Innovation, Commercialization, and the Successful Startup

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Innovation, Commercialization, and the Successful Startup (Working Paper)

James F. Jordan
Innovation is incomplete without the inclusion of commercialization. Companies that go through incubators, have industry-seasoned management, and continuously revalidate their business plans have improved results
Table of Contents

OVERVIEW ...........................................................................................................................................3

INNOVATION POLICY MUST INCLUDE COMMERCIALIZATION .........................................................3

INNOVATION IS A PROCESS OF CONNECTED STEPS .........................................................................4

INCUBATORS INCREASE THE PROBABILITY OF SUCCESS .................................................................5

DOMAIN EXPERIENCED PERSONNEL REDUCE RISK ........................................................................6

MATCH YOUR STRATEGY TO THE PRODUCT LIFE CYCLE ...................................................................8

A STARTUP MUST TELL A COMPELLING STORY ...............................................................................10

THE STORY MUST BE SUPPORTED WITH AN EVIDENTIARY INVESTOR PITCH .........................10

GREAT PITCHES CONSTANTLY UNDERGO THE PLAN-DO-CHECK-ACT CYCLE .....................13

REVISIT YOUR VALUE DRIVERS AFTER EACH PDCA CYCLE .....................................................13

1. CREATE AN UNFAIR ADVANTAGE ..................................................................................................13

2. DIFFERENTIATE YOURSELF EARLY AND PLAN TO EVOLVE FOR DISTANCE .....................14

3. DOMAIN EXPERIENCED MANAGEMENT IS THE KEY TO A SUCCESSFUL ENTERPRISE ........14

4. FOLLOW THE NORMS OF THE STARTUP CAPITAL MARKET ..............................................15

5. PLOT YOUR FUNDING SYNDICATE ..............................................................................................15

6. CONSIDER YOUR “EXIT CANDIDATES” WHEN PLOTTING YOUR BUSINESS MODEL ..........17

7. EVERY DOLLAR INVESTED SHOULD FOCUS ON THE REMOVAL OF RISK .......................18

8. BUILD CREDITABILITY & KNOWLEDGE THROUGH THIRD PARTIES ...................................19

9. CONSISTENTLY DELIVER TO YOUR DOCUMENTED PLAN ....................................................20

10. EXIT WISELY ................................................................................................................................22

CONCLUSION ......................................................................................................................................24
Overview

If data were to express that nine out of ten companies fail to make it to venture capital funding sources that may feel correct, as many should fail early technical hurdles. If we shared that the data was obtained further downstream, after technical feasibility was determined and a working prototype was created, perhaps you might be concerned.1

After reviewing existing publications, it appears our national discussion on innovation frequently excludes commercialization. As we will discuss, the definition of innovation itself must include commercialization.

Innovation policy must include commercialization

By considering the definitions below, the processes of research, development and commercialization must be included in the broader subject of innovation.

- **Research**: a studious inquiry or examination. Discovery and interpretation of facts, the revision of accepted theories or laws in light of these new facts, or practical application of such new or revised theories or laws.

- **Development**: the act of creating that which is unknown; a gradual and focused process by which anything is developed in a series of progressive steps.

- **Commercialize**: to make something available to be exploited for profit.

The end result of commercialization is the availability of the innovation to be exploited for profit, which creates both jobs and wealth. So it appears we have numerous embedded processes in innovation. The inclusion of commercialization and its required steps are a necessity in order to get an innovation to market.

These steps include having the time, money, and other resources necessary to prepare a product or service for “launch” and the activities necessary for the company to become self sufficient, i.e., cash-flow positive.

In the end, the hope of a nation is to have an innovation policy that creates numerous unique and protectable business categories for sustainable jobs and GDP growth. It is the hope of the investor that this same policy supports a return that exceeds the value-expended capital incorporating and appreciating the risk incurred.
Innovation is a process of connected steps

The process begins with research, the primary goal of which is the discovery and interpretation of new facts. In general, the government, academic institutions and large industries perform the majority of the research in the United States.

Frequently, one research project does not yield one result applicable to a specific market situation. It can take many research chapters to yield a development story.

Development is the step in which the research chapters are converted into a practical, applicable idea. Development generally occurs in academic and government institutions, within an existing company, or is handled by an individual or group of individuals.

Commercialization is a process of connected steps to bring a product to market. Progressive commercialization techniques embrace integration, concurrence, and/or overlap with the development process to ensure proper downstream execution.

Commercialization is executed primarily through two organizational forms: corporations and startups.

Corporations generally have more specialized personnel and have access to public financing. As a result, their commercialization teams have less of a focus on obtaining financing to fund the endeavor. The team’s main focus is developing a quality product that meets product specifications.

Although there are numerous commercialization processes and philosophies, they all contain a common series of steps and reviews often referred to as “gates.” The “gate” process typically starts with screening development ideas and scoping the objectives and deliverables of the project. A business case is documented and a prototype developed. The prototype is tested and validated at which point the product is launched.

