

# **MGT 250: Technology Competition and Strategy**

Syllabus for Winter 2013

<http://faculty.gsm.ucdavis.edu/~bhargava/250/>

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## Course Theme and Learning Objectives

This course covers business strategies for firms that make technology products. Internet-based goods, and products with digital components and network effects are an indispensable part of social and economic activity. Platform-mediated networks produce over half the revenue for over half of the world's 100 largest companies (e.g., American Express, Cisco, Time Warner). Technology entrepreneurship is commonplace. Yet, managing technology businesses involves unique challenges and opportunities, because of distinct economic forces affecting supply (e.g., cost structures), demand (e.g., how value is created) and markets (e.g., industry organization and competition). Conversely, strategic errors can be devastating. What are these forces? How do they impact competitive strategy in technology industries? And how should firms operating in these industries shape their competitive strategy? This course provides you with tools to examine and answer these questions, and to examine competitive strategy in the areas of product design, technology standards, pricing, distribution and ecosystem partnerships.

These tools will help you evaluate strategic factors that are fundamental to competition in the tech industry. How should firms adapt product design, pricing and launch strategies for network goods and platforms? How should multi-sided platforms drive adoption, which side should they charge, and how should they balance growth across both sides? How should platform owners think about the ideal level of openness and control? When are exclusivity contracts with developers desirable and likely? How do companies convert to a platform framework, and how do they become platform leaders? Why and how are standards wars fought? How do firms that contribute to a composite platform cooperate and compete?

The insights from this course are valid for information technology goods (hardware, software, online information goods, Internet and telecommunications services, consumer electronics, entertainment and media products) and other industries that have digitization and network effects, such as health care, banking, services, biotechnology, transportation and energy. The course employs a combination of simple but rigorous analytical models, emerging theories, and plenty of real-world examples, experiences, and formal cases.

**Code of Conduct and Academic Integrity.** These are paramount issues and apply to all classes at UC Davis. Please be aware of the guidelines available at <http://sja.ucdavis.edu/cac.html>, in addition to the specific issues listed in this syllabus.

**Disclaimer:** Syllabus is tentative. Final design will depend on class size, availability of guest speakers, and scheduling flexibility. The syllabus should be used in conjunction with the web site which contains additional details and critical updates.

	Topics	Case.Discussion.	Comments
1	Course Overview. Information and network goods - features and puzzles.	Form student teams.	Review syllabus, website. Pricing refresher, HW1.
2	Network goods: creating and capturing value; growth vs profitability; price dynamics.		Review 202A-203A. HW2. GS: Manish Jain.
3	Versioning strategy and launch timing for network goods.	Cork'd	
4	Revenue strategies for platforms and multi-sided markets	NeoPets	GS:Anthony Soohoo.
5	Strategic platform design: openness, control, exclusivity	Electronic Arts	
6	Platform development and leadership	PatientsLikeMe	
7	Platform envelopment and bundling.	Rhapsody	GS: Frank Washington
8	Network complements, tie-ins and metered sales: recurring vs. one-time revenues.	Virgin Mobile Kindle?	Setup for Wintel, Take-home exam
9	Platform co-opetition, compatibility and standards wars		WinTel Strategy Simulation
10	Project Presentations and course wrap-up		GS: Robert Vizza.

Table 1: Schedule Overview

# 1 Illustrative Phenomenon and Business Strategies

1. Why do so many firms in the IT industry give away their best products free?
2. Why do many software makers and cable TV operators force consumers to buy bundles of goods rather than just the components they need?
3. What might happen if the FCC forces cable companies to offer *a la carte* pricing?
4. Why is quality differentiation, as a tool to price discriminate and improve profits, particularly relevant for technology goods?
5. How can firms achieve quality differentiation merely through price discrimination and why, even for a commodity such as gasoline, might a gasoline station succeed while charging substantially higher price than its competitor just across the street?
6. How can software firms increase profit by damaging their own product (even when doing so increases cost)?
7. How can the ability to charge personalized prices (extracting more consumer surplus) be profit-reducing to the seller?
8. How should you price a new technology that is far costlier to make than the existing alternative, but delivers higher lifetime value to the buyer?
9. Why, and when, is flat-rate (or, all you can use, buffet) pricing appropriate for technology services, what are its pitfalls, and how can they be managed?
10. Why do some firms work hard to build converters to their competitors' products while others work equally hard to obstruct such converters?
11. What justifies "ladies nights" at nightclubs?
12. Why are there so many match-making sites within the same genre (given that participants might be best off under a "single marketplace")?
13. Why do makers of video gaming consoles subsidize end users (but tax game developers) while computer operating system makers subsidize software developers (but overcharge end users)?
14. Why did Sony win the Blu-Ray format war against a format (HD-DVD) that was sponsored by a whole array of companies?
15. Why is software typically so defective that it needs to be fixed a few times a week?

