290T: The Business of Software: Potpurri

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Potpurri of topics

- **Class feedback**
- **Project deliverables**
- **To bundle or unbundle?**

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Best things

- **Case discussion**
- **Cold calling**
- **Debates among students/challenging students**
- **Kurt's enthusiasm for the topic**

Individual comments
- **Good coverage on business models**
- **Posting HW responses**

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Worst things

- **Too much powerpoint, talking in Monday class**
- **Objectives of lectures and cases are not always clear**
- **Team formation**

Individual comments
- **No feedback on HW**
- **Ask questions with just one answer**
- **Style too "dictatorial"**
- **Too much on entrepreneurship**

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Suggestions for improvements

- **More speakers**
- **Start teams earlier, help on team formation**
- **Engage students in lecture**

Individual comments
- **More kindness and encouragement in teaching style**
- **Write student responses on the board during case discussions**
- **Post HW before lecture (takes the element of surprise out of questions)**

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My Action Items – and yours

I definitely have my homework to do and I am signing up for that. I don't want the fact that I've given you all "homework assignments" on these topics to diffuse the fact that I'm committed to addressing the issues raised in the feedback.

- **Apologies on the team formation: Should have "gone slow to go fast". Should have started team formation earlier and then I wouldn't have had to rush**
  - **But let's focus on success going forward. Please give me a break.**
- **Will work on more variety in Monday lectures, will work on more interactive learning facilitation, more speakers,**
  - **Learning and enjoyment are not so correlated. Try to reflect on the material however well it is delivered. Facilitated learning experiences are the best – but very time consuming**
- **Will speak louder**
  - **If you can't hear speak up**
- **Am relinquishing more control of class discussions**
  - **But some things do have one right answer**
- **Will continue to have an entrepreneurial bias in class**
  - **Please try to make the best of the material presented**
- **Will work on a kinder and gentler class**
  - **The business of software is not a particularly kind and gentle world.**
  - **"Because we cannot cover the world with leather, then we must learn to wear shoes." Shantideva, 2nd century Buddhist philospoher**

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Favorite comment?

- **"PS: Learning a lot!"**

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Class Facts: Grading

- **Case study questions:**
  - ~~11 assignments x 5 points each:~~ ~~55 points~~
  - 10 assignments x 5 points each: 50 points
  - Company backgrounder assignment   5 points
- **Class project (presentation & final report)   25 points**
  - Progress report 10/24
- **Class participation   20 points**
-
- **TOTAL   100 points**

- **Basically, you're signed up to a lot of thinking – not a lot of ``busy work''**

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Projects

Project	Description	Team
PandoraBots	Software robot hosting service	Gabriel, Brian, Ashley
Personal data management	Managing all the data individuals are creating	Laheem, Phil, Lauren, Rachel
PicoRadio	Applications for low-cost/low-energy motes	Jennifer, Ravi, Myra, Florian, Christian
Program analysis for security	Automatic code analysis software for finding security holes	David, Jimmy, Tom, Egan, Joyojeet
Tricked Out Texas Hold 'em	Software that lets players practice and optimize their poker strategies	Will, Leo, Arkadeb, Albert
X-think	Tablet PC Scientific Calculator	Satrajit, Scott, Ram, Kevin, Abdul

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Projects

- **Marketing driven:**
    - **Identify a market opportunity and**
        - **Size market opportunity**
        - **Develop marketing (product) requirements for product**
        - **Identify key technologies to realize the product requirements**
    - **Describe a product concept**
    - **Describe a basic business model**

OR

- **Engineering driven:**
    - **Given a technology**
        - **Show a number of ways of productizing the technology**
    - **Define the product concept that maximizes the opportunity including**
        - **Risk/Reward**
        - **Competitive environment**
        - **Barriers to entry**
    - **Describe a business model that supports the product concept**

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Business Model: A Detailed Model of Your Business Enterprise
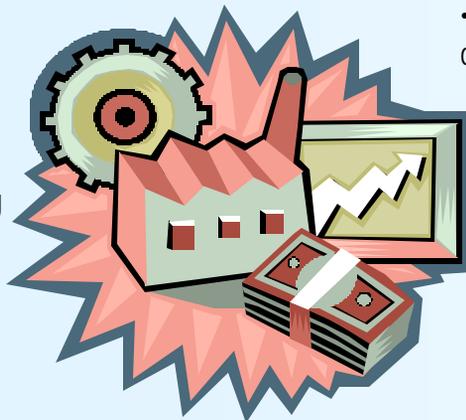
Executive Management
- CEO
- Mktg, Engr, Sales VPs

