



## Technology Innovation and Strategy

TE/ENG 565

Instructor: Sanjiv Chopra

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[www.tec.illinois.edu](http://www.tec.illinois.edu)



# ENG 565 TECHNOLOGY INNOVATION AND STRATEGY

## Course Syllabus

Prepared by: Sanjiv Chopra

### INTRODUCTION

This course is designed to help students develop strong conceptual foundations for understanding technological innovations. It will introduce concepts and frameworks for analyzing how firms can create, commercialize and capture value from technology-based products and services. It will also highlight why some firms that have successfully commercialized technology products as a new entrant, fail to sustain their success as technology changes and evolves around them.

### KEY CONCEPTS

1. Technological innovation and business strategy. How do innovating firms extract economic returns from an innovation and what are some of the barriers to it? Introduce the ideas of business strategy, core competence, and industry analysis aimed at understanding ways to capture the biggest slice of the value that is generated. In addition to the traditional ideas of strategy the importance of fostering dynamic firm capabilities in environments of rapid technological change will also be introduced.
2. Disruptive Innovation. Christensen's disruptive innovation framework helps explain why successful companies often lose out in the face of disruptive innovation. Too often successful companies introduce new products whose performance overshoots market need. They do this via sustaining innovations, in search of higher margins and to keep current customer happy. They often engage in sustaining innovation at the expense of developing disruptive products that have lower performance and cheaper but target emerging markets with high growth potential.
3. Technology evolution and dominant design: In the early stages of industry development, product designs are in a state of flux. At some point after considerable trial and error in the marketplace a design emerges that meets a whole set of user needs in a relatively complete fashion. This is called the dominant design, which by its very nature is product-defining. No one asks whether a car has a steering wheel or electric wipers! Once a dominant design emerges, the dynamics of competition change dramatically from the fluid phase to competition focused on price, quality and some differentiation leading companies to focus on different types of activities.
4. Crossing the chasm. Technology ideas don't often fail to transition from a promising, nascent early adopter phase to mass market. The gap between these two phases is called the chasm. What is the secret to crossing the chasm? Identify a single beachhead (product application) of pragmatist customers in a mainstream market segment and accelerate the formation of 100% of their "whole" product needs. The typical product development prioritization process usually results in new features (something) for everyone, but a *complete solution* for no one.
5. The technology S-Curve. S-Curve is a useful framework describing the substitution of new for old technologies at the industry level. According to the S-curve, in early stages of a technology the rate of progress in performance is relatively slow. As the technology becomes better understood, controlled, and diffused, the rate of technological improvement increases. In its mature stages, the technology will asymptotically approach a natural or physical limit. The S-curve framework can be used in both component as well as architectural level technology development.

6. Lead user research. Lead users are not the same as early adopters. They have a specific need and they actually adopt, or change the product to fit their needs. A wealth of information pertaining to product development resides in lead users. However it is not easy to find them and there are challenges in using this methodology.
7. Network externalities and standards: Adoption of new technology may be influenced by Network Effects (the utility derived from the consumption of a service/good for a given user of a network depends upon the number of other users on the same network). Various consumer applications (Web, mobile, and community) often exhibit positive network externalities. First mover advantage, assembling allies, and availability of complementary products can help establish technology standards in market with strong network effects.

## COURSE OBJECTIVES

Through case studies, a student project, and several analytical frameworks explored in class, this course aims to equip students with a broad perspective on the central issues involved in innovation throughout the product lifecycle. It aims to help students become even better leaders of technology and innovation.

## COURSE MATERIALS

### REQUIRED:

- TE/ENG 565 Course Packet
- Additional readings and Harvard Business School cases will be handed out throughout the semester.

### REFERENCES:

- *Innovator's Dilemma*, Clayton M. Christensen, 2003, ISBN 0060521996
- *Crossing the Chasm*, Geoffrey A. Moore, 2002, ISBN 0060517123
- *Strategic Management of Technology & Innovation*, Burgelman, Christensen, and Wheelwright, Fourth Edition 2004, ISBN 0-07-253695-0

## REQUIREMENTS AND GRADING

### ON-CAMPUS STUDENTS:

#### Contact hours:

One 100-minute lecture-discussion per week. A 100-minute session is counted as 2 contact hour. Thus, there are 2 contact hours per week x 14 weeks = 28 total contact hours.