Successful conclusion of this process is generally considered to be the final phase of new product development.
Startup companies typically do not have access to public financing. Thus, private financing is required and comes in the form of founder self-investment, organic growth (invest more when you sell more), and angel or venture capital investment. As a result, raising funds frequently consumes as much, or more, management time for a startup as commercializing the product.

**Incubators increase the probability of success**

Although the tactics are industry-specific, the strategic formula appears to be similar regardless of the industry.

Business incubators have become one of the most successful tools to mentor startup ventures. The definition of incubate is “to cause or develop”: that is exactly what business incubators do.

The first U.S. incubator was founded in 1959 in Batavia, NY, with the objective of assisting entrepreneurial companies develop, survive, and grow during their startup period.iii

According to the National Business Incubator Association (NBIA), there were 1,400 incubators in North America in 2006. For every one dollar of public investment in an incubator, it is estimated that there is a $30 return in local tax revenue. 87% of incubator graduates stay in business with 84% of the graduates likely to stay in the community versus companies that do not go through incubators.iii

According to NBIA in 2005, North American incubators assisted over 27,000 companies. These companies accounted for more than 100,000 full-time workers and generated annual revenues of more than $17 billion.ii

Incubators come in a variety of types and sponsors resulting in different programs. Below is an illustration of incubator types and sponsors.

<table>
<thead>
<tr>
<th>Incubator Types</th>
<th>Incubator Sponsors</th>
</tr>
</thead>
<tbody>
<tr>
<td>94% Non-profits</td>
<td>31% Economic Development</td>
</tr>
<tr>
<td>54% Mix use</td>
<td>21% Government</td>
</tr>
<tr>
<td>39% Technology</td>
<td>20% Academic Institutions</td>
</tr>
<tr>
<td>4% Service/Specialty</td>
<td>4% For Profit</td>
</tr>
<tr>
<td>3% Manufacturing</td>
<td>8% No Sponsors</td>
</tr>
<tr>
<td></td>
<td>8% Combination</td>
</tr>
<tr>
<td></td>
<td>8% Other</td>
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</tbody>
</table>

Source: 2006 State of the Business Incubation Industry
You will find different incubator program specifics but the objectives are all the same - find viable companies and get them to early-stage financing by offering specific services and/or initial funding.

Below is an example of the process and the programs at the Pittsburgh Life Sciences Greenhouse (PLSG). The PLSG is a non-profit incubator that offers programs and funding to help companies progress.

The illustration articulates, on the left, the sources of innovation. The investment continuum is highlighted at the bottom of the graphic representing the funding sources for each phase. The specific programs of the PLSG are identified in their Concept to Commercialization™ Model (blue circles). The company’s objectives are to provide capital, connectivity, people, and space to move client companies from pre-seed to early-stage funding.

Domain experienced personnel reduce risk

Domain experience means that the company’s founders or their management have worked in the industry before and have specific knowledge of the industry and the tasks at hand. Private investors have learned that successful startup ventures are led by those who have lived in the industry. In short, domain experience is the experience that an employee has acquired by virtue of their employment at another successful firm in a particular industry or industry segment.
This concept becomes intuitive when you consider that the first step in product development requires a thorough understanding of the “voice of the customer” and the customer problem you are solving. From that foundation, the product specifications are built: if you get it wrong, the entire business foundation is flawed.

Startups with limited budgets for market research must make assumptions on the “voice of the customer.” Who has a higher probability of making better assumptions, someone with 20 years of domain experience or someone from a different industry?

In addition to understanding the customer’s voice, domain experience brings relationships and an understanding of the connectivity within the industry.

Many products are part of a broader value chain that creates the ultimate customer solution. For example, a steering wheel for an automobile is important but without the entire car, its value is relatively trivial. Frequently the product may be part of a bigger customer system or may need to go through a particular channel partner. Those who have domain experience have relationships and knowledge about how to access these systems and channels.

The concept of domain experience is evidenced in the franchise industry. Why would one pay five or six times more to open a Dunkin Donuts than one would pay to open his own coffee shop?

This is done because it is understood that much of a startup company’s initial dollars are spent (wasted) finding a profitable business model. Those who franchise recognize this and are willing to invest more money in a proven model to reduce their investments risk of failure.

Additionally, continuing our Dunkin Donuts example, the company brings its entire supplier network to the franchisee. As Dunkin Donuts has greater buying power than a local coffee shop, the franchisee has access to a broader amount of products at a better price. Dunkin Donuts analyzes best practices on what the store should look like, how the kitchen is planned, how the receipts are prepared – these are all done to ensure franchisee success. What works is known and therein lays the value.

Another example almost states the obvious; Queen Isabella funded Christopher Columbus’ four voyages of exploration an attempt to colonize the “New World.”

Christopher Columbus had significant sailing experience. Would Queen Isabella have sent an inexperienced person into uncharted waters? You would not send someone who has just learned to navigate the local harbor to discover the “New World”.

