TIM 211
eBusiness: Technology and Strategy

Lecture 1
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Class web Page:
http://classes.soee.ucsc.edu/tim211/Spring14/

Who am I?

- John Musacchio
  PhD from Berkeley in Electrical Engineering
- Research Interests:
  - Economic issues in Communication Networks
  - Pricing
  - Service Differentiation
  - Investment Incentives
  - Security
- Experience
  - Start up, large companies

What is this class about?

- Information Technology
  - Open vs Proprietary Standards
  - Systems, Components, Interoperability
  - Role of Layers and Complements
  - Important eBusiness Technologies
- Economics of Information and IT
  - Costly to produce, cheap to reproduce.
- Strategies
  - Pricing, standard setting, partnering, etc.

What is this class about?

Complementors Example: Net Neutrality

ISP 1
ISP 2

Content Provider A
Content Provider B

ISP 2 needs to invest
To enable A’s service

Would allowing 2 to charge A
- encourage 2 to invest?
- discourage A to invest?
Network Effects

Technology A

Technology B

Lock-in

Ink

Cartridge

$$$

New Printer

Recommender + Switching Cost

How to combine switching costs with search and recommender technologies?

Reading Material:

Information Rules: A Strategic Guide to the Network Economy (Hardcover)
by Carl Shapiro (Author), Hal R. Varian (Author)

Buy from Amazon or electronic copy from HBS. See class webpage.

Reading Material:

Journal Articles
- Both engineering and management journals
  - Examples:
    - Internet Advertising and the Generalized Second Price Auction: Selling Billions of Dollars Worth of Keywords
    - A Two-Sided Market Analysis of Provider Investment Incentives With an Application to the Net-Neutrality Issue
      - J. Muscato, A. Weiland, G. Schweizer, Review of Network Economics 2009
    - Bundling Information Goods of Decreasing Value
      - X. Geng, M. Stinchcombe, A. Whinston, Management Science 2005
- Case Studies
  - Google, LinkedIn, Netflix, TripIt

Tentative Lecture Plan

<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>Lecture Topic</th>
<th>Reading (Reading to be done before each class)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4/3</td>
<td>Course Introductions</td>
<td>Varian and Shapiro (VS), Chapter 1. The Information Economy</td>
</tr>
<tr>
<td>2</td>
<td>4/10</td>
<td>Economics of Information: Pricing and reasoning Bundling and</td>
<td>HBR Five Competitive Forces</td>
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<td>Generalized Second Price Auction</td>
<td>YS, Chapter 2. Pricing</td>
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<tr>
<td>3</td>
<td>4/17</td>
<td>Industry and Technology Structure</td>
<td>YS, Chapter 3. Vetsing and building an information goods of decreasing value</td>
</tr>
<tr>
<td>4</td>
<td>4/24</td>
<td>Game Theory and Auctions</td>
<td>Refining components of a cloud computing comm. of the ACM</td>
</tr>
<tr>
<td>5</td>
<td>5/1</td>
<td>Game Theory Applications: Modeling of two-sided markets</td>
<td>YS, Chapter 7. Networks and Positive Feedback</td>
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<td></td>
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<td>and Network Advertising Auctions</td>
<td>HBS Winner Take All in Networked Markets</td>
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<td>Game Theory Primer</td>
<td>Game Theory Primer</td>
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<td>Game Theory of Network Technology adoption and the role of commons</td>
<td>Modeling the dynamics of network technology adoption and the role of commons</td>
</tr>
</tbody>
</table>
Tentative Lecture Plan

8 5/5  • Game Theory Applications  
   • Feldman, Downes, Schwartz, "Internet 
     Advertising."  
   • Chapter on Networks, Classes, and Markets: 
     Rationalizing About a Highly Connected World.
7 5/15 • Discussion of Search Engine 
   • Business Model  
   • Lock-in  
   • HBS Google  
   • HBS TapIt  
   • US Chapter 6, Recognizing Lock-In  
   • US Chapter 6, Managing Lock-In.
8 5/22 • Managing Coordinations  
   • Standards  
   • HBS With Friends Like These  
   • US Chapter 8, Cooperation and 
     Compatibility  
   • US Chapter 9, Navigating a Standards War.
9 5/29 • eCommere: social networks  
   • HBS Linked In  
   • Netflix, Loading With Data.
10 6/5 • Final Project Presentations  
   • Wrap-Up.