## 2 Detailed Schedule

### 2.1 Overview and introductions

- **Course overview.** Objectives, schedule, expectations, grading scheme.
- **Learning objectives.** How are hi-tech products different on the supply side (e.g., cost structures), demand side (network effects, complements, two-sided networks), and market-level considerations (e.g., standards and compatibility)? What challenges do these differences create? And, what distinctive business phenomenon and competitive strategies emerge in response?
  - Hal R. Varian. “High Technology Industries and Market Structure”. In: *Federal Reserve Bank of Kansas City Proceedings* (2001). URL: <http://ideas.repec.org/a/fip/fedkpr/y2001p65-101.html>.
  - Thomas Eisenmann. “Platform-Mediated Networks: Definitions and Core Concepts”. In: *Harvard Business School* (2007), skip Appendix B-C.
- **Optional reading** Carl Shapiro and Hal R. Varian. *Information rules: a strategic guide to the network economy*. Boston, MA, USA: Harvard Business School Press, 1998. ISBN: 0-87584-863-X, Ch1; Ch2 p. 9-32; (Sebastian Morris. “Competition, Regulation and Strategy: The Information Technology Industry”. English. In: *Economic and Political Weekly* 38.33 [2003], pp. 3494–3499); The economics of free (Chris Anderson. “Free! Why \$0.00 Is the Future of Business”. In: *Wired* [2008]. URL: [http://www.wired.com/techbiz/it/magazine/16-03/ff\\_free](http://www.wired.com/techbiz/it/magazine/16-03/ff_free)).
- What you should know and remember from 202A: Demand, supply, price elasticity, price optimization, different types of pricing schemes (e.g., linear price, two-part tariffs, bundles), uniform pricing pros and cons, price discrimination, game theory and Nash equilibrium.

### 2.2 Network goods and platforms

- **Learning objectives.** How to conceptualize consumer valuations and consumer adoption under different types of network effects? What challenges does this raise for firms in capturing this value? How should firms adapt product design and pricing strategies?
  - Thomas Eisenmann. “Platform-Mediated Networks: Definitions and Core Concepts”. In: *Harvard Business School* (2007), Appendix B-C
  - Hongju Liu and Pradeep Chintagunta. “Pricing under Network Effects”. In: *Handbook of Pricing Research in Marketing*. Ed. by Vithala Rao. Northampton, MA: Edward Elgar Publishing, Inc.1, 2009
  - Yikuan Lee and Gina Colarelli O’Connor. “New Product Launch Strategy for Network Effects Products”. In: *Journal of the Academy of Marketing Science* 31 (3 2003), pp. 241–255

- **Optional Reading.** Characteristics of information goods, and how they affect product differentiation, price discrimination, versioning (Carl Shapiro and Hal R. Varian. *Information rules: a strategic guide to the network economy*. Boston, MA, USA: Harvard Business School Press, 1998. ISBN: 0-87584-863-X, Ch. 2 p. 37-44; Ch. 3).

### 2.3 Versioning and Launch Timing Strategy for Platforms and Network Goods

- **Learning objectives.** What barriers do firms face when launching network goods, why growth and profitability can be in severe tension, and how to address these challenges through strategic choices in launch timing and product design?
  - Hemant K. Bhargava and Vidyanand Choudhary. “Economics of an Information Intermediary with Aggregation Benefits”. In: *Information Systems Research* 15.1 (2004), pp. 22–36
  - Hemant K. Bhargava. “Versioning and Launch Timing for Platform Technologies, adapted from Hemant K. Bhargava and Daewon Sun and Byung Cho Kim: “Commercialization of Platform Technologies: Launch Timing and Versioning Strategy”, *Production and Operations Management*”. In: (2012)
  - **Case discussion:** Cork'd: Building a Social Network for Wine Lovers. Peter Soles. “Cork'd: Building a Social Network for Wine Lovers”. In: *Harvard Business School* (2011). Case # 9-911-026

### 2.4 Revenue Strategies for Platforms and Multi-sided Markets

- **Learning objectives.** How should multi-sided platforms drive adoption, which side should they charge, and how should they balance growth across both sides?
  - Thomas Eisenmann, Geoffrey Parker, and Marshall van Alstyne. “Strategies for Two-Sided Markets”. In: *Harvard Business Review* (2006)
  - **Case discussion:** NeoPets Inc. Thomas Eisenmann and Liz Kind. “NeoPets Inc.” In: *Harvard Business School* (2003).
- **Optional Reading** (Sunil Gupta and Carl Mela. “What is a Free Customer Worth?” In: *Harvard Business Review* [2008]).

