

# Engineering Entrepreneurship: Your Engineering Business Concept

ENGR 4302/5302; EE 4302/5203



**WHAT EVERY ENGINEER  
SHOULD KNOW ABOUT  
STARTING A  
HIGH-TECH  
BUSINESS  
VENTURE**

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# The Opportunity Recognition Process

1. “Prerecognition stew”—think creatively about a problem for a while
2. The “Eureka!” experience—always a possibility!
3. Further development of the idea
4. The decision to proceed

# Where Do Business Ideas Come From?

It developed from another idea I was considering	23.1%
My experience in a particular industry or market	55.9%
Thinking about solving a particular problem	22.9%
Discussions with my friends and family	42.4%
Discussions with potential or existing customers	30.9%
Discussions with existing suppliers or distributors	15.9%
Discussions with potential or existing investors/lenders	8.1%
Knowledge or expertise with technology	28.6%
Other	6.9%
While in school	14.4%
Discussions with social or professional acquaintances	13.0%
Research conference	0.7%
Working in the industry	61.9%
Working in the military	3.1%
Other	6.9%

Sometimes, the first idea is not what leads to success.  
Must then refocus the business plan.

## “REFOCUSED” SUCCESS STORIES

- The founders of **PayPal** initially began developing cryptography software and a service for transmitting money via PDAs before developing its leading online payment tool.
- **Hotmail's** founders came up with their idea for a Web-based e-mail service because they were tired of being unable to access their personal e-mail addresses when behind their work firewalls.
- **Ironport**, a leading e-mail and network security company acquired by Cisco in 2007, was initially founded to develop technology for sending e-mails rather than blocking them.
- Mitchell Kapor, the cofounder of **Lotus Development**, had been working at VisiCalc, the leading spreadsheet software company. He left the company and leveraged that experience (as well as a few legal conflicts going on at VisiCalc) to trump VisiCalc and create a leading company in the software space opened up by VisiCalc's problems.
- **TiVo** initially received its funding as a “flamboyant, home server network thing,” according to its founder Mike Ramsay. However, after realizing that the idea was a hard sell to consumers, primarily because it was difficult to explain, TiVo modified its business to its current digital video recorder model.
- **Viaweb**, eventually acquired by Yahoo! and renamed Yahoo! Store, was originally formed as a company aiming to get art galleries online. After finding out that they couldn't convince art galleries of the benefits of putting their art online, Viaweb's founders realized they should consider making something people actually want—and used the tools developed for art galleries to help consumers create their own online stores.
- The collaborative bookmarking site **del.icio.us** was originally created as a way for founder Joshua Schachter to organize his personal collection of over 20,000 Web bookmarks. Little did Schachter realize that his idea for fixing a problem he had would grow into a business later acquired for an amount rumored to be around \$30 million.

Personal Digital Assistant=PDA now?



## HURRYING TO “REDUCE IT TO PRACTICE”

### What could happen

You’ve decided on your idea (and it seems like a great idea). Now should we hurry up and build the product so we can get a patent?

### Watch out for

This is a common mistake some new entrepreneurs will make. Once they’ve decided on their business idea, they throw themselves wholeheartedly into building a product so they can get it patented. Although this approach may help you develop a product you can patent, it may not help you to develop a product you can sell. Before you throw countless resources into development of a product based on your idea, be sure to spend the time and energy researching the market, talking to potential customers, and analyzing the competition.

**TIP:** Make sure you’ve done market research and analysis to build a product you can sell rather than just a product you can patent.

You don’t have to reduce to practice to get a patent---but it strengthens the patent

# Developing a Product Consumers Want

- ▶ Is someone willing to buy this?
- ▶ Is someone willing to pay enough for this to be profitable?
- ▶ Who is the specific user of the product?
- ▶ Is this better than the alternatives?
- ▶ Is the market for this product large enough?
- ▶ Is someone else already filling the market need? Competition!

Not easy questions!

## COMMON PROBLEMS WITH NEW BUSINESS IDEAS

Where do ideas go wrong? Oftentimes ideas go wrong when entrepreneurs start with their technology and try to sell it to consumers rather than the other way around. The question isn't, How can I get people to buy my invention? Instead, the question should be, What can I invent that people will buy?