These examples illustrate the feeling investors have regarding the importance of domain experienced personnel, particularly when funding a startup company.
**Match your strategy to the product life cycle**

Successful commercialization requires alignment with your target market’s lifecycle. Innovation is successful when matching the appropriate strategy with the appropriate product lifecycle. Different tactics are deployed at each phase to affect change. The four stages of the product lifecycle are introduction, growth, maturity and decline. The graphic depicts the evolution of revenue with time.

Innovation is defined as introducing something new to affect change. From a business perspective, a marketing specialist would state that the desired effect of innovation is either to:

- create a new, differentiated and protectable market category, or
- collapse the value steps in an existing category, resulting in decreased cost or an increased benefit.

As demand declines, industry consolidation is necessary to adjust supply with demand while maintaining declining pricing.

At the **introduction stage** of the product lifecycle, the product is initiated into its market. The priority at this time is to create awareness of the offering through promotional efforts. It is noteworthy that frequently competitors are few or nonexistent at this point. If there are competitors, promotional efforts are oriented toward growing the category to the benefit of all versus competitive attacks.

At the **growth stage**, sales are generally escalating due to product awareness. This growth, with its corresponding cash, attracts competitors. Incumbent companies reinvest their cash windfalls to maintain position and hold off competitors. It is at this stage that promotional efforts change focus toward differentiating from the competition.

At the **maturity stage**, the market is established and sales tend to plateau: weaker competitors struggle for market share and ultimately leave the market and the remaining players intensely compete for market share. At this point, large cash profits are available for investors as product reinvestment is not as attractive based upon the market maturity.

At the **decline stage**, sales growth ceases and there are fewer players in the marketplace. As demand falls, companies either eliminate product lines or seek to extend life spans through new product line extensions or repositioning the products to new markets.
Perhaps some examples would be useful in sharing the importance of understanding the product lifecycle.

The first example is in the market introduction phase - the electric car. It is generally understood that this market lacks supporting infrastructure. Lacking market infrastructure constrains growth and the manufacturer’s ability to sell features that would be desirable in later phases.

For example, a manufacturer would not go to the expense of building an electric car capable of driving a cross-country trip, not because they could not build that car, but because the market infrastructure does not support the trip. There is simply a lack of electric battery recharging stations for the journey.

Therefore, investing in building an electric car for anything other than local use would not yield an investment return at this time.

Healthcare has numerous examples of introduction, growth, maturity and reinvestment. There are many great examples of how to manage the product lifecycle curve.

An angioplasty balloon was designed to open blocked vessels in the heart. In the late 1980s, and early 1990s, these products were in the growth phase. Revenue was increasing at double-digit rates and the average selling price was well in excess of $750. Today, according to Frost and Sullivan, the market is growing at less than 4% with an average selling price below $200.

How did this happen? As the balloon angioplasty market neared maturity, a new technology, called a heart stent, came along to advance and grow the market. A heart stent is essentially a scaffold that is left behind to keep the vessel open. Clearly investing today in a new angioplasty balloon would not be a prudent decision. A cycle of introduction, growth, maturity and reinvention has kept these market growing and avoiding decline.

An example of a declining industry segment would be the dot matrix printer. Dot matrix printers are still used in certain applications, however their use declines more every day. It would be cost prohibitive to design a differentiated dot matrix printer today at the right cost point and expect to get a return on investment.

At this declining phase of the market, acquisitions and consolidation tactics would be more a profitable tactic than product introductions to make a return.

All of the above are examples of the importance of recognizing what phase of the product lifecycle your market is in. A good idea is not necessarily a good product, or a profitable one, if it is not a match with its product lifecycle.
A startup must tell a compelling story

A startup must be mindful of the need to pull together a compelling story that satisfies multiple constituencies. Naturally, the startup and its product must have a story that is appealing to its customers: those who would purchase the product. However, to obtain a liquidity event (going public or a sale), a startup must be attractive to the public markets, the private markets, and the company’s potential acquirers. You could call these multiple constituencies the company’s “publics”.

The chart demonstrates that the complexity of the startup company trying to define a voice to its “publics”. The company must tell a compelling story to obtain funding and advance through the investment continuum. Each subsequent round of investors (seed, early stage, growth, and later stage) is interested in different aspects of the story.

Achieving a “liquidity event” (the method by which investors get their money returned and hopefully profit) may require one story for an acquirer that may be an entirely different story needed for sustainability (public capital). Given the vast amount of “publics,” the process can be difficult and complex. However, the best companies have the capability to create a simple story that is compelling for all.

The story must be supported with an evidentiary investor pitch

An investor pitch is a comprehensive plan that can be communicated according to the “rule of three.” There are moments where you must communicate your story in less than three minutes. There are times when you have 30 minutes to communicate your plan and then there are occasions during final negotiations for fundraising where you may have up to three hours to communicate your message. Creating a presentation that can be used for all three occasions (three minutes, 30 minutes, and three hours) requires some planning.

