Semiconductor Marketing, Part 1

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My perspective is based upon …

- 27 years in high-tech engineering, marketing and management

- Last 18 years in semiconductor companies
  - 12 of those years in startups
  - Most recent four years in very early stage startups (company creation phase)

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Agenda for Lecture 6

- Introduction

- Real-world Company Creation

- Five Key Market Analysis Tasks

- Collecting Data

- Refining the Solution Definition

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Guide to Understanding the Material

Concept is important to success in this class!
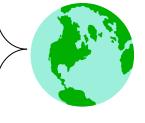
Concept is important to success in a real business!

On later slides, the size of the icon shows relative significance.

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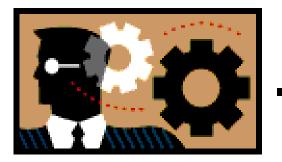
Semiconductor Marketing Tasks

- Defining business plans
- Defining product strategies
- Public relations and marketing communications
- Project management
- Product pricing
- Lead generation
- Training and supporting the sales force
- Allocating products (during times of shortages)
- Discontinuing products

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Who is a Semiconductor Customer?

YOU

THE CUSTOMER

END USER

Semiconductor
Marketing
Manager

Electrical
Engineer at
your customer
(designs PCBs
at an OEM)

People who
buy the engineer's
products.
Consumer or
Industrial.

Real-world Company Creation

Being a founder

- Q: How do you work on a new startup?

- A:
  - Most Employee Agreements give <u>all</u> your inventions to your current employer
    - Have a labor attorney review your employment agreement
  - If you want to do a startup from the very beginning (being employee #1), then be prepared to have no salary for one year
  - Alternative, get your first start-up experience at early stage startup that just got funded

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The typical 1st-time entrepreneur's misunderstanding

- **What they think**
  - The value of the company is in the entrepreneur's one unique technology idea, and that idea must be protected at all costs!

- **Reality**
  - The value of the company is in:

    A <u>capable team</u> identifying <u>customer problems</u> in a <u>large-enough market</u>

    and

    Defining <u>unique technology</u> that satisfies customer problems

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What Really Happens

- Your "special and unique" product idea will look different by the time you:
  - Get funded
  - Get samples into customers hands

- Why?
  - Constant learning
  - The teachers are:
    - Customers – you learn why they don't care about your technology
    - Venture Capitalists (VCs) – you learn that your idea is not fundable as presented
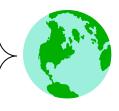   - Competitors – you learn that your idea is not unique

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Five Key Market Analysis Tasks

Inputs to the business plan

Task 1 – Identify Customers' Pain

- Pain is a problem that a customer faces

- For example, companies that buy semiconductors can feel pain when they:

  – Don't have a product for an emerging market

  – Can't ship new features to the marketplace on a timely basis

  – Have worse performance specs than the competitors

  – Don't have a competitive manufacturing cost

  – Don't have enough R&D budget to hire enough engineers

  – Have the wrong type of engineers to address an emerging market or a new technology

Look to your personal experience and to your friends for product ideas!

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Task 2: Define Solution for Customers' Pain

- What product can you develop that will solve the customer's problems?

- In a 30 second speech to your customer, can you explain how you solve the customer's pain? Examples:
  - If you use my solution, I can decrease your manufacturing costs by 20%
  - If you use my technology, you can offer end users a certain feature that they would like but could not buy before
  - If you use my technology, you can decrease your development expenses by 30%, or shorten your development schedule by 4 months, or fire half your engineers

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Task 3: Identify the Market Size

- How many units are bought each year of the type of product you want to build, and at what price? (units x price = market size)

- Sometime a market is smaller than you first think

  – A power supply control IC for a Pentium has different requirements for desktop and notebook PCs   --> two different market segments!

- The Addressable Market is that portion of the market that your company could sell a specific product to:

  – A foreign company may not be able to sell to a US defense contractor, even with the perfect product and a price of $0

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Analyzing the Market Size

- Go to published reports for obvious, large markets
  - It's hard to find data for smaller, less obvious markets

- Potential sources of data:
  - Competitors' revenue
    - What portion of the company's total revenue comes from a particular product line?
  - Extrapolate from the number of systems sold
    - Number of systems sold times number of ICs per system times average-selling-price
    - For fixed-function ICs, assume 15% price reduction per year
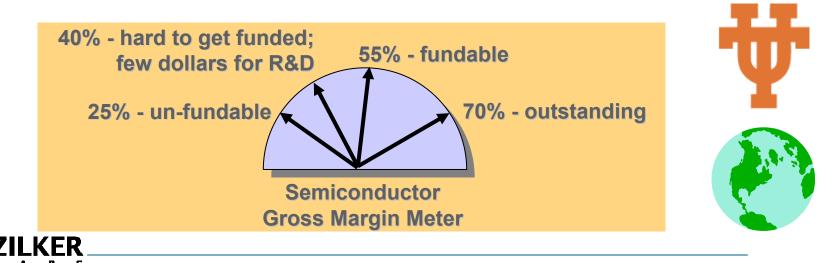
Task 4: Perform Competitive Analysis

- Define what products are sold today to your chosen customer market segment, and how your products are better

- Is there any reason why your competitors can't easily copy your approach?

- You need a <u>unique advantage</u> that can last for several years
  - Unique technology (patentable intellectual property), in terms of new materials, or new algorithms, or new manufacturing technology, and/or
  - Business advantages, for example, none of your competitors have an R&D organization with the right skills to develop technology like yours

Task 5: Perform Cost and Margin Analysis

- What will it cost to manufacture your product, and what can you sell it for?