Here are a few of the most common problems for entrepreneurs deciding what idea is best:

- **Marginal niche product:** You can make a successful small business by tackling a small niche problem. However, if you are looking to build a startup that will require outside investors (probably in the form of venture capital), you can't try to carve out a small niche just to avoid any competitors. In some sense, competition is good. It means that the end customer is actually willing to pay money for something. Outside investors rarely will fund a business that doesn't have a potential market of at least \$500 million (this means that, if you had 100% of the sales in the market each year, your company would have sales of \$500 million). It is okay to tackle a marginal niche market, but realize that it is more difficult to raise outside funds if that is the market you are set to pursue.



## COMMON PROBLEMS WITH NEW BUSINESS IDEAS (CONTINUED)

- **No specific user/customer:** This is the holy grail of problems with startup business ideas: not having a customer in mind before you build the product. Think like a sales person and consider to whom you would actually sell the product. Before you go out and build any products, interview your likely customers and see whether they would buy it and how much they would pay. In some cases, you've got a separate user and customer: sure, it's the consumer who buys the product off the shelf, but you also need to sell it to the grocery store purchasing manager who would need to purchase the product and stock the shelves.
- **Derivative idea:** Many "new ideas" are actually just improvements or enhancements to existing products. This approach can work, but remember that being "just as good" or "just a bit better" is a difficult product to sell.
- **Willingness to pay for your product (or pay enough for your product):** Some ideas may seem to make sense and be an improvement over what is available, but if you can't make people pay money for your product or pay enough money for your product, then you may not have a viable business concept. It doesn't mean it is a bad idea or a bad product, but it may not qualify as a viable business concept to start a business around.

## ACCORDING TO VENTURE CAPITALISTS

**What is the most common mistake entrepreneurs make when completing their company's business plan?**

- Stating that the company had no competition or underestimating the strength of competitors — 32% of respondents
- Not clearly explaining the opportunity — 27%
- Disorganized, unfocused, or poor presentation — 12%
- Miscalculation of market share and market size — 9%
- Failing to describe a sustainable competitive advantage — 9%
- Failing to address the risks of a venture and failing to provide a contingency plan for coping with the risks — 9%

*Source: Profit Dynamics Inc.*

## ONLINE RESOURCES TO RESEARCH COMPETITORS AND MARKETS

- **D&B's International Million Dollar Database** (<http://www.dnbmdd.com>) provides information on approximately 1,600,000 U.S. and Canadian leading public and private businesses. Fee for access to the database, but many libraries will have free access to the databases available for library patrons.
- **Hoovers** (<http://hoovers.com>) provides information on public and private companies from sources such as D&B and others. Subscriptions from \$75 per month.
- **Hill Search** (<http://www.hillsearch.org>) provides detailed data on public and private companies in North America and access to current and archived articles from the national and regional newspapers, industry journals, trade magazines, and newswires. \$59.95 per month; \$650 annually.
- **Integra Information** (<http://integrainfo.com>) provides various private company research information. Costs range from \$9.95 to \$200 per report, with subscription fees available for access to multiple reports.

Photonics Buyers' Guide--free

Market reports on specific industry ~\$2-5k typically

<https://www.uspto.gov/>

Search for patents

**New to Patent Searching?** See this important information about searching for patents:

[How to Conduct a Preliminary U.S. Patent Search: A Step by Step Strategy](#) - Web Based Tutorial (38 minutes)

- [The Seven Step Strategy](#) - Outlines a suggested procedure for patent searching
- A [detailed handout](#) of the Seven Step Strategy with examples and screen shots.

Patents may be searched using the following resources:

- [USPTO Patent Full-Text and Image Database \(PatFT\)](#)
- [USPTO Patent Application Full-Text and Image Database \(AppFT\)](#)
- [Global Patent Search Network \(GPSN\)](#)
- [Patent Application Information Retrieval \(PAIR\)](#)
- [Public Search Facility](#)
- [Patent and Trademark Resource Centers \(PTRCs\)](#)
- [Patent Official Gazette](#)
- [Common Citation Document \(CCD\)](#)
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# Initial steps towards a business plan—can this work?