#### Grades:

Grades for on-campus students will be determined on the basis of attendance/class participation, midterm exam and a final group project.

#### 1. Class participation:

Heavy emphasis will be placed on class attendance and active, thoughtful classroom participation.

What does that mean? All students are expected to have completed each session's readings, and have prepared an analysis of the issues raised in each case without exception. In evaluating classroom participation, I look for students who clearly articulate their analysis, back up their views with any relevant facts, and move the analysis forward.

## 2. Midterm:

There will be a 90-minute midterm exam (closed book, closed notes). This will consist of a set of short-answer questions and/or short cases to be read, analyzed, and turned in at the end of the period.

## 3. Group project:

Students will also be required to finish a group project. These will consist of students in groups of three or four, exploring a topic related to the dynamics of technical innovation. The final deliverable for the group project will be a 15 minute in-class powerpoint presentation and submission of the powerpoint slides for grading. The group presentation will be 15 minutes in duration and will be followed by 5-10 minutes of Q&A. I may also ask each participant to evaluate the contribution of the other group members (peer review).

Grades for on-campus students are determined as follows;

- Attendance 10%
- Class participation 20%
- Midterm exam 40%
- Group project 30%

### *ON-LINE STUDENTS (DISTANCE LEARNERS):*

#### Contact hours:

Two 50 minute video lectures per week. A 50-minute session is counted as 1 contact hour. Thus, there are 2 contact hours per week x 14 weeks = 28 total contact hours.

#### Grades:

Grades for online students will be determined on the basis of homework assignments, midterm exam and a final project that is to be completed either individually or in groups.

#### 1. Homework assignment:

On-line students are expected to complete each sessions reading before viewing the class video in order to get the most benefit from the course material. Students will be expected to complete homework assignment covering content each major module of the course. These assignments have to be done without referring to the class notes or readings (closed book, closed notes).

#### 2. Midterm:

There will be a 90-minute midterm exam (closed book, closed notes). This will consist of a set of short-answer questions and/or short cases to be read, analyzed, and turned in at the end of the period.

#### 3. Individual/Group project:

On-line students will also be required to complete an individual or a group project. This will consist of student(s) exploring a topic related to the dynamics of technical innovation. You will be required to turn in a 10-12 pages written report with your analysis and recommendations.

Grades for on-line students are determined as follows;

- Homework assignments (1-2 page write-ups) 30%
- Midterm exam 40%
- Group project/Individual project 30%

## GROUP/INDIVIDUAL PROJECT

Working in groups of three (on-campus students), or individually (on-line students) you will explore a topic of particular interest related to the management of technology and innovation.

Project options include:

- Analyze a contemporary (or anticipated near future, 0-5 year) disruptive innovation, and present action plan(s) for one or more key players involved (Music and video distribution over the web, Inorganic semiconductors, hybrid/electric automobiles, Active suspension technologies, Unmanned Aerial Vehicles, Alternative Energy, Mobile TV streaming, On-line education, Online peer to peer lending, etc.)
- Other options that tie directly to the course material

Above all else, I want this project to be directly *relevant, interesting* and *beneficial* to you. As such, I am prepared to give considerable topic leeway, provided you establish a direct connection to the topics presented by the course in both your proposal and final deliverables. For instance, if you have an idea for a new process or product innovation in a *new* firm or within an *existing* entity, and want to use this as an opportunity to explore and further refine it, by all means do so.

There are three deliverables for this project:

- a. Short 1-2 page proposal.
- b. Written report (approximately 10-12 pages in length) for online students
- c. Powerpoint presentation for on-campus students.

## ABOUT THE INSTRUCTOR

**Sanjiv Chopra** has worked in the technology industry in various Engineering and Management roles for over fifteen years. Since 2005, as Entrepreneur-in-Residence in the College of Engineering at the University of Illinois, Chopra has taught two popular graduate courses titled “Technology Innovation and Strategy” and “Venture Funded Startups”. As a “practicing” entrepreneur Chopra provides a balanced understanding of strategic and tactical issues that confront engineers and entrepreneurs in designing and commercializing technology based products.