Factory/tooling
- Infrastructure
- Computing
- R&D Staff
- Support

Capital
- Self-funded
- Angel, VC

Products/Services
- Product/service definition

Marketing
- Market sizing
- Competition

Mktg/Sales
- Customers
- Model of sales engagement

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Project Deliverable

- **One way or another the deliverable is a business model**
- **Marketing driven (do we have any?)**
  - **Should spend more time/data justifying why *this particular* market**
- **Technology driven**
  - **Should spend more time/data justifying why *this particular* packaging of technology maximizes revenue opportunity**

Business Model Template

Your name
Company Name

Outline

- <u>Team overview</u>
- **Business environment**
- **Product Overview**
- **Marketing Plan**
- **Distribution strategy**

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The Team

- **Talk about team roles and backgrounds**
- **Leader (CEO)**
- **Marketeer (VP of Marketing)**
- **Engineering (VP of Engineering)**
- **Technical backstop (CTO)**
- **Visionary (could be anyone of the above)**

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Outline

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Business Environment

- **What trends are you exploiting?**
  - **Corporate/enterprise trends**
    - **Insourcing/outsourcing**
  - **Market trends**
    - **"Riding on the back of the explosive growth in …"**
  - **Technical trends**
    - **Emergence of a new platform (3G Radio, Palmtop)**
    - **Moore's law**
  - **Consumer trends**
    - **Ubiquitous cell phones**
  - **Financial market trends**
    - **Application service providers are in, DotComs are in, the New Economy or Application service providers are out, DotComs are out, "Are you still talking about the New Economy?"**

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Customer Profile

- **Describe the customer of this technology including their work environment, usage flow and experience level**

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Customer Value Statement

- **Describe this product's value to the customer/user**
- **The "phrase that pays"**
  - **Simulation runs/compiles/layouts over a coffeebreak – rather than a weekend**
  - **Absolutely, positively overnight**
  - **You will never lose another jpeg or mp3 file**

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Product Objectives

- **Outline product scope**
- **Define what problem the product is intended to solve – what headache does this cure?**
- **Discuss customer/market requirements**
  - **Discuss which will be met and which will not be met**
  - **What the product *does not do* is as important as what it will do**

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Product Description

- **Describe how the product fits into the customer usage flow**
- **Describe the synergies and dependencies the product has with other products or infrastructures**

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Market Segmentation

- **Break the market into segments**
- **How are the individual segments characterized?**
- **What are the buying behaviors of the different segments?**
- **What are the expectations of the segment (product performance, reliability, sophistication)?**
- **Which segments will most rapidly adopt the technology?**
- **Which segments will ultimately provide the best customer base for sustained revenue?**

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Anticipated challenges: Segmentation

- **Market segmentation:**
  - **By revenues: <$250M, <$500M, <$1000M**
  - **By needs: immediate response, daily response, overnight turnaround,**
  - **By budget for product(s) in this category: <$25K, <$125K, <$1M**
  - **By demographics: ASIA, Europe, US-regional**
  - **By psychographics: urban, rural, yuppie, techie**

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Market Size and Dynamics

- **Describe how this product fits in the key market trends Estimate the potential market size**
- **Estimate the projected market growth**
- **Estimate your expected market share goal**
- **Estimate the market window for this idea in terms of timing**
- **Identify competitors and their characteristics (next slide)**
- **(break info into market segments as is useful)**

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Anticipated challenges: Sizing

- **Market sizing: try to get a top down and bottom up estimation – don't feel obligated to "fudge" to get them to align**
  - **Top down: 1- 3% of semiconductor revenue will be spent on tools to build those products**
  - **Bottom up: 30K installed seats of Design Compiler**
  - **Top down: consumers spend % of their disposable income on computer-games products**
  - **Bottom up: Yahoo has x thousand people in the game room playing poker**

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Sizing the opportunity

Bottom up analysis

• **Number_of_users * average_sales_price_of_sw = total_available_market**

• **Number_of_users_you_can_service * average_sales_price_of_sw = serviceable_market**

• **Compute "penetration rate" of the market**

Top down analysis

• **Average tool budget of IC design team/industry 1-3% of expected revenue**

• **Average enterprise corporation Information Technology budget**

• **Size these down by the relative importance of your application (what other products will your customers give up to buy yours)**

If you're lucky these numbers are available from Dataquest, Gartner Group, International Data Corporation – otherwise

• **Private industry analysts (e.g. Will Stauss, Handel Jones)**

• **International trade shows (Design Automation Conference), Journals (EE Times) and organizations (ACM- SIGDA, IEEE etc.)**

That gives you a market opportunity – what's next?