## STEPS TO PREPARING A BUSINESS CONCEPT SUMMARY

To prepare the business concept summary, you can follow these steps:

- **Prestage:** When to begin? How long will it take? Who to include? What tools to use?
- **Stage 1 (information gathering):** Develop an understanding of your potential products and services, and establish a tentative development timeline; determine the estimated product sales and costs; and collect data used to define the potential market.
- **Stage 2:** Produce a simple business concept summary and a related set of tools for your business.
- **Stage 3:** Initiate a critique and reworking of your business concept summary.

# Prestage

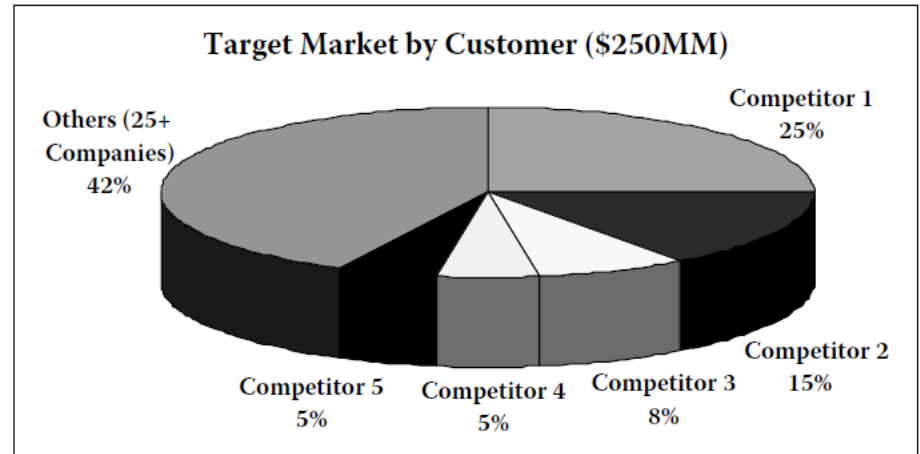
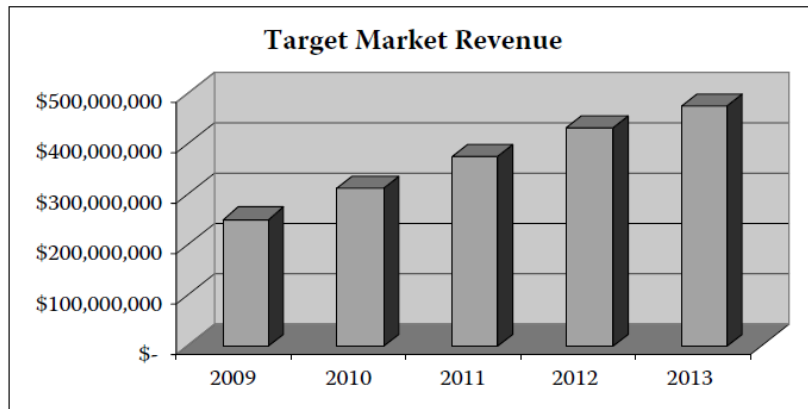
- ▶ When to begin the planning process and how long will it take?—early! Time: depends.
  - ▶ Who to include in the process?
  - ▶ What tools to use?
- 
- ▶ In summary: gather your thoughts and get organized!

# Stage 1: Information Gathering

- ▶ **Products and Services**
  - Definition—what product/service?
  - Development—development cost, time, talent?
  - Future—improvements, new product ideas?
- ▶ **Product Sales and Costs**
  - Customers—how many? why will they buy the product?
  - Sales—price? distribution?
  - Costs—my costs? future costs upon streamlining manufacturing?
  - Intellectual property—do I need it? trade secrets better?
- ▶ **Market Data**
  - Target markets—what, size, first market, who buys, current state?
  - Competition—who, how good are they?
  - Market trends—customers, industry?
  - Market research—known now, needed in future?