The best pitches contain a concise preview of the company and a compelling story of success for the “publics”. The market need is defined, the product offering is expressed, and the market opportunity is quantified. Competition is expressed and the business model is articulated. There is a commercialization plan with future milestones and their corresponding funding needs. The skill of the management team is communicated and the presentation is closed with an opportunity summary.
The next two pages demonstrate the type of content that should be included in your presentation.

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**Table of Contents**

- The Preview
- The Venture Concept
- The Market Need
- The Product Offering
- The Market Opportunity
- The Competition
- The Business Model
- The Commercialization Plan
- Future Milestones
- The Management Team
- Funding Needs
- Opportunity Summary

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**The Preview**

- A concise summary message of the opportunity
- If you have only 3 minutes, this slide & the Venture Concept slide would be your entire presentation

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**The Venture Concept**

- 30 second pitch
- Funding past & future
- Strength of the team

---

**The Market Need**

- Has the company identified a clear need/problem in the market
  - The solution & economic need (customer pain)
  - How it is addressed today
  - What gaps exist
  - The primary & secondary customers

---

**The Product Offering**

- Near-term product/service offering
- How it works
- How is it protected
- Current status of the technology
- Demonstrated outcomes of the concept
- The long-term opportunity

---

**The Market Opportunity**

- Patient profile, prevalence, incidence, treatment methods
- Market size: growth rates of industry & target market
- Creation of new/untapped market demand
- Describe external factors driving growth
- Is the competitive advantage sustainable

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**The Competition**

- Macro: what companies play in these segments
- Micro: what product lines do each company play with
- What competing technologies are under development
- Is the company positioned to compete effectively

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The Competition
- Macro: what companies play in these segments
- Micro: what product lines do each company play with
- What competing technologies are under development
- Is the company positioned to compete effectively

The Business Model
- Market strategy
- Mfg, market, sales, distribution strategy
- Anticipated market share
- Anticipated revenues 1yr/5yrs
- If to early provide a sense of scale
- Price of product/CAGS

The Commercialization Plan
- Intellectual property
- Market selection rationale
- Adoption drivers
- Performance data
- Reimbursement
- Regulatory
- Sales channel & pricing strategy

Future Milestones
- Product development milestones
- Regulatory milestones
- Product launch dates
- New hire schedule
- Other significant milestones

The Management Team
- Management team
- Scientific advisory board
- Board of Directors
- Express the domain experience
- Identify special skills that will help you win
- Communicate special relationships

Funding Needs
- Money raised to date
- Money currently being sought/use of funds
- Anticipated future funding needs
- How will investor realize profit/exit strategy

Opportunity Summary
- How fundable is the company in the venture capital community
- What are the likely sources of follow-up funding
- Does the company have a clear understanding for finding f/u funding
- What are the companies “fundable milestones” are how are you tracking to them.
Great pitches constantly undergo the Plan-Do-Check-Act cycle

Plan-Do-Check-Act (PDCA) was made popular by Dr. W. Edward Deming, who is considered by many to be the father of quality control.

The “Plan” cycle is the establishment of objectives and the processes necessary to deliver the results are specified. In the “Do” cycle, the process is implemented, preferably in a small scale. In the “Check” cycle, the process is reviewed to determine if it met its expected output. The “Act” process determines if there was a difference between the desired output and the actual output. If there is a difference, the steps to apply changes are designed to meet the “plan.” The process is then repeated.\(^{\text{vi}}\)

Revisit your value drivers after each PDCA Cycle

1. Create an unfair advantage

Great startups are constantly attending to their “unfair market advantage,” which is composed of characteristics the company possesses that favors its success.

This unfair advantage can be had by creating new categories or markets, collapsing the value steps of an existing market, seeking team members with proprietary customer relationships or know-how, or seeking first-mover advantage.

Venture capitalists particularly enjoy the creation of new categories or markets that are protected by intellectual property. Startup companies that seek to create new, differentiated and protectable areas frequently cause displacement of an existing market player and are acquired early. Venture capitalists find that these investments have shorter lifecycles from creation and to acquisition. This process is something they can continually deploy with great success.

Startups that seek to collapse the value steps in the market offer a decreased cost as one aspect of new customer benefit. Destruction of the existing market results in the startup firm connecting new components of the value chain or completely removing components of the value chain. Private investors also prosper from this particular tactic: however, collapsing value chains is not a continuously repeatable tactic as it takes time for the industry to standardize on your chains.

Private investors also seek teams with proprietary customer relationships or know-how. This tactic is particularly attractive when large players decide to outsource whole categories of businesses previously performed internally. Management teams departing from these large businesses generally enjoy intimate relationships with the outsourcing company and can quickly grab revenue contracts. The startup businesses either eventually are acquired as the industry consolidates or becomes self-sustaining. Sustaining models generally are not attractive to venture capitalists; however, they are attractive to angel investors.
Frequently, seeking first-mover advantage can suffice. Sometimes an industry-incremental improvement, not capable of enjoying intellectual property protection, can still be significant. Even though a major player could eventually copy the idea, they may find it more cost-effective to acquire it. Why? Because acquiring new customers is expensive and it may be cheaper to just buy the ones you already have. These models may not be as attractive to venture capitalists; however, they are attractive to angel investors.