### 2.5 Strategic Platform Design: Openness, Control, and Exclusivity

- **Learning objectives.** How should platform owners think about the ideal level of openness and control? When are exclusivity contracts with developers desirable and likely? How do these choices affect competition and innovation?

- Andrei Hagiu and Robin Lee. “Exclusivity and Control” . In: *Harvard Business School* (2009). # 08-009.
- Thomas Eisenmann, Geoffrey Parker, and Marshall Van Alstyne. “Opening Platforms: How, When and Why?” In: *Platforms, Markets And Innovation*. Ed. by Annabelle Gawer. Edward Elgar, 2009.
- **Case discussion:** Electronic Arts. Thomas Eisenmann and Justin Wong. “Electronic Arts in Online Gaming” . In: *Harvard Business School* (2006).

## 2.6 Platform Development

- **Learning objectives.** How do companies convert to a platform framework, and how do they become platform leaders?
  - Annabelle Gawer and Michael Cusumano. “How companies become platform leaders” . In: *MIT Sloan management review* 49.2 (2008), pp. 28–35
  - Thomas Eisenmann and Andrei Hagiu. “Staging Two-Sided Platforms” . In: *Harvard Business School* (2007)
  - **Case discussion:** PatientsLikeMe.

## 2.7 Platform Envelopment and Bundling

- **Learning objectives.** Why do tech firms find product bundling attractive? How does bundling affect the competitive interplay between an existing tech platform and an innovative entrant? Why might a bundling based business model fail for firms that aggregate digital goods from multiple producers?
  - Thomas Eisenmann, Geoffrey Parker, and Marshall Van Alstyne. “Platform envelopment” . In: *Strategic Management Journal* 32.12 (2011), pp. 1270–1285. DOI: [10.1002/smj.935](https://doi.org/10.1002/smj.935)
  - Hemant K. Bhargava. “Can Aggregators Thrive under Competitive Digital Distribution, adapted from Hemant K. Bhargava: “Retailer-Driven Product Bundling in a Distribution Channel” , *Marketing Science*” . In: (2012)

## 2.8 Network complements and services

- **Learning objectives.** What are different types of complement goods? How do they affect strategy for core product, when complements are made by the same or different firms? How to decide the optimal mix between recurring vs. one-time revenue for metered complements?

- Hemant K. Bhargava. “Multi-Part Tariffs: Teaching Note”. UC Davis Working Paper, last revised February. 2009
- **Case discussion:** Virgin Mobile. Gail McGovern. “Virgin Mobile USA: Pricing for the Very First Time”. In: *Harvard Business School* (2007).
- **Optional reading:** The strategic value of complements (Nicholas Carr. *The strategic value of complements*. 2007. URL: [http://www.nicholasgarr.com/digital\\_renderings/archives/the\\_strategic\\_value.shtml](http://www.nicholasgarr.com/digital_renderings/archives/the_strategic_value.shtml)).

## 2.9 Platform Competition and Standards

- **Learning objectives.** Why and how are standards wars fought? How do firms that make component systems compete? How do firms that contribute to a composite platform cooperate and compete?
  - Carl Shapiro and Hal Varian. “The Art of Standard Wars”. In: *California Management Review* 41.2 (1999), 25 pages
  - Stanley M. Besen and Joseph Farrell. “Choosing How to Compete: Strategies and Tactics in Standardization”. In: *The Journal of Economic Perspectives* 8.2 (1994), pp. 117–131
  - **Wintel strategy simulation** David B. Yoffie, Ramon Casadesus-Masanell, and Sasha Mattu. “Wintel: Cooperation or Conflict?” In: *Harvard Business School* (2004). Case # 9-704-419
  - Winner-take-all markets Thomas Eisenmann. “Winner-Take-All in Networked Markets”. In: *Harvard Business School* (2007)
- **Optional reading** Game theory and competition: duopoly pricing and product decisions (Felix Oberholzer-Gee and Dennis Yao. “Game Theory and Business Strategy”. In: *Harvard Business School* [2006]). Systems competition and direct network effects (Carl Shapiro and Hal R. Varian. *Information rules: a strategic guide to the network economy*. Boston, MA, USA: Harvard Business School Press, 1998. ISBN: 0-87584-863-X, Ch 8). (Victor Stango. “The Economics of Standards Wars”. In: *Review of Network Economics* 3.1 [2004], p. 1. URL: <http://EconPapers.repec.org/RePEc:bpj:rneart:v:3:y:2004:i:1:n:1>).