# Stage 2: Creating a Business Concept Summary

- ▶ Spreadsheets, notes, documents, analysis
- ▶ Business Definition—value proposition=customer focused!
- ▶ Market Potential: Now and future; competition



# Stage 2: Creating a Business Concept Summary (Continued)

- ▶ Success Drivers: 3–5 **distinguishing** drivers
- ▶ Sales and Costs: You vs the competition

	Year 1	Change	Year 2	Change	Year 3
Per-unit price	\$100.00	10%	\$110.00	2%	\$112.20
Per-unit cost	\$25.00	–5%	\$23.75	1%	\$23.99
Gross margin	\$75.00		\$86.25		\$88.21
Gross margin percentage	75.0%		78.4%		78.6%

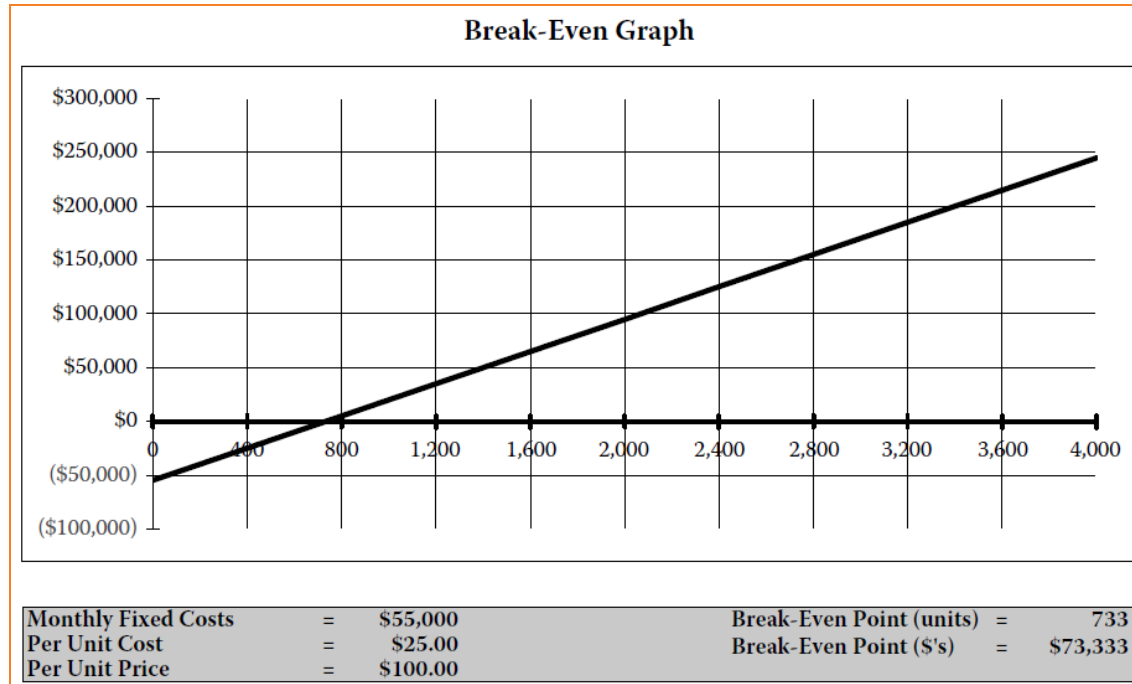
If possible, provide a comparison of price per unit and gross margins to the primary competitors.

	My company	Competitor 1	Competitor 2	Competitor 3	Average
Per-unit price	\$100.00	\$125.00	\$133.00	\$127.50	\$128.50
Gross margin percentage	75.0%	67.5%	77.6%	73.2%	



# Stage 2: Creating a Business Concept Summary (Continued)

- ▶ Break-even point: Chart shows monthly income vs #units sold/mo



$$55,000 + (100 - 25)x = 0 \Rightarrow x = 733 \text{ units/mo}$$

$$\text{Cost/mo} = 55,000 + 733 * 25 = \$73,333 \text{ at break-even point}$$

$$\text{Income/mo} = 100 * 733 = \$73,333 \text{ at break-even point}$$

# Stage 3: Critique/rework your plans

- ▶ NDA=nondisclosure agreement
- ▶ Bounce off colleagues/collaborators
- ▶ Get input

