market Positioning in Your Start-up

If you are not in quadrant IV, watch out!

QIII: Existing market / existing product

example: opening a new restaurant

Very risky for entrepreneurial start-up, not a lucrative market--OK for income substitution business

QII: New Market / Existing product

example: 3M post-it notes (glue and paper), marketing existing technology

An opportunity for start-up with superior marketing and selling skills to make new demand for existing product

Market Positioning in Your Start-up can't

QI: New market / New product

example: first video games and home computers

Sounds good but a very tough avenue for a pioneering, technology driven entrepreneur. You can do all the ground breaking R&D only to have new market entrance exploit your efforts.

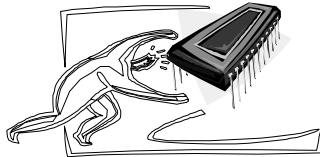
The first is not always the best!

QIV: New product / Existing market

Let market pull decide which product to develop.

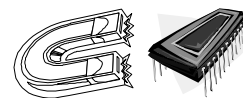
SAFE, you can leverage your technology to produce advanced, new product, delivering more benefits at lower cost to customers in a receptive market demanding your development.

Entrepreneurial Start-up Technology Push - Market Pull



- pushing breakthrough technology into market
- you are relying on your technology to push customers into a new market
- you will be forced to do missionary sales which require educating the market
- the danger is that your attempts to exploit new markets using your advanced technology, other companies (late market entries) can reap rewards of your pioneering work

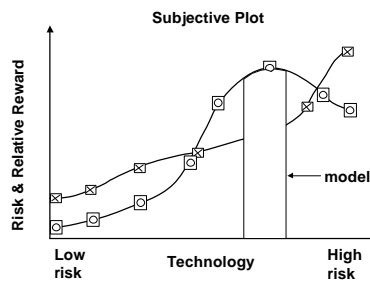
Entrepreneurial Start-up Technology Push - Market Pull



- the presence of customers is questionable
- new markets take extra time and money to reach a break even status
- you rely on markets that desire a specific benefit to be met by your technology
- distinguish yourself from competition by service, benefit or price
- a model -- recognize unique market opportunities that slightly stretch state-of-the-art technology and then develop products identified by market within your technology skill set

Entrepreneurial Start-up Risk and Rewards

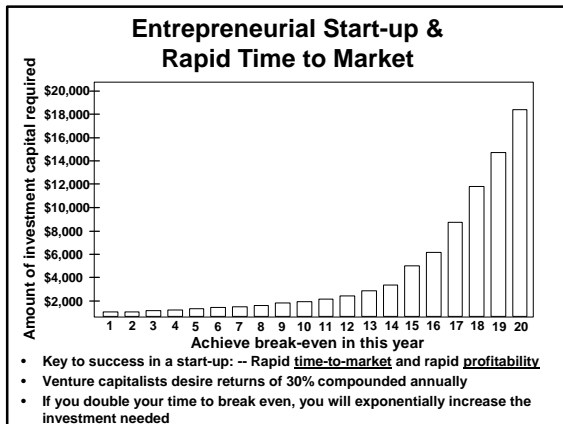
—x— Potential risk
—o— Potential reward



Entrepreneurial Start-up Risk and Reward: A Model

1. Potential reward exceeds risks
2. Optimize spread between risk and reward
3. Market does not lag technology capability
4. Technology is pulled by market
5. Do not push technology or market





Entrepreneurial Start-up Creating a High Growth Business

- Growing a successful high-tech start-up involves much more than engineering and technology -- if you become a CEO or President of a start-up and you are an engineer, you will do everything except engineering and product development
- If you want to create wealth, you must rely on growth

Grow a Commanding Position in a Defensible Market Segment

"Marketing must invent complete products and drive them to commanding positions in defensible market segments."

Some approximate numbers from a General Electric study:

- >30% market share, profitable company;
- <15% market share, almost always lost money;
- 15 - 30% gray area

Attracting Customers

This can be frustration for a start-up

Scenario: You give a presentation to a potential customer, and they respond

"The product is just right, but will you be around in a few years to service it?"