2. Differentiate yourself early and plan to evolve for distance

Many companies fail to be planful when it comes to positioning. Positioning is an investment to influence the perception of a branded product. The objective of a brand is to occupy a unique space in the consumer’s mind.

The intention of this investment is that the product enjoys a higher sales volume and/or price than the product would have if it stood without a particular brand attribute.

Careful consideration to positioning is frequently overlooked by startup companies. If a startup company is the first into the market category, they may not see the importance of this as their initial positioning speaks not to their product but to the category in general. (See the product life cycle management discussion.)

When this occurs, followers enter the market and either copy the incumbent’s positioning and/or create a differentiated positioning to steal market share. It is therefore advisable to “stake a position that is impervious to competitive advancement™”. This can be done through alignment with the company’s intellectual property or by capturing some other meaningful category symbol/message that others cannot replicate.

Lastly, it is important to recognize in the innovation cycle that the market will evolve through growth and maturity and will eventually decline. Therefore, positioning must evolve over time to continue to distance you from the competition. Considering each phase of the future market and setting your initial positioning for that evolution is prudent and cost-effective.

3. Domain experienced management is the key to a successful enterprise

We have spoken of the importance of domain specific management upon the formation of a startup company. The company must remember that each new hire is an opportunity to gain additional domain experience and specific know-how.

Startup companies also require different management skills at different sizes of revenue and in different product lifecycles phases. It is, therefore, critical that the startup companies not only look at each new hire as an opportunity to gain domain experience and specific know-how but an opportunity to bring in personnel who
match the particular product life cycle that the company is either in, or intends to be in, in the foreseeable future.

A caution: it is also common for companies to make mistakes at this phase by hiring personnel too early. For example, the CEO or marketing executive skilled at the maturity or decline phase is not likely to be as effective in the introduction or growth phase.

4. Follow the norms of the startup capital market

Startup companies begin without revenue and thus traditional discounted cash-flow valuation methods do not apply for valuations. Startup companies must be aware of the norms associated with those private investors who frequent their particular market. Each specific market has certain steps that are associated with an increase in the value of the company. These steps and their associated value points must be known and are frequently called “fundable milestones.” Below is an example.

Private investors generally equate a funding series with a particular stage in the investment continuum (see the chart on page 8).

Pre-money refers to the value given to the company before it raises a round of capital.

Once the capital is raised, it is added to the pre-money valuation to obtain post-money valuation. You’ll notice that the post-money for Series A is not the pre-money of Series B. This is due to the premium awarded to the previous investors in Series A for success. It is noteworthy to comment that there can also be a “down round” which means that the Series B pre-money could be less than the Series A post-money. This happens when the previous “fundable milestones” were not met efficiently and the new investors are not going to pay for that inefficiency.

5. Plot your funding syndicate

Startup companies generally receive their initial funding from “Family and friends,” followed by Angels and then perhaps Venture Capitalists.

“Family and friend” investors are exactly that - people the founders know personally who are willing to invest in their venture.

Angel investors are high net-worth individuals. Frequently, they are accomplished business leaders. Other times, they are individuals whose wealth is gained through a
non-business means (like a sports figure) or their wealth is inherited. More recently, angel investors have joined together and formed angel groups.

A venture firm is simply an investment firm that gives money to growing companies for a return. The venture capital (VC) firm generally receives their money from institutional investors and high net-worth individuals. These funds are pooled together to create a dedicated firm whose core skill is to identify startup companies with the potential to generate high returns. VC firms generally focus in a specialty area such as healthcare or information technology. Many are even more focused such as those who invest only in the medical device or the pharmaceutical segments of healthcare. Those who place their money in a venture firm are counting on the expertise and specialized knowledge of the firm’s investment partners to gain a high return.

A syndicate is a group of investors who come together to fund a particular company. Funding syndicates are not formal or permanent entities; however you will frequently notice groups of individuals, angels, or VC Funds that collaborate on financing.

Most likely each round of funding in a startup will not be from one individual but from a group. This can be considered a syndicate. However, consider broadening that concept. If you combined all the people involved in financing the company from inception to cash flow positive, is that also not a syndicate? We will discuss this more later.

Angel investors can be the most important role in your startup company as they are generally the first non-founder Board of Director members and non-family and friend stockholders. Experienced angels can offer advice based upon their experience and can be invaluable to helping you obtain future financing rounds.

Recall our discussion regarding where Angel investors obtain their money. Wouldn’t you expect to receive better advice from an Angel Board of Directors member with significant business results in your specific industry than from someone who inherited his or her wealth? As money is power and influence, an inexperienced Angel could unintentionally and adversely impact the company.

