Successful Entrepreneurship for Microsystems

Rakesh Kumar, Ph.D., Life Fellow IEEE

November 17, 2015
rakeshk@eng.ucsd.edu
Rakesh.tcx@gmail.com
858.945.3758

Teaching Assistants:
Dharmil Chandarana dharmil@ucsd.edu
Swetha Krishnakumar swk032@ucsd.edu

Course presented at UCSD CSE 190, Fall Quarter 2015
Key Takeaways - Guest Speakers Rappaport/Lee

- **Product/Marketing/Sales**
  - Having Competition can be good – validation of the NEED [“the Problem”]
  - Your product must be ~10X better, 10-20% improvement won’t make it!
  - Sell to VITO (very important top officer), Avoid CMORE
  - Document and File Patents
  - Carefully decide the Market Size ur company will Target

- **Raising Capital**
  - Investors want to Maximize their Return, and their Probability of Success
    - Due diligence focuses on checking the TEAM, past successes, Character,…
    - Put together a good story about U, your personality, your TEAM…leave your EGO at home!
  - VC’s usually look for TEAM, MARKET SIZE, TECHNOLOGY…in that order
  - VC is usually a General Partner. Limited Partners are Mutual Funds, Banks, and other Institutions
    - GP is looking to maximize Return for the LP’s
  - VC’s are a closed-knit community, a syndicate

- **Leadership/Management**
  - Grow ur company very carefully – 1 → 5 → 20 → 100 →…establish company Culture
  - Hire people with a “Can Do” attitude
  - Companies fail because of People, Technical problems are usually solvable
Key Takeaways
...IEEE N3XT, Global Entrepreneurship event, Toronto

- The era of "Exponential Computing" is here creating opportunities for 10X better products
- Good Marketing comes from developing a deep understanding of Target Customers - their specific Pain, gathering points, unique qualities, and how they learn
  - Validate what they want—don’t assume, interview
  - Solve their problem—don’t start with a solution
  - Having an audience/customer is a privilege - understand what they want and how, and invest in them
- Do it because you just can't not do it!
  - Have the "GRIT" to "shake it off"...referring to the many challenges
  - You’ve got to be “all in”, “Figure out which 24 hours of the day you want to work”
- “Only hire people you would be willing to be stuck with for 4 hours at an airport”
- “Derisk” the deal for investors – demonstrate a need, a customer, and a large enough market, understand where you fit in the competitive ecosystem, connect your pitch emotionally and financially
- No Net Margin, no Mission (or business)
Start-up “Administrative” Checklist

- **Company**
  - Name, Domain Name (search)
  - Address, phone, email
  - Web hosting, Domain registration, Website
- **Business License(s) – city, county,..**
- **Business Structure - Incorporation**
- **Bank Account(s)**
- **Financial**
  - Record keeping, Accounts, Payables,..
  - Funding
- **Intellectual Property**
Business Structure

- Sole Proprietorship
- LLC (Limited Liability Company)
- C-Corporation
- S-Corporation
  - “sub-chapter S of the Internal code”
- Partnership

The corporation is considered an artificially created legal entity that exists separate and apart from those individuals who created it and carry on its operations. With as little as one incorporator, a corporation can be formed by simply filing an application for a charter with the respective state. By filing this application, the incorporator will put on record facts, such as:

- the purpose of the intended corporation,
- the names and addresses of the incorporators,
- the amount and types of capital stock the corporation will be authorized to issue, and
- the rights and privileges of the holders of each class of stock.

The term *corporation* comes from the Latin *corpus*, which means *body*.
<table>
<thead>
<tr>
<th></th>
<th>C Corp</th>
<th>S Corp</th>
<th>LLC</th>
<th>General Partnership</th>
<th>Sole Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owners have</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>limited liability</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>for business</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>debts and obligations</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Created by</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>a state-level</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>registration that</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>usually protects the</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>company name</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Business</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>duration can be</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>perpetual</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>May have an</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>unlimited number of</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>owners</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C Corp</td>
<td>S Corp</td>
<td>LLC</td>
<td>General Partnership</td>
<td>Sole Proprietor</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------</td>
<td>--------</td>
<td>-----</td>
<td>---------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>May issue shares of stock to</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>attract investors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owners can report business</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>profit and loss</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>on their personal tax returns</td>
<td></td>
<td></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Owners can split profit and</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loss with the business for a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lower overall tax rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permitted to distribute special</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>allocations, under certain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>guidelines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not required to hold annual</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>meetings or record meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[www.incorporate.com/business_structure_comparison_chart.html](http://www.incorporate.com/business_structure_comparison_chart.html)
Why Incorporate?