## 2.10 Wrap-up and Project Presentations

- **Wrap-up:** Course summary and recap, Discussion of Exam.
- Project presentations.

## Pedagogical paradigm

- The course will be a mix of lectures, classroom discussions (usually around business cases), and guest speakers. Some issues are rigorously examined using mathematical models of consumer/firm behavior and competitive actions.
- You will see equations, graphs, and numbers – in the reading materials, in lectures, in assignments, in business cases, and in exams. It will also help you to be familiar with statistical data analysis and numerical computation (use a tool of your choice: R, SPSS, Stata, SAS, Excel).
- We will take 1-2 minute digestion breaks every half to one hour (at suitable stopping points) to give everyone an opportunity to assimilate and reflect on the issues that were just covered. Ask for one if I don't!

## 3 Class Project (Team Effort)

An in-depth class project will be an integral learning component of this course. The project topic is your choice, and should involve application and analysis of the concepts learnt in this class to a real-world problem. Please consult the set of sample project reports, posted on the web site, to get a feel for what you are required to do for this class project. Project work is divided into multiple phases, with timeline and deliverables as stated in the Schedule Overview.

**Project proposal.** List the topic, describe the intended final output, and summarize your research plan and method. One pager, which provides a glimpse of a) the context (or firm, product, or phenomenon) you are analyzing, b) the specific questions you wish to study, c) the methods/data/models that you would use to analyze and answer the questions, and d) the shape and nature of your intended final results. Email this to me, and follow up with email, phone or F2F discussion during the week.

**Progress report.** State what you've accomplished, and your plan for the remaining work. 2 pages.

This segment is worth 5 points, and will be graded on Clarity, Level of progress, and Timeliness of submission.

**Project presentation and report.** Your presentation should be designed, as appropriate, for senior executives of your corporation/board/investors. The written report is an executive summary (approximately 3-5 pages) supported by additional materials from your presentation.

## 4 Administrative Details

**Pre-requisites** MBA core classes in economics (202A "Markets and the firm"), statistics (203A "Data analysis for managers"). **You should feel very comfortable with the material you've already learnt in**

these two classes – if necessary, please go over your books and notes before this course commences.

Recommended preparation also includes 203B (Forecasting and Managerial Research Methods – or, prior knowledge of statistical data analysis techniques) and 204A (Marketing Management).

#### 4.1 Tentative Grading Plan

**20%** Homework assignments.

**20%** Take-Home Exam (Week 8).

**10%** Pop quizzes, spread through the quarter.

**15%** Case discussion write-ups and leadership (Team assignment).

- Two-thirds of the grade represents writeups and case analysis, graded according to (1) adherence to rules (submission time, format, length), (2) clarity and organization of content, (3) effort (e.g., did you do the computations or analysis to support your claims), and (4) to-the-point response. Some issues are semi-structured and without a definitive answer. What is important is a logical analysis leading to clear insight and recommendation, where appropriate.
- A third of the grade is reserved for in-class case presentation and leadership.

**15%** Class participation.

1.5 points for each session: 1 point for presence and punctuality, 1.5 for stellar participation (e.g., informed discussion and questions; examples or counterexamples based on your reading and experience).

**20%** Project (Team assignment).

- Half this grade will be *peer-assigned* in response to the following questions.
  - Did the problem statement and conceptualization create or enhance your knowledge?
  - Was data collection, assumptions, and methodology sensible and appropriate?
  - Was the analysis and solution/conclusion meaningful, informative, and convincing?
  - Was the work presented clearly and paced correctly?
  - Was the overall project relatively ambitious and challenging?
- The second half of the grade will be assigned by me, based on a combination of above issues plus timeliness and quality of work in progress during the quarter.

Some grades (project, participation, discussion) will be determined subjectively. Table 2 summarizes the Spring 2009 grades. The historical pattern is an A-/A grade for a score of 85% or above, B+ for 75-85, and B for 65%–75.