Frequently, the term “smart money” is used to refer to investors with industry experience. “Smart money” investors not only offer domain experience, they also offer other industry connectivity to suppliers, as well as relationships with potential management candidates and potential acquirers. Some offer venture capital connectivity as they may have had successful venture capital endeavors themselves. All of this domain experience is needed as the company progresses.

Depending on how much money the startup company may require, they may need to involve venture capital. The venture capital industry has several different types of firms that are distinguished by the timing and the purpose of an investment.
Venture capital firms are generally broken into seed, early-stage, growth, and later-stage firms. There are further distinctions but they are beyond the scope of this discussion.

Each type of venture capital firm is skilled at their particular phase of development (i.e.; seed) and they frequently offer domain experience and industry connectivity. By design and necessity, they also have relationships with the next level of venture capital firm. For example, early-stage venture firms have relationships with growth venture firms. One can appreciate that the venture capital is by design built on syndicates.

One will also hear the term “smart money” used in venture capital. An investment partner who has had several successful startup ventures offers more operational experience than someone with an investment banking background at the seed stage. Yet the opposite would be true at the later stage venture firm. As later-stage firms are focused on providing funding toward a liquidity event, an investment banking background would be more cherished at this phase.

The chart to the right depicts the path a startup company needs to navigate.

As those involved in your company have down-stream relationships (i.e., seed to early-stage), it is important to understand how the next potential investors can improve your connectivity and reduce your firm’s risk.

It therefore is critical to plot, to the best of your ability, a syndicate of relationships from Business Incubators right through to your final exit.

6. Consider your “exit candidates” when plotting your business model

Often, startup companies will excitedly communicate that a large number of potential companies could acquire them. This is frequently as much a burden as it is an opportunity.

The reason for the burden is that acquiring companies are interested in products that deliver their value in a manner that is consistent with the acquiring company. By its nature, the acquiring company has scaled its business model and become efficient by following specific steps to satisfy their customers.

Startup companies can make an egregious error when their process of satisfying the customer’s need is significantly different from that of the potential acquirer. Acquirers are looking to put new products through their existing customer value pipeline. This is how they gain leverage over their existing cost infrastructure. If the
startup company’s new product also requires an investment in infrastructure, the
acquirer must decide if the incremental investment is worthwhile. The necessity of
new infrastructure can add an unnecessary level of risk to your company: a risk that
may not have been necessary to add.

Therefore, startup companies who may have more than one acquirer may develop a
business model that tends to satisfy no one.

7. Every dollar invested should focus on the removal of risk
Your business plan expresses your vision, defines the opportunity, articulates
necessary funding and delineates the major steps associated with achievement.

Your commercialization plan is a further refinement and contains all the tactics
associated in achieving your business plan. To simplify our discussion, the word
product will be used to describe either a manufactured product, software, or a
service.

The International Organization for Standardization (ISO) defines risk as the effect of
uncertainty on objectives. Risk management is asking what could fail during the
planning cycle and creating defensive processes to inhibit risk.

Contingency plans define what you will do if the risk does occur: a “Plan B.” Risk
management and contingency planning are designed to address areas of predictable
failure.

Using the chart to the right, the top row is an over simplification of your
business plan. Your business plan is essentially the expression of customer
expectations with an understanding of the product specifications and process
investment necessary to achieve the projected results.

Your commercialization plan, being a
more comprehensive document, should
contain a risk and contingency
management plan to anticipate how
bad benchmarks or poor conformance could enter your system. Let us detail this a
little further.

Benchmarks are the external customer specifications that you are targeting. For
example, the product must do “A” and “B.” Your development team must translate
those benchmarks into something that can be measured so that design personnel
can numerically define when they have met customer expectations.
When the design team is satisfied that they have a system configuration that meets R&D benchmarks, they have developed their product specifications. Next you need to communicate to the organization all the activities that need to be obeyed to deliver the product. These are called the process specifications.

In attempting to deliver that plan, two things can go wrong: bad benchmarks (targets) or bad conformance (adherence to processes).

There are numerous types of risk items and their specific discussion is beyond the scope of this chapter. However, for startups to obtain funding, they must articulate their understanding of risk areas and express their plans to manage or remove the risk.

By identifying these areas and demonstrating that the risk has been removed from the system, the company is advancing and thus its valuation should increase.

8. Build creditability & knowledge through third parties

As every industry contains standards in one form or another, planful utilization of these standards can communicate the removal risk, which increases investor and customer confidence.

Before a company is formed, value points can occur. For example, if the technology started in a university and the university professor received a research grant - that has value. The grant award states that the granting organization (which has an independent assessment committee) saw the project as differentiated and viable.

In early company formation, Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants are highly valuable. These programs provide qualified small business concerns with money to develop and commercialize an innovative idea. The details of these programs can be found at [http://www.sbir.gov](http://www.sbir.gov).