Advantages

- Owners protected from personal Liability
- Unlimited Life
- Brand Protection
- Prestige and Credibility – “Inc.” or “LLC”
- Transferability of Ownership/Shares
- Ability to raise Investment Capital
- Corporations have a reliable body of legal precedent to guide owners and managers
- Best vehicle for eventual IPO
- Income splitting, Tax benefits and flexibility under some circumstances
- Deductible expenses

Disadvantages

- Require Annual meetings, and Minutes
- Owners and Directors must observe certain formalities
- Expensive to set up
- Require periodic filings with the state, and Annual fees
- Double Taxation (C-Corp)

Ref: www.entrepreneur.com/article/77730
http://Smallbusiness.foxbusiness.com/starting-a-business
www.sba.gov
Protecting your Invention

- Trade Secrets
- Patents
- Register Trademark with USPTO (US Patents & Trademarks office)
- Copyright ©
Utilizing Trade Secrets to protect your Invention

➢ Valuable information that is maintained confidentially.
  ➢ Information such as a method of production, technical data, and general or specific “know-how” can be protected as a trade secret, so long as such information has:
    ➢ independent economic value, because:
      ➢ it is not generally known and
      ➢ is protected by reasonable secrecy procedures.

➢ Uniform Trade Secrets Act

➢ A trade secret exists as long as it is not generally known and the owner of the trade secret employs reasonable efforts to maintain the secrecy of the trade secret.

➢ It is not possible to maintain a trade secret and obtain a patent on the same subject matter

➢ A basic trademark costs about $325 per “class” at filing, along with legal fees.
  ➢ It’s worth it to protect your brand.

Ref: S. Gonzalez
Utilizing Patents to protect your Invention

- It’s a “Negative Right”…the government endows you with the exclusive right to exclude others from making, using or selling your invention.
- Invention must fall within several classes of subject matter:
  - Utility, Design or Plant
  - Protection of Design or Devices
  - Protection of Processes and Manufacturing
- Invention must be:
  - New or Novel
  - Useful
  - Non-obvious to a person having ordinary skills in the art of the invention

Ref: S. Gonzalez
http://www.uspto.gov/patents-getting-started/general-information-concerning-patents

1) Utility patents may be granted to anyone who invents or discovers any new and useful process, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof;
2) Design patents may be granted to anyone who invents a new, original, and ornamental design for an article of manufacture; and
3) Plant patents may be granted to anyone who invents or discovers and asexually reproduces any distinct and new variety of plant.
Steps towards Patenting your Invention

- **Patent Search**

- **Draft Patent Application**

- **File**
  - “Patent Pending” status

- **Prosecution**
  - USPTO does search
  - USPTO “Office Action”
  - Your Response, including “claim amendment” if required
  - Notice of “Allowance”…on your way to a Patent
  - Final Office Action …option to re-file

- **Issue Fee**
  - Upon Notice of Allowance
  - Patent granted in 1-3 months

Ref: [www.neustel.com/Patent-Inventions](http://www.neustel.com/Patent-Inventions)
Steps towards Patenting your Invention …some complications

- **First to File** (Europe, now also in US) vs. **First to Invent** (was in US)
- 1 year to file
- General rule – file in US *before* disclosing
- Low cost “Provisional” Patent filing
  - Establish early filing date
  - File full Patent app within 1 year

Ref: Joe Hadzima, Boston Business Journal, MIT
Licensing Mobile Apps

- Software code can be copyrighted
- Mobile Apps that change the way a device performs an operation could be patentable
- Challenge – short lifecycle
  - File “Provisional” patent app – good for 1 year
  - Then decide whether to file for a patent
- “methods or processes for producing a useful, concrete, and tangible result”
- “Open Source License” you give the right to someone to use your source code under some Terms and Conditions.
  - You have no control or leverage!

Ref: S. Gonzalez
Licensing your IP

- At some point in the life of your company you may want to “License” your invention to a “Strategic Partner”
  - A lump-sum payment
  - A “Royalty” payment (e.g., ~2-5% or unit selling price)

- Some issues:
  - The Terms:
    - Exclusive or Non-Exclusive
    - Right to sublicense
  - Warranties
  - Indemnities
  - …

- Valuation

Ref: S. Gonzalez
“Patent Trolls”

- PAE (Patent Assertion Entity)

HW 10 - Legal and Administrative

...Due Tuesday, November 24th
...This is a TEAM project. Only one submission per team is required.

➢ Create a Legal and Administrative Summary for your Project
  ➢ Will your company be an LLC, C Corp or an S Corp? What is the rationale?
  ➢ What is unique about your project, and does it need to be trademarked or Patented? Why?
In-class Quiz 9 9-1

- List 3 possible company structures
- Which one is the most likely fit for your company?