Chopra currently serves as a Senior Director of Industry Strategy in the Industries Business Unit (IBU) at Oracle Corporation where he advises potential clients on the business benefits of technology-enabled business transformation. Chopra has also served in key management roles and advisory board of several venture funded technology startups. From 2006 until 2008, Chopra served as a business development executive for Xelerated, Inc. Xelerated is a Communications Processor company funded by pre-eminent venture capitalists, including Accel Partners, Sweden based A/P Fund. From 2001 until January 2006 Chopra served as the Chief Operating Officer of Intersymbol Communications. Intersymbol is a venture-backed technology company developing disruptive, mixed signal integrated circuits for optical communications industry. Intersymbol was acquired by Finisar Corporation (NASDAQ: FNSR) in March 2006. Prior to Intersymbol Chopra was the Co-founder and Vice President of Business Development for CapacityWeb, Inc, a venture backed supply chain software and technology provider. From 1991-1997 he worked in Silicon Valley, California for Integrated Device Technology (NASDAQ: IDTI) designing and developing semiconductor integrated circuits for the personal computer and communications industry. Chopra has also worked as a management consultant at Booz, Allen & Hamilton, a premier management consulting firm.

Chopra holds a B.S. in Electrical Engineering from BIT, India, a Master of Science degree in Electrical Engineering from Iowa State University, and an MBA from Northwestern University, Evanston, IL.

## LECTURE TOPICS AND READING LIST FOR ON-CAMPUS STUDENTS

### WEEK 1: COURSE OVERVIEW AND INTRODUCTION TO KEY CONCEPTS

#### READING:

1. Peter F. Drucker, "The Discipline of Innovation", Harvard Business Review, November-December 1998.
2. Clayton Christensen, Michael Overdorf, "Meeting the challenge of Disruptive change", Harvard Business Review, Vol. 78, Issue 2, Mar/Apr 2000.

### WEEK 2 AND WEEK 3: DISRUPTIVE INNOVATION AND MANAGING TECHNOLOGICAL TRANSITIONS

#### READING:

#### Week 2

1. Sanjiv Chopra, "Choose To Disrupt", Silicon India Magazine, May 2007.
2. Remember Lowly Memory Chips? They're Back Changing Industries, Wall Street Journal, 2005.
3. Clayton Christensen, Matt Verlinden, "Disruption, Disintegration and the Dissipation of Differentiability", Industrial and Corporate Change, Volume 11, November 5, 2002 pp. 955-993. (SKIP SECTIONS: 4.1, 4.2, 4.4, 4.6, 5.1, 5.2, 5.4).
4. Clayton Christensen, Joseph Bower "Customer power, strategic investment, and the failure of leading firms", Strategic Management Journal, March 1996, Volume 17, Issue 3.

#### Week 3

1. Clayton Christensen, et. al, "Innovation Killers: How Financial Tools Destroy Your Capacity To Do New Things", Harvard Business Review, Jan 2008.
2. James Utterback, Happy Acee "Nanotechnology: A disruptive technology?" MIT Working paper, 2002.
3. Henderson and Clark, (1990), "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms," Administrative Science Quarterly 35. 1990 pp. 9-30.
4. Sanjiv Chopra, "Focus On Architectural Innovation" Silicon India Magazine, June 2007.

#### CASE:

Continuous Casting at USX Corporation

### WEEK 4 AND WEEK 5: CROSSING THE CHASM

#### READING:

#### Week 4

1. Geoffrey Moore "Crossing the Chasm and beyond", pp 362-368, Strategic Management of Technology and innovation, 4<sup>th</sup> edition, Robert Burgelman, et. al.
2. Geoffrey Moore, "Crossing the Chasm", Harper Collins: NY, pp. 12-25, 30-83

#### Week 5

3. Geoffrey Moore "Darwin and the Demon", Harvard Business Review, July/Aug 2004

#### CASE:

Documentum, Inc.