# Is Snapchat really worth \$10 billion?

*By* ERIK SHERMAN MONEYWATCH *August 27, 2014*

- ▶ Snapchat raised eyebrows last year when the instant messaging service spurned a \$3 billion acquisition offer from Facebook (FB). That now looks like a sound business decision.
- ▶ Venture capital firm Kleiner Perkins Caufield & Byers plans to invest up to \$20 million in Snapchat, valuing it at a hefty \$10 billion, according to The Wall Street Journal. The deal would give Kleiner Perkins a less than 1 percent stake in Snapchat, the newspaper reported. That follows a round of funding earlier this year by Russian investment group DST Global that valued Snapchat at \$7 billion.
- ▶ **Indeed, the idea that the market can place an enormous value on a company that has yet to earn a dime is not new.** Some businesses require a large number of customers or users to be viable. Take FedEx (FDX). The company operated in the red for year as it built out its logistical infrastructure and people became accustomed to overnight delivery. But it took having operations in enough cities for the service to become viable and sustainable.
- ▶ Bottom line: No revenue, yet huge valuation.

## **Snapchat funding and valuation—update from Wikipedia**

Snapchat raised \$485,000 in its [seed round](#) and an undisclosed amount of [bridge funding](#) from [Lightspeed Ventures](#). By February 2013, Snapchat confirmed a \$13.5 million [Series A](#) funding round led by [Benchmark Capital](#), which valued the company at between \$60 million and \$70 million. In June 2013, Snapchat raised \$60 million in a funding round led by [venture-capital](#) firm [Institutional Venture Partners](#), and the firm also appointed a new high-profile board member, Michael Lynton of [Sony](#)'s American division. By mid-July 2013, a media report valued the company at \$860 million. On November 14, 2013, [The Wall Street Journal](#) reported that Facebook offered to acquire Snapchat for \$3 billion, but Spiegel declined the cash offer. Tech writer [Om Malik](#) then claimed on November 15, 2013 that Google had offered \$4 billion, but Spiegel again declined. On December 11, 2013, Snapchat confirmed \$50 million in [Series C funding](#) from Coatue Management. Four more funding rounds, from December 2014 to March 2016, amounted to approximately \$1.2 billion and totaled funding at \$1.36 billion. Beyond 2014, the company had achieved a valuation of \$10–\$20 billion, depending on the source. According to reports in May 2016, the company's estimated worth was said to be approaching \$22 billion in the event of a new round of investment. Further reports in 2016 suggested that funding was almost at \$3 billion and that Snapchat was targeting yearly revenues of a billion dollars.

# About to Snap .....

March 3, 2017

Snap (SNAP) surged 44% in its first day of trading Thursday and was up about 20% Friday after Comcast(CMCSA)-owned NBC Universal announced it had taken a stake in the social media company.

That makes Snap worth more than \$40 billion. Deere's market value is about \$35 billion.

In fact, Snap's market value is greater than that of 378 of the companies in the S&P 500.



# Snap Inc.

American multinational technology and social media company

[snap.com](https://snap.com)

Snap Inc. is an American camera and social media company, founded on September 16, 2011, by Evan Spiegel, Bobby Murphy, and Reggie Brown [bas... en.wikipedia.org](https://en.wikipedia.org)

Headquarters: Santa Monica, California

Founder(s): Evan Spiegel, Reggie Brown

Employees: 3,195

Parent Organization: Tencent

Stock Price: SNAP (NYSE) **\$22.69** +0.25(+1.11%)

Tue, Sep 8, 2020, 4:00PM EDT

**Snap went IPO in 2017 at \$24/share.....**

Latest....

Stock price: SNAP (NYSE)Yahoo Finance

**\$10.55**

+0.11 (+1.01%)

As of Tue. Sep 5, 2023 1:26PM EST

Market open.

Possible that the stock has split  
accounting for half of the drop.....?