- The customer may be saying I want to purchase from proven customers
- Therefore, you must identify a market need and provide a product with exceptional performance and price advantages to attract new customers away from competition. Many Fortune 500 companies are good customers for start-ups

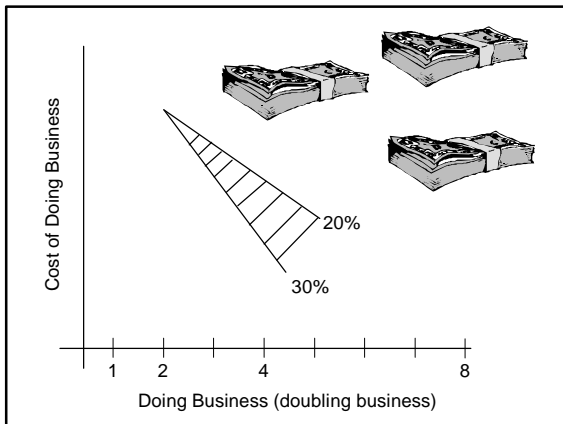
Entrepreneurial Start-up: Develop a Product Family

- Most often a single product does not constitute a business; therefore, you must strive to create a family of products to satisfy market needs
- Model for start-ups, it is often a good model to provide solutions to different customers with different needs
 - e.g. is your software compatible with all hardware platforms?

Entrepreneurial Start-up Achieve Critical Mass and Economies of Scale

- Supporting infrastructure, plan, equipment and all other fixed costs, need to be spread out over your product base. WITHOUT a growing product base, a single product base, a single product enterprise will be overburdened from fixed cost.
- Until your company revenues exceed some critical mass, your fixed cost will restrain profitability
- Growth enables you to hire experts and a talented employee pool... You need to get out of the situation "jack of all trades, expert in none".
- Economies of scale one essential -- approximate numbers "The cost of doing business decreases 20% - 30% every time business is doubled".

From: Perspectives on Experience, Boston Consulting Group



Entrepreneurial Start-up Should I Focus on Diversifying?

- Focus - place your bets on one product, one customer, one supplier, or one investor, something can fail and disrupt it all
- By diversifying your business, selling to various customers and industries, you may increase chances of success
- It is wise to diversify, but make sure you establish yourself before doing so
- You need to grow to diversify



Parallel a Series Model Focus vs. Diversify

- SERIES SYSTEM - No backup, linear array, one part fails, the chain breaks



where P_i is the reliability of a component, and P_s is the reliability of entire series system

$$P_s = P_1 \times P_2 \times P_3 \times \dots \times P_n = \prod_{i=1}^n P_i$$

The reliability can be no higher than any one of the parts because failure of any one part will stop the system from operating. Be aware of proverbial weak link.

Parallel a Series Model Focus vs. Diversify con't

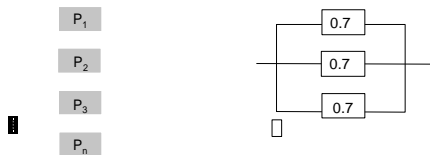
Ex. $0.99 \quad .099 \quad 0.70$

$$P_s = (0.99)(0.99)(0.70) = (0.99)^2(0.70) = .686 = 68.6\%$$

The reliability can be no higher than any one of the parts because failure of any one part will stop the system from operating. Be aware of proverbial weak link.

Parallel or Series Model Focus or Diversify

- PARALLEL SYSTEM - Redundancy, there are backups if one fails



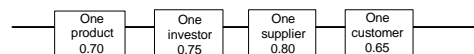
Now, the reliability of the system is:

If one of the above components fail, the system still functions.

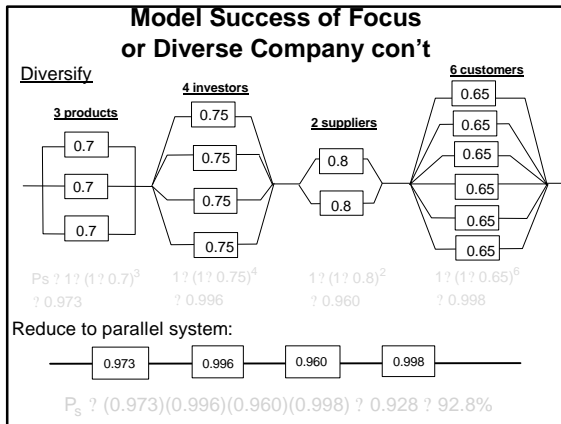
Model Success of Focus or Diverse Company

- Four components: product, investor, supplier, customer. P_s : probability of success

Focus



$$P_s = P_1 \times P_2 \times P_3 \times P_4 = (0.70)(0.75)(0.80)(0.65) = 0.273 = 27.3\%$$



Entrepreneurial Start-up Create Career Opportunities

**MY
COMPANY**

- Great companies are run by great people
- Great people are attracted to great companies
- Exceptional people need to grow, learn and take an increasing responsibility
- Only a growing company can provide this attraction
- Every great person needs to be promoted and recognized as valuable through salary hikes, and a growing company can do this
- Attracting and then keeping employees is essential

Create Future Start-ups

- You may have left a company to create your own start-up
- This will also happen in your start-up if you are successful
- Your company will have many ideas all of which cannot be exploited. Some employees may wish to leave to pursue these ideas that are orthogonal to your business plan
- You may wish to invest in some of these new ventures in exchange for equity