## **WEEK 6 AND WEEK 7: INTRODUCTION TO STRATEGY**

### *READING:*

#### **Week 6**

1. Porter, Michael (1996), "What is Strategy?" Harvard Business Review, November 1996 pp. 61-78. Volume 74 Issue 6
2. Prahalad, C.K. and Hamel, Gary (1990), "The Core Competence of the Corporation", Harvard Business Review 1990. Volume 68 Issue.
3. Michael Porter, "The Five Competitive Forces That Shape Strategy", Harvard Business Review, Jan 2008.
4. Clayton Christensen, Scott Anthony "Solving the Dilemmas of Growth", Strategy and Innovation, July 2003.
5. Honda, in a Funk, Tries to Revive the Civic's Virtues, Wall Street Journal, 2005
6. For U.S. Airlines, A Shakeout Runs Into Heavy Turbulence, Wall Street Journal, 2005
7. Optional: Robert S. Kaplan, David P. Norton, "Mastering The Management System", January 2008.

### ***PROJECT PROPOSALS DUE:***

Due in class: One page proposal for final project and identification of team members.

#### **Week 7**

### *READING:*

Strategy issues in environments of rapid technological change

1. David J. Collis, Cynthia A. Montgomery, "Competing on Resources", Harvard Business Review, July 2008.
2. David Teece, Gary Pisano, Amy Shuen, "Dynamic Capabilities and Strategic Management" Strategic Management Journal, Vol. 18:7, 1997.
3. Kathleen M. Eisenhardt, Donald N. Sull, "Strategy as simple rules", Harvard Business Review, Jan 2001.

### *CASE*

Power Play (A): Nintendo in 8-bit Video Games

## **WEEK 8 AND WEEK 10: TECHNOLOGY EVOLUTION**

### *READING:*

#### **Week 8**

Technology Evolution and Dominant Design

1. Utterback, James (1994), "Dominant designs and the survival of firms". Chapter 2 in Mastering the Dynamics of Innovation, Harvard Business School Review Press pp. 23-55 and pp.79-102
2. Sanjiv Chopra, "In Pursuit of Dominant Design", Silicon India Magazine, March 2007.
3. As Hybrid Cars Gain Traction, Industry Battles Over Designs, Wall Street Journal



## **WEEK 9: SPRING BREAK**

### **WEEK 8 AND WEEK 10: TECHNOLOGY EVOLUTION**

*READING:*

#### **Week 10**

S-Curves for component and architectural technologies

4. Clayton Christensen, "Exploring the limits of the Technology S-Curve. Part I: Component Technologies". *Journal of Production and Operations Management* 1, no. 4 (Fall 1992)
5. Clayton Christensen, "Exploring the limits of the Technology S-Curve. Part II: Architectural Technologies". *Journal of Production and Operations Management* 1, no. 4 (Fall 1992)

*CASE:*

Hewlett-Packard's Merced Decision

### **WEEK 11: PROFITING FROM TECHNOLOGY INNOVATION**

*READING:*

1. Teece, David "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing, and public policy." *Research Policy* 15, no. 6 (Dec. 1986): pp. 185-219. Volume 16.

*CASE:*

Abgenix and the Xenomouse

### **WEEK 12: LEAD USER RESEARCH**

*READING:*

1. Stefan Thomke, Ashok Nimgade, "Note on Lead User Research" pp 794-800, *Strategic Management of Technology and innovation*, 4<sup>th</sup> edition, Robert Burgelman, et. al.
2. Got a Better Letter Opener, *Wall Street Journal*, July 2006.
3. Clayton Christensen, Scott Cook, Taddy Hall, "Marketing Malpractice: The Cause and the Cure", *Harvard Business Review*, December 2005.