Evaluation

• Homework assignments 20%
• Participation 10%
• Project 1 30%
• Final Project 40%

Project 1

- Write software to propose, accept and refer potential trades of fictional goods
- Practical web coding skills and implement "business logic" in software
- Simple implementation provided
  - No experience in web programming is needed.
- Opportunity to apply strategic lessons
  - Pricing, learning and targeting likely buyers, choosing how much to pay intermediaries to pass on referrals.
- Details to follow

Final Project

Objective
- Demonstrate a working understanding of class concepts.

Task:
- Write a paper in groups of 2-3

Choice 1:
- Propose a new information technology product or service.
- Propose how you will make the product or service commercially viable:
  - Discuss the competitive landscape
    - the competitors (if any), potential substitutes, your suppliers and complementors.
    - What are the strengths and weaknesses of these players?
  - Propose a revenue model
    - Product vs. service?
    - Licensing? Dual? Freeware? Etc?
    - Razor and blades?

Final Project (Choice 1 cont’d)

- How will you cope or take advantage of network effects, lock-in, etc?
- What will be your stance on standards and interoperability?
  - Proprietary vs. open standards.
  - Open or closed source?
- How will you create barriers to entry?
Final Project
Choice 2:

- Analyze a market with existing players
  - Discuss the competitive landscape
    - the competitors (if any), potential substitutes, your suppliers and complementors.
    - What are the strengths and weaknesses of these players?
  - What revenue models do the players in the market use?
  - How do the players cope or take advantage of network effects, lock-in, etc?

Final Project Paper (choice 2 cont’d)

- What are their stances on standards and interoperability?
  - Proprietary vs. open standards.
  - Open or closed source?
- How do they create barriers to entry?
- Make predictions – Will the market tip to one dominant player? Will the present dominant firm lose their position.

Participation

- We will have a lot of classroom discussion over the course of the quarter.
  - especially when we read case studies!
- This is an opportunity for you to
  - think through ideas.
  - give feedback.
  - learn from your classmates.
- We will evaluate your participation.

Information Rules
Chapter 1

Technology changes

- But economic laws do not...
- Example: Netscape
  - Meteoric rise and fall
  - Vulnerability – dependence MS Windows
- Applications, OS, Hardware – Complementers
  - Need strategies to deal with complementers as well as competitors

Complementers

- Compatibility as a strategic choice
- Role of standards
  - Open or proprietary
**Information**

- Roughly anything that can be digitized
- Costly to produce, cheap to reproduce
- Cannot use cost based pricing
  - Marginal cost is 0
- Must use value bases pricing
- But values vary
  - Target different markets
  - Discriminate with versions
  - Example: Hard back books, delayed paperback books

**Rights management**

- Low reproduction cost is two-edged sword
  - Cheap for owners (high profit margin)
  - But also cheap for copiers
- Maximize value of IP, not protection
- Example
  - Video industry
  - Others?

**Information an Experience good**

- Don’t know it’s value until you already have it!
- Brand and reputation key
- May need to give some away to let people know what you have to offer
  - Examples?

**Economics of Attention**

- Too much information out there
- Value is in filtering, and locating it
- Advertising models
  - Newspapers
  - Hotmail

**Systems Competition**

- Microsoft-Intel: Wintel
  - Intel
    - Commoditize complementary chips
  - Microsoft
    - Commoditize PCs
- Apple
  - Integrated solution
  - Worked better, but lack of scale led to problems in late 90s, early 00s
Lock-In and Switching Costs

- Example: Stereos and LPs
  - Costly switch to CDs
- Systems lock-in: durable complements
  - Hardware, software, and wetware
  - Individual, organizational, and societal

Network Effects

- Value depends on number of users
- Positive feedback
  - Fax (patented in 1843)
  - Internet (1980s)
- Indirect network effects
  - Software
- Expectations management
  - Competitive pre-announcements

Compatibility

- Examples
  - Beta v. VHS
  - HD-DVD v. Blu-ray
    - Role of 3rd parties
- Backwards compatibility?
  - Game consoles…

Basic Strategies

- Go it alone
- Partnerships
- Formal standard setting
  - Widespread use
  - Licensing requirements
- Competition in a market or for a market?

Policy

- IP policy
- Competition policy
  - Regulation
  - Antitrust
- Electronic commerce
  - Contracts
  - Privacy

Information is Different…

- but not so different

- Key concepts
  - Versioning
  - Lock-in
  - Systems competition,
  - Network effects