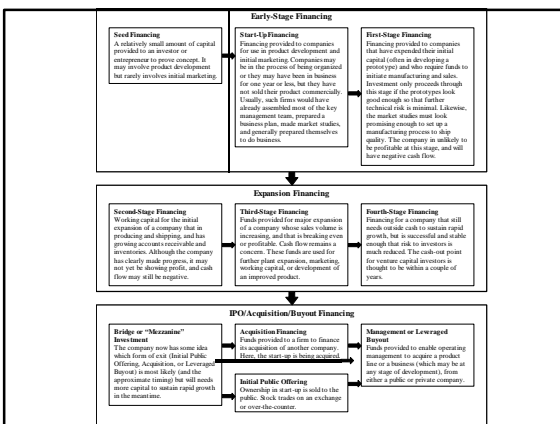
Create Value, Attract Investments and Cash Out

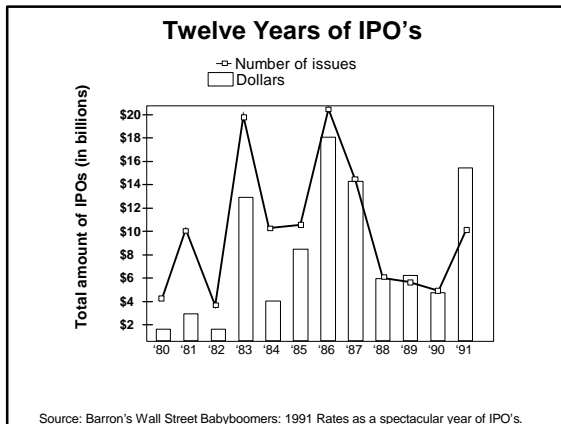
- You and your investors will someday want to exchange stock certificates for cash
- To do this, your company will have to be of sufficient size and profitability to go public (IPO) or be acquired by another company
- This again requires growth.

Start-up Financing Terminology and Stages

Several financing stages for high growth start-up

- Early Stage Financing
- Expansion Financing
- IPO / Acquisition / Buyout Financing





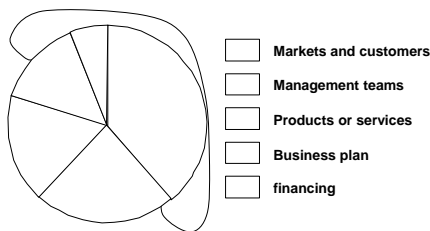
Elements of a Successful Start-up

What is the first thing a company has to have to be in business?

A customer which relates to the broader concept of a market.



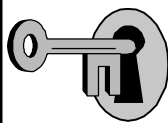
Five controllable ingredients for start-up success



Entrepreneurial Success Through Classical Management Functions

Brandt's Commandments	Classical Management Function	Emphasis for the Entrepreneur
1. Limit the number of primary participants to people who can consistently agree upon and directly contribute to that which the enterprise is to accomplish, for whom, and by when.	staffing	Launch your start-up with a complete, experienced, and compatible management team.
2. Define the business of the enterprise in terms of what is to be bought, precisely by whom (i.e., the customers) and why.	planning	Use a market-and customer-driven strategy to define your product.
3. Concentrate all available resources on accomplishing two or three specific operational objectives within a given period of time.	organizing directing controlling	A superb business plan calls for superb, focused execution.
4. Prepare and work from a written plan that delineates who in the total organization is to do what, by when.	planning	Write a solid business plan that the team believes in.
5. Employ key people with proven records of success at doing what needs to be done in a manner consistent with the desired value system of the enterprise.	staffing	Create a complete, experienced, and compatible management team.
6. Reward individual performance that exceeds agreed-upon standards.	staffing	Motivate with a fair remuneration plan, including equity participation.
7. Expand methodically from a profitable base toward a balanced business.	controlling	Pursue rapid profitability leading to high growth.
8. Project, monitor, and conserve cash and credit capability.	controlling	Never run out of money!

Source: Entrepreneurship: The Ten Commandments for Building a Growth Company by Brandt's.



Creating Your Management Team and Board of Directors

Key Positions in Your Company

- Chairman of the Board
- Chief Executive Officer (CEO)
- President
- Chief Operating Officer (COO)
- Chief Technical Officer (CTO)
- Vice President of Engineering (VP Engineering)

Chairman of the Board

- A member of the corporation's board of directors who presides over its meeting and who is the highest ranking officer in the corporation.
- Many times in a start-up, the chairman of the board is initially held by founder until a sophisticated investor helps fund the company and requests to occupy the position.