*CASE:*

Innovation at 3M Corporation (A)

### **WEEK 13: STANDARDS AND NETWORK EXTERNALITIES**

*READING:*

1. Shapiro, C. and H. Varian (1999). The art of Standards Wars, *California Management Review*, 41(2): pp. 8-32.
2. Thomas Eisenmann, Geoffrey Parker, Marshall W. Van Alstyne, "Strategies for Two-Sided Markets" *Harvard Business Review*, October 2006.
3. David, (1985), "Clio and the Economics of QWERTY", *American Economic Review*. Vol 75, No. 2, May 1985. pp. 332-337.
4. Pekka Rantasaari, "Network Effects and Adoption of new Technology", *Helsinki University of Technology*.

*CASE:*

Adobe Systems Incorporated

### **WEEK 14: GROUP FINAL PRESENTATIONS**

## PREPARATION QUESTIONS FOR IN-CLASS DISCUSSION (ON CAMPUS STUDENTS)

Disruptive innovation:

1. Why do most large successful companies lose the ability to enter small emerging markets?
2. Why are established firms better positioned to introduce sustaining innovations as opposed to disruptive innovations?
3. How can a large company develop new capabilities to embrace and initiate disruptive change?
4. Why are vertically integrated firms generally dominant at the early stages of an industry?
5. What gives rise to move away from vertical integration to specialization (or disintegration)?
6. How does the locus of profits shift at various stages of an industry's evolution?

Crossing the Chasm:

1. What is the technology adoption life cycle?
2. What is the recommended high technology marketing strategy?
3. What is the problem of this strategy?
4. What is the main reason that companies cannot overcome the "chasm", and the recommended approach to cross the chasm?

## INTRODUCTION TO STRATEGY

Basic strategy:

1. Why is Operational Effectiveness alone not sufficient to achieve superior profitability?
2. What are the three key elements that drive competitive advantage through strategy?
3. What is the growth trap and what are the ways to avoid the trap?
4. What are core competencies and how do you identify something as core competence?

Five Forces:

1. Discuss Porter's five forces that determine competition in an industry?

Strategy in environments of rapid technological change:

1. What is the alternative view of strategy in high velocity markets?

## TECHNOLOGY EVOLUTION

Dominant Design

1. What is a dominant design? How is it established?

S-Curve

1. How does dominant design relate to the S-curve?
2. When is an S-curve analysis helpful, and how should it be used?

## PROFITING FROM TECHNOLOGY INNOVATION

1. What are some of the elements that determine whether or not the innovator will receive significant economic returns from innovation?
2. How does the relative importance of appropriability and complementary assets change over the life cycle of an industry?
3. What is the relationship between Teece's concept of "complementary assets" and "barriers to entry" as defined by Porter?

## MANAGING TECHNOLOGICAL TRANSITIONS

1. How is the phenomena outlined by Christensen related to Foster's S-curve?
2. What determines the success or failure of incumbent firms in Henderson-Clark?

### **TECHNOLOGY MARKETING: CROSSING THE CHASM, LEAD USER RESEARCH**

1. What is the “chasm”? How do you know you are in a “chasm”?
2. What techniques does the author recommend for “chasm management”?

### **STANDARDS AND NETWORK EXTERNALITIES**

1. How do standards and network externalities affect technological competition?
2. What are tradeoffs faced by managers in such markets?

## PREPARATION QUESTIONS FOR IN-CLASS CASE DISCUSSION (ON CAMPUS STUDENTS)

### Continuous Casting at USX Corporation

1. Do you think Kappmeyer should sign the proposal, and why?

### Documentum, Inc.

1. What did Documentum learn from its experience with the first two customers?
2. Should Documentum accept the Marsh and McLennan deal?
3. What is your reaction to Moore's method of selecting the target market?
4. What is the difference between a horizontal and vertical strategy?

### Power Play (A): Nintendo in 8-bit Video Games

1. Nintendo successfully recreated the home video game business following the Atari-era boom and bust. How did it do so?
2. How was Nintendo able to capture value from the home video game business?

### Hewlett-Packard's Merced Decision

1. Does the market need the Merced chip?
2. Who will benefit the most from the introduction of the Merced chip in the markets served by ESG? Who will benefit least, and why?
3. What should Jim Davis recommend?