  - Price minus manufacturing_cost = gross_margin

- Can you make enough margin $ to support growth?

  - $ for investing in R&D, marketing and sales force

40% - hard to get funded; few dollars for R&D

55% - fundable

25% - un-fundable

70% - outstanding

Semiconductor Gross Margin Meter

Margin Guidelines

- Over-investment by VCs can destroy margins
  - Bluetooth IC prices fell very low before first ICs sampled
  - Sixty startups chasing some aspect of 802.11
- Customers with extreme margin pressure will transfer that pressure to you
  - Asian PC manufacturers keep IC prices low (except for Intel)
- Easily replaceable parts have low margins
  - All pins on a Ethernet transceiver IC are fully specified by IEEE
  - Commodity parts

Collecting Data!

You need to know a lot to get funds from a Venture Capitalist!

Source: Investment Banks
(Secondary Market Research)

Likely your best source of data for this class. Ask UT librarian, Dorothy Carner, dcarner at mail.utexas.edu, to help you find reports.

- Reports from firms such as Goldman and Wachovia
- Banks' motivations
  - Make big $ commissions from Mergers/Acquisitions and Initial Public Offerings
- Positives
  - Banks sometime generate good market overview reports
  - Reports are generally free!
  - They often summarize market research firm results
- Negatives
  - They don't report on small, niche markets
  - They know all about start-ups that were created 3 years ago, and what established companies want to buy this month

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Example of an Excellent Investment Bank Report

- Salomon Smith Barney, "The Storage Area Networks Book 3", Oct. 22, 2001

- Four hundred pages

- Includes
  - Definition of a SAN
  - Market size
  - What's driving demand, and application challenges
  - Review of relevant technologies and protocols, and where technology is headed
  - Market share
  - Paragraph-length discussion on 21 public companies
  - Page-length discussion of 80 private companies
  - Glossary

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Source: Market Research Firms
(Secondary Market Research)

- For example, IDC and Gartner/Dataquest

- Their motivations
  - Making money selling you market research

- Positives
  - Their high-level quantitative market data can be useful
  - Face-to-face, they can sometimes give you constructive feedback on your investor presentation

- Negatives
  - Hard to get reports without paying big $ for it
  - They need to generate maximum revenue for their research efforts
    - They live in the world of hot emerging or big markets
    - They can't give you feedback on niche opportunities
    - By the time they publish on a market, you may be too late

Source: Potential Customers
(Primary Market Research)

- **The more senior the person, the better**
  - **Has better understanding of "strategic" pain**
  - **More ability to commit to work with you**
  - **More credible with VCs**
- **How to find names at customers**
  - **Talking to friends of friends of friends of friends**
    - **Senior marketing folks will often introduce you to senior engineers**
    - **Sales people are often helpful**
    - **Ask everyone you talk for the name of someone else**
  - **Extract names from: patent searches, trade shows presenters, technical conferences, magazine articles, white papers, ….**
  - **What is your tolerance for cold calling and rejection?**

Last semester, every group doing some primary research made an 'A'.

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Indicators of a Good Idea

- **When you pitch your solution with a prospective customer:**

  - **The meeting goes one hour beyond the scheduled end time**

  - **The customer leans across the table toward you and smiles**

  - **The customer asks for follow-up activities**

- **Your solution is easily applied**

  - **Your customer doesn't have to change its culture or organizational structure**

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Source: Potential Employees
(Primary Market Research)

- Often the best source of specific information on competitors, and also how competitive you are
    - Some folks really like to talk
    - Why won't the candidate join your company?
- It's a delicate dance. Non Disclosure Agreements don't fully protect you.
    - It's hard to know if a NDA has been violated
- Find names the same way you find customer names

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Source: Patents databases

- Positives
  - Good source of names for potential employees, and for identifying a company's general interest in markets

- Negatives
  - You learn what the company worked on 12-18 months ago

Refining the Solution

Zeroing in on the Product

- Define precisely a target market segment and problem

- Develop a compelling and differentiated value proposition

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Market Segments – A TI DSP example

Product family	Key Feature	Applications
C6000 Family, TMS320C6000	**High Performance** DSPs delivering new levels of C-based performance and cost efficiency, with low power dissipation,	Broadband networks and digitized imaging applications.
C5000 Family, TMS320C5000	**Power Efficient** DSPs delivering optimal combination of performance, peripheral options, small packaging and the best power efficiency	Personal and portable Internet and wireless communications.
C2000 Family, TMS320C2000	**Control Optimized** DSPs delivering highest performance, greatest code efficiency and optimal peripheral integration	Industrial and appliance control
OMAP Family	**Integrating an ARM processor** with a DSP.	Mobile Internet devices & multimedia appliances.
Other TMS320 DSPs	**All other** TMS320 DSPs including C33x floating point DSPs	Older designs

How to Refine the Segment Definition

Customer Segment Need	→	**Market Acceptance**	←	Company Solution

Not So Critical → Very Critical

'Must Have' ← 'Nice to Have'

- **Think of the segment as a set of Customers with a problem**

- **Keep changing your segment definition until you can identify:**

  - **A "very critical" need**

  - **Customer who say they "must have" your solution**

- **For example: Assume you have basic new display technology. Which system needs it the most? CRT, HDTV, notebook, PDA, or cell phone**

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Discussion