An Introduction to Technology Commercialization and Venture Capital

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Talking Points

I. Roadmap from the lab to the marketplace
II. Who VCs are and how VC works
III. How VCs evaluate and fund investment opportunities
At the laboratory

- One asks a question or poses a problem
  - A device that performs a novel/improved function
  - A method/material for the lowering power dissipation/cost/size and/or increasing the performance/reliability of a system

- Several approaches/solutions for addressing the problem/challenges are proposed
  - New system architecture
  - New process
  - New material
  - New device

- A researcher creates a “proof of concept” to prove the validity of his/her approach/solution
  - Results are peer-reviewed, published, and presented to the academic community
  - Disclosures are made to the Office of Technology Licensing
Startup vs. Licensing

Can a business be built around the technology, if further engineered?

- Is it a standalone system?
  - Battery, memory, solar panel, engine
- Is it a material that can be sold to a systems integrator?
  - Anode material, dielectric material
- Does it enable an exclusive service?
  - Method for transporting hydrogen
- Does it fit into existing distribution/sales channels?

Would an existing company pay to use the process/material as-is?

- Compound for a drug

Would a company that owned this technology have a distinct competitive edge, or "value proposition?"
Sources of funding

- **Small-business innovative research grants**
  - Government grants that support technology commercialization
  - NSF, NIH, DOE, DoD, etc…
  - Phase 1: Feasibility study – 6 months, $100,000
  - Phase 2: Commercialization plan – 1 year, $750,000
  - NIST – Advanced Technology Program – $1 Million per year

- **Joint research/development agreements**
  - A large corporation finances technology development/engineering with specific milestones, in exchange for an option to take a first look at the end product
Other sources of funding

- Debt financing
  - Small Business Association loans
  - Typically require some sort of leverage

- Equity financing
  - Friends, family and fools
  - Angel investors
  - Venture Capitalists
Venture Capital

▶ Consists of:
  ▶ Limited partners
  ▶ General partners
  ▶ Associates and analysts
▶ Limited partners
  ▶ Invest capital into the fund (they bring the money to the table)
  ▶ Do not make decisions as to what investments are made
▶ General partners
  ▶ Decide what investments are made
  ▶ Manage the fund
▶ Associates and/or analysts
  ▶ Assist the general partnership in making investment decisions
Evaluating an Investment Opportunity

*Purpose:* Understand the **risk** and **reward** associated with the investment

- Technology
- Market
- Financing
- Competitive
- Management

*How much $$$ is needed to get where, and how much as that worth?*
Technology Risk

- Demonstrating a concept in practice
- Scaling from a “proof of principle” to a “commercial sample”
  - Performance
  - Yield
  - Cost
- Compatibility with existing peripheral systems
- Mass manufacturability

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Market Risk

Market value
- What kind of value does the market place on the technology?
- What is the risk associated with achieving that value?

Market “window”
- Early entry results in requiring additional capital to keep the business afloat until revenue is generated
- Late entry puts the company at a competitive disadvantage against incumbents

Market size
- Is there a market?
- Small market: Will it sustain the company’s expenses
- Large market: What will be the competitive dynamic?
Competitive Risk

- Large corporations with cash-rich R&D organizations
  - Engage in a strategic partnership?
- Other well-funded startup companies
- Competing technologies
  - Superior and inferior technologies
What is the potential upside?

Does the anticipated upside justify the potential risk?
Financing the startup

Investors offer a “term sheet” that provides a template for:

- “Pre-money valuation”
- Amount invested and the option pool
- Vesting schedules
- Liquidation preferences
- Board composition
- Protective provisions
- Voting rights

Only legally-binding term is the exclusivity clause

- Cannot negotiate with other investors until an agreed date
Basic terms

- **Valuation**
  - The share of the company that the founders are giving up for the venture financing
  - Function of the risk-reward profile

- **Amount invested**
  - Financing needs for achieving agreed-upon milestones

- **Liquidation preferences**
  - Protects preferred shareholders in an event that the company is liquidated
# Example Series A Financing

<table>
<thead>
<tr>
<th></th>
<th># of common shares</th>
<th># of Series A preferred shares</th>
<th>Fully-diluted %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investors</td>
<td></td>
<td>0</td>
<td>10000000</td>
</tr>
<tr>
<td>Newco (founders)</td>
<td></td>
<td>6000000</td>
<td>0</td>
</tr>
<tr>
<td>Option Pool</td>
<td></td>
<td>4000000</td>
<td>0</td>
</tr>
</tbody>
</table>

- Total # of shares: 20 million
- Preferred shareholders get:
  - Special treatment in an event where the company is liquidated.
  - Voting rights
  - Others outlined by the term sheet

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Future financing rounds

<table>
<thead>
<tr>
<th>Investment</th>
<th>Premoney</th>
<th>Post</th>
<th>F/O % Stake</th>
<th>F/O Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series A</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>50.00%</td>
</tr>
<tr>
<td>Series B</td>
<td>15</td>
<td>30</td>
<td>45</td>
<td>33.33%</td>
</tr>
<tr>
<td>Series C</td>
<td>15</td>
<td>45</td>
<td>60</td>
<td>25.00%</td>
</tr>
</tbody>
</table>

- As “value-creating” milestones are met, capital can be raised at a lower expense to the existing shareholders.
- Although it may be attractive for a founder to get a high “pre-money,” the resulting “post-money” could turn away potential future investors.
  - Investors like to look back and see significant increases in company valuation between financing rounds.
  - Furthermore, there needs to be enough “breathing room” in the valuation so that the investors can expect a return that would justify the risk.
How much should you raise?