The value of an SBIR/STTR to the startup company is that scientific experts have vetted the technology and the approving panel sees the commercial potential in the project. The funding for this program goes toward the development of the product and because it is a grant it is basically free money in the eyes of the investor. Investors recognize that the dollars invested by the grant reduces the need for the company to raise additional equity. As grants are not paid back they reduce the need to raise additional equity. This is referred to as “non-dilutive funding.”

Patents communicate value. For example, submitting a patent application and having a “patent pending” designation expresses that the technology is at a specific phase. An issued patent is the government issuing the right for the company to be the only one to perform that patent – this is very valuable.
Before a product is launched many companies must adhere to some form of industry regulatory process. In regulated industries, ISO certification is valuable. It communicates that your product specifications meet industry standards and that your internal processes are designed to a certain standard of excellence. In healthcare, FDA approval is required before a company can commercialize its product and is therefore very valuable. Audited financial systems provide investor confidence that the financial systems adhere to certain standards and are a fair representation of the company’s status.

Having an article published in a peer-reviewed journal can also provide the investor with confidence that the technology is unique. That same article can also communicate confidence that your customer (being the peer) has also vetted the technology and finds it valuable.

Below is an example of the some external validation points and their meaning to investors.

<table>
<thead>
<tr>
<th>External Validation Point</th>
<th>Value to Investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Research Grant (example NIH, R01)</td>
<td>• Independent assessment that the technology is differentiated&lt;br&gt;• Independent assessment that the technology is viable</td>
</tr>
<tr>
<td>SBIR/STTR</td>
<td>• Independent assessment that the technology has commercial value&lt;br&gt;• Competitive program only 2-3% of projects get funded&lt;br&gt;• Dollars are non-dilutive to investors</td>
</tr>
<tr>
<td>Patent Office</td>
<td>• Patent Pending communicates the belief that the technological approach is protectable&lt;br&gt;• Patent Issued states the government is issuing the company the right to exclusively use this approach</td>
</tr>
<tr>
<td>Regulatory Bodies</td>
<td>• ISO certification expresses that your business systems adhere to certain standard&lt;br&gt;• FDA signifies your product meets certain standards and you have supporting evidentiary data&lt;br&gt;• Validates the technology and the value to the customer</td>
</tr>
<tr>
<td>Peer Reviewed Journal Articles</td>
<td></td>
</tr>
</tbody>
</table>

### 9. Consistently deliver to your documented plan

Developing a comprehensive plan from the beginning is difficult. This difficulty is natural, as it is nearly impossible to conceive of every aspect of a commercialization plan from the startup phase to cash flow positive to exit. Understating or overstating the cost of your plan is a major risk. Benchmarking is a valuable mechanism to guard against this frequent error and a tool to assist you in managing risk.
Benchmarking against large companies and other startups in your industry helps you gain insight into the total cost of other such endeavors. When you match your particular business plan to certain benchmarks and find variance, this leads the writer of the business plan to either investigate for what is missing or make a dollar assumption on the effort.

Misaligned investor expectations are one of the biggest challenges for a startup CEO. Benchmarking is a great tool to defend your plan against investors who are always looking to drive down the pre-money value of a deal in the motivation to own more of the company with their investment.

Once invested, that same investor is motivated to have the company spend as little as possible to minimize future funding needs so they can maximize their ownership and return.

For example, if every other company in the category took $25-$35 million to build, how is it reasonable that your startup can do it in $5 million.

Databases such as Venture Source (www.venturesource.com) and Hoovers (www.hoovers.com) are great tools.

Venture Source allows you to investigate how other startups in your particular industry were valued and how much money they raised at various Series (see chart page 13, a subset is below). This is a good way of understanding how much others have raised in total capital and how much the firm should be valued at that particular point in time.

<table>
<thead>
<tr>
<th></th>
<th>Series A - in millions</th>
<th>Series B - in millions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Money</td>
<td>Capital Raise</td>
</tr>
<tr>
<td>0.5</td>
<td>1.5</td>
<td>2</td>
</tr>
</tbody>
</table>

Hoovers is another great tool and serves a slightly different purpose. Hoovers contains data from thousands of firms from both public and private companies. Companies are categorized using Standard Industry Code (SIC) allowing the user to easily find companies that are in a similar industry.

Hoovers provides financial information, which allows you to put together the DuPont Model. The DuPont model is a return on equity formula that allows you to understand how a business derives its return. The formula is below:

\[
\text{ROI} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} = \frac{\text{Net income}}{\text{Total assets}}
\]

The value of using this formula is that it helps you understand how the industry on average makes a return. Like with our valuation discussion, if everyone else in the industry has a 15% net income (net income/sales) and you are at 30%, you are most likely missing something in your plan. Likewise, if the entire industry takes $1 of
assets (sales/assets) to generate a dollar of sales and you take 10 cents, you are probably missing something.

10. Exit Wisely

There is a saying that goes, “pigs get fed and hogs get slaughtered.” The intention of this idiom, as it relates to our subject, is that one should exit at a reasonable price given the company’s progress and funding environment.