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Market

500,000 MATLAB users

Go to implementation – 50k users

Quantization – 40K * $1K = $40M

Fast simulation – 15K * $5K = $75M

Software Synthesis 5K * $50K = $250M

Catalytic's Sweet spot $250-350M

• **Top down**
  • **500k MATLAB users**
  • **50k go to implementation**
    • **80% need quantization**
    • **30% need fast simulation**
    • **10% need software synthesis**
➔ **$365M market**
  • **Said another way**
    • **$9B DSP market[1]**
    • **1.5-3% is tools[2]**
➔ **$135M - $270M market**

  • **DSP tools market: 50% CAGR[1]**

$9B market; 30%CAGR[1]
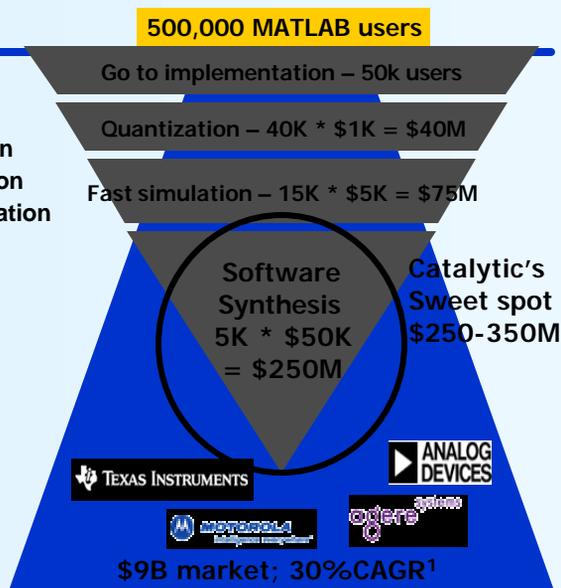
[1] Forward Concepts
[2] Percentage of semiconductor revenue spent on tools

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Product Positioning

	Articulation	Action	Association
	What do you say	**What do you do**	**Who you work with**
Technology			
Product			
Market			
Company			

Competitive Assessment (SWOT)

Company	Strengths	Weaknesses	Opportunities	Threats
Comp1				
Comp2				
Comp3				
Etc.				

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Distribution strategy

How do you plan to sell this?

- **Shareware?**
- **Downloads over the web? Fulfillment?**
- **Over the counter retail software sales**
- **Individual sales force**
- **OEM agreements**

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Open Issues

- **Identify any open issues (including risks and contingency plans)**

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Issues in choosing bundle/unbundle

- **Give an example of a bundle/unbundle product packaging decision (presumably to maximize the revenue opportunity) and either**
  - **Rationalize the decision or**
  - **Propose an alternative strategy and defend it**
- **Your argument should include the following considerations:**
  - **Customer requirements**
    - **Which solution (bundled/unbundled) will be easier to use?**
    - **Migratability → SW solution**
    - **Customer desire for platform ownership → unbundled SW for existing platform**
    - **Customer desire for turnkey solution → bundled HW/SW solution**
  - **Customer buying behaviors – will they pay more for the solution if bundled with HW?**
  - **Platform availability – does a platform for running your software already exist? How stable is it? Can you control it? Can you depend on it?**
  - **Ease of solution development – will it be easier to develop a bundled HW/SW solution? Or unbundled SW solution?**
  - **Capital costs**
    - **How much**
  - **Distribution issues**
    - **Can you sell a bundled solution?**
    - **Can you manage the inventory issues of a bundled solution?**

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Issues in choosing bundle/unbundle

- **Market requirements**
  - **Customer has existing hardware platform**
  - **Customer is seeking turnkey solution**
- **Distribution and sales**
  - **Hw sales distribution**
  - **SW sales**
- **Capital requirements**
- **Buying behaviors**
- **Margins**
- **Why bundle with HW**
  - **Ease of user experience – control over user experience**
  - **Ease of development - less feature interaction**
- **Platform availability**

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