- Identify the significant milestones that will significantly reduce risk, hence add value to the company
  - Putting together a team, starting a company, and licensing the technology
  - Showing a proof of concept
  - Attracting a world-class CEO
  - Developing engineering design libraries
  - Delivering product samples to customers
  - Generating revenue
  - Becoming profitable
- Figure out how much time and money will be required to hit each milestone
  - At least half of the venture money is usually spent on payroll for R&D/engineering at technology-focused startups
- Request an amount that would take the company to the next step
Is more $$$ better early on?

- The first money is also the most difficult to raise
  
  *Should the entrepreneur try to raise as much as he/she can in the first round?*

- **Rationale for “yes” answer:**
  
  - Better resources can be provided early on to ensure success faster
  - Longer runway means more time will be spent adding value to the company rather than going out to raise money
  - The company will not be “marketed” as much to VCs

- **Rationale for a “no” answer:**
  
  - The company’s higher “post” valuation (premoney + amount invested) would make the company less attractive for follow-on investors
Financing examples

$10M raise at a $10M premoney valuation

<table>
<thead>
<tr>
<th>Series</th>
<th>Total VC Inv.</th>
<th>Pre</th>
<th>VC 1 Inv</th>
<th>Post</th>
<th>F/O % Stake</th>
<th>F/O Equity ($M)</th>
<th>VC 1 % Stake</th>
<th>VC 1 Equity</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>10</td>
<td>3</td>
<td>20</td>
<td>50.00%</td>
<td>10.000</td>
<td>15.00%</td>
<td>3.000</td>
</tr>
<tr>
<td>B</td>
<td>15</td>
<td>30</td>
<td>3</td>
<td>45</td>
<td>33.33%</td>
<td>15.000</td>
<td>16.67%</td>
<td>7.500</td>
</tr>
<tr>
<td>C</td>
<td>15</td>
<td>45</td>
<td>2</td>
<td>60</td>
<td>25.00%</td>
<td>15.000</td>
<td>15.83%</td>
<td>9.500</td>
</tr>
</tbody>
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$2.5M raise at a $2.5M premoney valuation

<table>
<thead>
<tr>
<th>Series</th>
<th>Total VC Inv.</th>
<th>Pre</th>
<th>VC 1 Inv</th>
<th>Post</th>
<th>F/O % Stake</th>
<th>F/O Equity ($M)</th>
<th>VC 1 % Stake</th>
<th>VC 1 Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.5</td>
<td>2.5</td>
<td>1.25</td>
<td>5</td>
<td>50.00%</td>
<td>2.5</td>
<td>25.00%</td>
<td>1.25</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>25</td>
<td>2.5</td>
<td>35</td>
<td>35.71%</td>
<td>12.500</td>
<td>25.00%</td>
<td>8.750</td>
</tr>
<tr>
<td>C</td>
<td>15</td>
<td>45</td>
<td>2.5</td>
<td>60</td>
<td>26.79%</td>
<td>16.071</td>
<td>22.92%</td>
<td>13.750</td>
</tr>
<tr>
<td>D</td>
<td>15</td>
<td>60</td>
<td>2.5</td>
<td>75</td>
<td>21.43%</td>
<td>16.071</td>
<td>21.67%</td>
<td>16.250</td>
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</table>
Venture investment process

- The general partnership makes a decision
- An investment is made in return for a stake in the company
- The VCs take an active role as advisors and board members
  - Facilitate access to key customers/potential acquirers
  - Assist in securing additional non-dilutive government financing
  - Build visibility and awareness
  - Recruit talent & professional management
  - Assist in raising additional financing
  - Define competitive strategy and positioning
- The VCs assist in identifying/facilitating an “exit”
  - Acquisition
  - IPO
New challenges in early-stage tech VC

- Specialized innovations
  - Requires in-depth knowledge to appreciate the value proposition and anticipate major challenges that lie ahead
  - Require a deep understanding of an ever more complex value chain for commercialization

- Semiconductor newcos normally need to deliver working systems prior to exit
  - Requires relationships in place with potential customers to define specifications
  - Complex value chains require investigating/evaluating multiple paths to commercialization

- VCs will need to shift from “passive opportunity seekers” to “active opportunity builders.”
  - Hands-on assistance in shaping and building opportunities for the business
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