### Abgenix and the Xenomouse

1. Does Pharmacol or BioPart represent a better way to go for Abegenix? Why?
2. What should Scott Greer do?
  - a. Go it alone through the end of phase II trials?
  - b. Sign with Pharmacol?
  - c. Sign with Biopart?
  - d. Something else?

### Innovation at 3M Corporation (A)

1. How does Lead user research process differ from and complement other traditional market research methods?
2. Has the Medical-Surgical team applied the lead user research process successfully? Why or why not?
3. What are the risks to the new lead user process at 3M?

### Adobe Systems Incorporated

1. How was Postscript established as a de facto standard? How did Adobe make money from Postscript, despite it being an "open" standard?
2. Which firm is currently in a stronger position to control de facto standards in the eBook space: Adobe or Microsoft?
3. What should Adobe do? How can they win the standards war? Should they focus on eDocs or eBooks? Will the eBooks market tip or will there be multiple standards? How can Adobe make money in this market?

## **LECTURE TOPICS AND READING LIST FOR ON-LINE STUDENTS**

You must complete the homework after reading the assigned reading and/or case but prior to viewing the lecture video for that topic. Please consult the viewing schedule on the Video Lectures page.

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3. Peter F. Drucker, "The Discipline of Innovation", Harvard Business Review, November-December 1998.
4. Clayton Christensen, Michael Overdorf, "Meeting the challenge of Disruptive change", Harvard Business Review, Vol. 78, Issue 2, Mar/Apr 2000.

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READING:

#### **Week 2**

5. Sanjiv Chopra, "Choose To Disrupt", Silicon India Magazine, May 2007.
6. Remember Lowly Memory Chips? They're Back Changing Industries, Wall Street Journal, 2005.
7. Clayton Christensen, Matt Verlinden, "Disruption, Disintegration and the Dissipation of Differentiability", Industrial and Corporate Change, Volume 11, November 5, 2002 pp. 955-993. (SKIP SECTIONS: 4.1, 4.2, 4.4, 4.6, 5.1, 5.2, 5.4).
8. Clayton Christensen, Joseph Bower "Customer power, strategic investment, and the failure of leading firms", Strategic Management Journal, March 1996, Volume 17, Issue 3.

#### **Week 3**

5. Clayton Christensen, et. al, "Innovation Killers: How Financial Tools Destroy Your Capacity To Do New Things", Harvard Business Review, Jan 2008.
6. James Utterback, Happy Acee "Nanotechnology: A disruptive technology?" MIT Working paper, 2002.
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CASE:

Continuous Casting at USX Corporation

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5. Geoffrey Moore, "Crossing the Chasm", Harper Collins: NY, pp. 12-25, 30-83

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CASE:

Documentum, Inc.

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### ***PROJECT PROPOSALS DUE:***

Due in class: One page proposal for final project and identification of team members.

#### **Week 7**

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5. David Teece, Gary Pisano, Amy Shuen, "Dynamic Capabilities and Strategic Management" Strategic Management Journal, Vol. 18:7, 1997.
6. Kathleen M. Eisenhardt, Donald N. Sull, "Strategy as simple rules", Harvard Business Review, Jan 2001.

### *CASE*

Power Play (A): Nintendo in 8-bit Video Games

## **WEEK 8 AND WEEK 10: TECHNOLOGY EVOLUTION**

### *READING:*

#### **Week 8**

Technology Evolution and Dominant Design

6. Utterback, James (1994), "Dominant designs and the survival of firms". Chapter 2 in Mastering the Dynamics of Innovation, Harvard Business School Review Press pp. 23-55 and pp.79-102
7. Sanjiv Chopra, "In Pursuit of Dominant Design", Silicon India Magazine, March 2007.
8. As Hybrid Cars Gain Traction, Industry Battles Over Designs, Wall Street Journal

## **WEEK 9: SPRING BREAK**

### **WEEK 8 AND WEEK 10: TECHNOLOGY EVOLUTION**

*READING:*

#### **Week 10**

S-Curves for component and architectural technologies

9. Clayton Christensen, "Exploring the limits of the Technology S-Curve. Part I: Component Technologies". *Journal of Production and Operations Management* 1, no. 4 (Fall 1992)
10. Clayton Christensen, "Exploring the limits of the Technology S-Curve. Part II: Architectural Technologies". *Journal of Production and Operations Management* 1, no. 4 (Fall 1992)

*CASE:*

Hewlett-Packard's Merced Decision

### **WEEK 11: MIDTERM EXAM**

### **WEEK 12: PROFITING FROM TECHNOLOGY INNOVATION**

*READING:*

2. Teece, David "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing, and public policy." *Research Policy* 15, no. 6 (Dec. 1986): pp. 185-219. Volume 16.