Frequently startups get over-exuberant once they start having success and overstate the value of their company. Previously, we discussed the value of benchmarks and here again valuation and exit comparatives keep one realistic.

Understanding historical benchmarks is valuable. Awareness of the immediate environment is also critical. Four to six months into our last recession, Venture Source™ data suggested that medical device company valuations decreased by 25% due to the lack of availability of money. Those investors who did have money to invest saw this as a great opportunity to invest in companies at low valuations.

So at that moment, if your startup needed more capital and you were offered an exit at the 25% discount, would you wait or would you exit? This question needs to be answered within the context of a particular company. If the company was cash flow positive and not in need of further cash, perhaps waiting for a change in economic cycle with the chance of regaining the lost 25% makes perfect sense. However, if your company had an exit opportunity and also was in need of more capital, then an analysis would need to be completed.

If the current stockholders could not continue to invest in the company, then new investment money would dilute the current stockholders (to dilute means that the current stockholders would own less of the company). As a result, it is conceivable that the cost of dilution would offset the 25% valuation increase at a future date. Under this scenario, considering risk, the company should sell now.

These are complex analytical considerations and require analysis beyond the mathematical. Understanding the voice of the exit company is as important as understanding the voice of your customer. The details of a target exit company should be well understood. What are their strategies, business tactics, and cycles of their exit targets? Startup CEOs should know as much as possible about their target companies.

The following examples, with details changed and embellished to protect the companies, make this point.

This startup company had a technology that addressed a specific industry problem. As the startup company’s product did not touch the customer, it was part of a bigger
company system. (Think of a steering wheel vendor selling to an automotive company). As a result, the bigger companies controlled access to the market.

The industry with access to the company saw this problem as minor and therefore did not want to address it. The startup company faltered because it could not obtain an industry relationship for distribution. Just before faltering, the industry regulatory body determined that this problem was a major issue and asked the industry what it was going to do about the problem. All of a sudden, the company was bought. This was pure luck and had nothing to do with the actions of a thoughtful CEO.

Another example is a company that was negotiating with the industry market share leader (> 55% market share) to buy their startup company. The industry leader used their size to intimidate the startup in an attempt to drive the acquisition price down. This intimidation was not without evidence as the industry leader had done this before.

However, the startup CEO knew the industry well. He knew the industry leader was concerned over the announcement that its largest competitor in Europe intended to launch into the U.S. the following year. The industry leader knew that if the competitor had access to this technology it would provide them with a significant cost advantage. This was of great concern to the industry leader. The result – the startup company was acquired at a premium.

In another example, a startup company had a technology that could apply to four different market segments. Three of the market segments already existed and one was not developed yet. An experienced CEO joined the company and had deep industry relationships. He called the division president of one of his potential exit candidates and asked him which market he should enter. The Fortune 100 executive told him that he was already in 3 out of 4 of the markets. If the startup company entered his markets he would see him as competition. However, the market that he was not in was important and no one in the industry had the technology to satisfy that market yet. He stated that if the startup company developed that market, the entire industry would most likely be grateful. The end result is the startup CEO positioned the company, had no problem raising private equity, and had a successful exit.

In all examples, the CEOs of these startup companies had excellent reputations, deep domain experience, and creditability with the private equity market. However, one CEO did not put as much analysis into his exit candidates. Luck allowed for a successful exit, not a skillful analysis of the startup company’s exit candidates. The other two startups incorporated an exit company into their overall strategy from the very beginning and were rewarded for doing so.
Conclusion

Innovation policy must include innovation and if we all agreed on the system, its components, and the end goals, our debate on innovation policy would be about which part of the system to flex to meet our national goals.

Innovation is a process of connected steps. Measuring and incorporating best practices would ultimately perfect the system. One of the most documented and measured steps today is in the area of incubation.

Incubation improves company survival and those companies that have succeeded have impacted the economy. There are numerous forms of incubators but they all share a common goal – find viable companies and progress them to early-stage capital or sustainment.

Finding capital consumes the total startup management team far more than the management teams of larger companies. Having domain-experienced personnel reduces startup risk as these CEOs have “navigated these waters before.” Domain-experienced startup CEOs should match the product life cycle and the startup company must tell a compelling story, which must include the startup company’s Exit Candidates.

Every time the story is told, there is an opportunity for improvement. Using Dr. Deming’s PDCA Cycle is one method and we offered ten (10) checkpoints to consider during every improvement cycle.

Successful startup personnel do not necessarily know it all; however, they benchmark to ensure that they are reasonable in their planning and they frequently adjust their plans through a type of PDCA Cycle upon every new gain in knowledge.

“Be smart, move fast, and correct often” is the motto of the successful startup.
i Mid-session review budget of the US government, fiscal year 2009,  

ii Business Incubation Works, 1997; 2006 State of the Business Incubation Industry


vii International Organization for Standardization, ISO 31000:2009,  
http://www.iso.org/iso/catalogue_detail.htm?csnumber=43170


ix Internal analysis, Pittsburgh Life Sciences Greenhouse