Table 2: Summary of grades for Spring 2009.

summary	section	exam..35.	project..30.	participation..25.	case..10.	total..100.	grade
	B:32	Min. :19.00	Min. :28.00	Min. :18.00	Min. : 8.00	Min. :75.00	A :14
	D:18	1st Qu.:26.25	1st Qu.:29.00	1st Qu.:21.25	1st Qu.: 9.00	1st Qu.:87.25	A-:25
	NA	Median :29.00	Median :29.00	Median :23.00	Median :10.00	Median :90.00	A+: 1
	NA	Mean :28.16	Mean :29.34	Mean :22.70	Mean : 9.56	Mean :89.76	B+:10
	NA	3rd Qu.:30.00	3rd Qu.:30.00	3rd Qu.:24.00	3rd Qu.:10.00	3rd Qu.:94.00	NA
	NA	Max. :35.00	Max. :31.00	Max. :25.00	Max. :10.00	Max. :99.00	NA

## 4.2 Team Assignments

Ideal team size is 4 students. All members of a team must participate fairly. Individual performance will be evaluated based on peer evaluation. Students will work in teams for case discussion and preparation.

## 4.3 Class Policies and Rules

- Class sessions will begin on time. Late arrival (including, after breaks) is distracting and disrespectful. Also, avoid distractions such as extraneous use of computers, cell phones, talking among yourselves, etc. If you have something relevant to discuss, please share with the class.
- Conduct yourself according to the University of California's standards of ethical conduct for students, available from the GSM Associate Dean or the Office of Judicial Affairs at <http://sja.ucdavis.edu/cac.html>.
- Read material in advance, and contribute to discussion. I don't "teach from" the readings. Their purpose is to provide context, a reference for future, and to enable you to ask meaningful questions in class. Homework assignments are designed to engage you on the topic, and understand the "problem" for which we will discuss theory or solutions in class.
- Absence is strongly discouraged. If your schedule predicts absences, consider skipping this course this year. If you do miss a session for unanticipated reasons ( personal, family, religious, medical, pleasure), you must make up through (1) independent reading, problem-solving, and getting a class debrief from at least two of your colleagues; (2) submit a 1-2 page note (by next class): list what you did to make up, and summarize what you learnt.
- Class assignments must be delivered on time, 48 hrs before class (20-50% penalty for each delay).
- Reports should be easy to read (clearly legible, and organized into subsections) and concise. Separate essential points by moving details into an Appendix. Excessive use of color or other attempts to beautify the report are unnecessary.

## Textbook

Read any one of these books.

- Carl Shapiro and Hal R. Varian. *Information rules: a strategic guide to the network economy*. Boston, MA, USA: Harvard Business School Press, 1998. ISBN: 0-87584-863-X: will appear to be dated (late 1990s, which is a long time ago in this highly dynamic industry), but it is an excellent anchor and, moreover, contains many principles that are both timely and timeless. It contains many practical examples and is written in a very readable non-technical way.
- David S. Evans and Richard Schmalensee. *Paying with plastic: the digital revolution in buying and borrowing*. Cambridge, MA, USA: MIT Press, 1999. ISBN: 0-262-05062-5: also somewhat dated, but it covers the concepts of this course in an excellent way, and with respect to a concrete (albeit a single) setting.
- David S. Evans and Richard Schmalensee. *Catalyst Code: The Strategies Behind the World's Most Dynamic Companies*. Harvard Business Press, 2007. ISBN: 9781422101995. URL: <http://books.google.com/books?id=Q40BQgAACAAJ>: a recent discussion of the platform concept and how it drives the success of major modern companies.
- A. Gawer. *Platforms, Markets and Innovation*. Edward Elgar, 2009. ISBN: 9781848440708. URL: <http://books.google.com/books?id=1BvhQT8SHZkC>: the most recent book - a collection of chapters written by several different, but leading, scholars - and its contents appear to fit very closely with the focus of the course (but I haven't read it yet).

### Further Reading:

1. Oz Shy. *The Economics of Network Industries*. Cambridge University Press, 2002.  
*Provides a good and consistent mathematical foundation to analyze a variety of issues discussed in class.*
2. Hal R. Varian, Joseph Farrell, and Carl Shapiro. *Economics of Information Technology: An Introduction*. Cambridge University Press, 2005.  
*Light reading and useful insights related to course material.*
3. Costas Courcoubetis and Richard Weber. *Pricing Communication Networks*.  
*Deep and in-depth coverage of many pricing related issues in networks.*
4. *The Information Economy and Network Economics* (at UC Berkeley): lots of pointers to research resources <http://www2.sims.berkeley.edu/resources/infoecon/Networks.html> and data <http://www2.sims.berkeley.edu/resources/infoecon/>.