*CASE:*

Abgenix and the Xenomouse

### **WEEK 13: LEAD USER RESEARCH**

*READING:*

4. Stefan Thomke, Ashok Ningade, "Note on Lead User Research" pp 794-800, *Strategic Management of Technology and innovation*, 4<sup>th</sup> edition, Robert Burgelman, et. al.
5. Got a Better Letter Opener, *Wall Street Journal*, July 2006.
6. Clayton Christensen, Scott Cook, Taddy Hall, "Marketing Malpractice: The Cause and the Cure", *Harvard Business Review*, December 2005.

*CASE:*

Innovation at 3M Corporation (A)

### **WEEK 14: STANDARDS AND NETWORK EXTERNALITIES**

*READING:*

5. Shapiro, C. and H. Varian (1999). The art of Standards Wars, *California Management Review*, 41(2): pp. 8-32.
6. Thomas Eisenmann, Geoffrey Parker, Marshall W. Van Alstyne, "Strategies for Two-Sided Markets" *Harvard Business Review*, October 2006.
7. David, (1985), "Clio and the Economics of QWERTY", *American Economic Review*. Vol 75, No. 2, May 1985. pp. 332-337.
8. Pekka Rantasaarri, "Network Effects and Adoption of new Technology", *Helsinki University of Technology*.

*CASE:*

Adobe Systems Incorporated

**WEEK 15: GROUP FINAL PRESENTATIONS**



## HOMWORK ASSIGNMENT FOR ONLINE STUDENTS

All online students are required to submit their homework assignment by the due date mentioned below. The homework must be submitted (email to the instructor) in the form of a 1-2 page Word or Adobe document.

**You must complete the homework after reading the assigned reading and/or case but prior to viewing the lecture video for that topic. Please consult the viewing schedule on the Video Lectures page.**

### **Homework # 1 – Week 2**

1. Why do most large successful companies lose the ability to enter small emerging markets?

### **Homework # 2 – Week 3**

*Case - Continuous Casting at USX Corporation*

1. Do you think Kappmeyer should sign the proposal, and why?

### **Homework # 3 – Week 5**

*Case - Documentum, Inc.*

1. Should Documentum accept the Marsh and McLennan deal?
2. What is your reaction to Moore's method of selecting the target market?

### **Homework # 4 – Week 6**

1. Why is Operational Effectiveness alone not sufficient to achieve superior profitability?
2. What are the three key elements that drive competitive advantage through strategy?
3. What is the growth trap? What do companies typically do when they are in the growth trap? How can they avoid the growth trap?

### **Project Proposals Due Week 6**

### **Homework # 5 – Week 7**

*Case - Power Play (A): Nintendo in 8-bit Video Games*

1. How was Nintendo able to capture value from the home video game business?

### **Homework # 6 – Week 9**

*Case - Hewlett-Packard's Merced Decision*

1. Does the market need the Merced chip?
2. What should Jim Davis recommend?

### **Homework # 7 – Week 12**

*Case - Abgenix and the Xenomouse*

1. What should Scott Greer do and why?

### **Homework # 8 – Week 13**

*Case - Innovation at 3M Corporation (A)*

1. How does Lead user research process differ from and complement other traditional market research methods?
2. What are the risks to the new lead user process at 3M?

## **Homework # 9 – Week 14**

*Case - Adobe Systems Incorporated*

1. What should Adobe do? How can they win the standards war? Should they focus on eDocs or eBooks? Will the eBooks market tip or will there be multiple standards? How can Adobe make money in this market?