Chief Executive Officer (CEO)

- The CEO is reserved for the principal executive
- The CEO is the officer of the firm who is principally responsible for the activities of the company
- The CEO is usually an additional title held by the Chairman of the Board, the president
- In seed-stage and start-up companies, the founder is both CEO and President



Chief Operating Officer (COO)

- In larger companies, the CEO title is frequently held by the Chairman of the Board
- This leaves the president or executive vice president as the Chief Operating Officer (COO) responsible for personnel and administration on a day-to-day basis



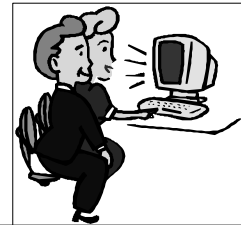
Chief Technical Office (CTO)

- Silicon Valley title for key individuals upon who the company is clearly dependent on for technical contributions



Vice President of Engineering / Research & Development

- Responsible for R&D, developing technology for future product generations
- Big companies separate VP of Engineering and VP of R&D, but start-ups typically combine the two



Management

"In starting a new company, the three most important factors are

- people
- people
- people"

Arthur Rock, Venture Capitalist



Team Size - Product Status Analysis

Management Status		→ Most desirable			
Level 4: All members on board are experienced.	5	6	7	8	
Level 3: All members identified; some on board only after funding	4	5	6	7	
Level 2: Two founders; others not identified.	3	4	5	6	
Level 1: Single entrepreneur.	2	3	4	5	
	Level 1: Idea only; market assumed.	Level 2: Prototype operable but not developed for production; market assumed.	Level 3: Product fully developed; few or no users; market assumed.	Level 4: Product fully developed; satisfied users; market established.	
	Product Status				

Venture capitalist likes to build their portfolio on 6s, 7s

Entrepreneurial Start-ups Team Members

Your core team will probably consist of three members

- Team Member (founder, CEO, president)
- Vice President of Marketing & Sales
- Vice President of Engineering (maybe CTO)



- Initial team will drive business and define what product to develop, how to build it, how to sell it.
- Soon thereafter, you will need to hire a financial officer and VP of Manufacturing

- What if you are an engineer and founder, but you are 'married' to the technology? It may be hard to let go of the technical roles.



- You will have to make the decision
 - Be CEO and leave engineering to someone else
 - Let one team member take CEO position
 - Compromise initial growth of business by acting both as CEO and engineer

The Entrepreneur Do you have the following qualities?

- Problem Solving: creative, analytic, broad perspective
- Motivated: determination, drive, initiative, goal oriented
- Work habits: self-discipline, responsible, decisive, integrity
- Organization/Planning: priorities, punctuality, flexibility
- Interpersonal characteristics: self-confidence, persuasiveness, stability, perceptiveness
- Leadership: delegation, firmness, participation



A Winning Team

Be compatible and synergetic

Each member must:

- challenge the others
- provide mutual inspiration
- work well together
- perform under chaos
- maintain control under extreme pressure



The Entrepreneurial Team

Team Leaders	Achievement-Oriented Managers	Technology Team Leaders	Advisory Board (part time)
Chairman of the Board	chief operating officer (COO)	Chief Technical Officer (CTO)	entrepreneurial team members
Chief Executive Officer (CEO)	Chief Financial Officer (CFO)	Vice President of Engineering	providers of professional services (law, accounting, etc.)
President	Vice President of Marketing	Director of Technology	providers of capital
	Vice President of Sales	Chief Scientist	industry experts and consultants
	Vice President of Manufacturing		university professors

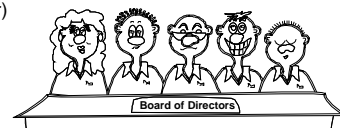
Source Bob Hansens, President of Silicon Valley Entrepreneurial Club

Board of Directors

A small start-up company can do well with a small board, usually between 4 - 6 people. An odd number is often prudent (5 - 7), to avoid even split of decision

Who should be on the initial board?

- You (founder)
- Outside financial advisor (CFO)
- First round investor
- Highly respected business advisor (potential 2nd round investor)



Compensating the Board

- If the board member is a founder or team member, no compensation is required
- If a member is not a stockholder or not affiliated directly with start-up venture the cash or stock options are compensation
- Structure compensation in such a way to ensure board members stick around for rewards



Legal Liability

- Boards are legally responsible for actions of the corporations
- Many people will not formally serve on the board due to legitimate concerns for liability
- Board of Directors liability insurance is available, but often outside your financial capability in a start-up



Advisory Board

- For scientific & technical intensive companies, an external advisory board may be set up
- A technical/scientific advisory board can bring in consulting expertise at a low cost
- Since they have no legal purpose, very limited liability exposure, individuals are honored and willing to participate
- Can help your image in the industry and trade press



Summary

- Many of these issues discussed in this Entrepreneurial Module should show up in your business plan.

