

Sawyer Business School

Syllabus – MGSM 830

Technology Strategy

Class Hours:

Sep 17, 2011 (Saturday): 8:30 AM to 7 PM (1:15 PM to 2:15 PM lunch)

Sep 18, 2011 (Sunday): 9 AM to 7 PM (1:30 PM to 2:30 PM lunch)

Oct 01, 2011 (Saturday): 8:30 AM to 7 PM (1:15 PM to 2:15 PM lunch)

Oct 02, 2011 (Sunday): 9 AM to 7 PM (1:30 to 2:30 lunch)

Professor: Sam Mishra, MBA

Telephone: (408) 838-2393

Email: sambit@alum.mit.edu

Prerequisites: None.

Class website: Check *Blackboard* for announcements and updates, especially for assigned Internet / Web articles.

Required Text / Readings:

1. **Strategic Case Analysis: Business Concepts, Strategy Frameworks, and Solved Cases As Socratic Dialogues** (ISBN: 978-0-9798354-0-7). Will be available at the Bookstore. (Note: The book is also available on Amazon.com. The Amazon.com Link is <http://bit.ly/9DIMUB>)

2. Course Packet from Bookstore.

(Note: If the journal articles can be difficult, don't feel intimidated, just skip the page which does not make sense, move to the next page, and continue reading. Business Case Studies may not be skipped, since special class discussion points can be earned by a thorough reading of the Business Cases.)

3. **Assigned readings / listenings from the Internet.** All links, including links to the podcasts by the professor, will be posted on blackboard, if not already there in this syllabus.

Course Description

This course provides you with a plethora of analytical tools and strategy frameworks and applications thereof whether your goal is to leverage technology resources and services in your company or whether you want to focus your career on managing high-tech, biotech, or clean-tech businesses. Many traditional businesses are reinventing themselves as technology businesses; e.g., UPS prides itself as a technology company that delivers packages. In the current era of fuming debates on global warming, carbon points and clean-tech are emerging

as viable technology focus areas for businesses. Technology is everywhere, from Google search and Facebook pictures to iPhones and iPads to three dimensional IMAX entertainment to using technology as an educational medium to bridge the literacy gap between the first world and the third world.

You will find the contents of this course to be extremely useful whether your need is to know how to apply technology strategy in your day to day work in consulting, big tech-firms, or new ventures; or whether you work in a non-technology-centric industry such as retail / banking / government, but interface with e-business / IT / Internet marketing groups and realize that technology remains one of the biggest influencers on management of your organization. The tools and frameworks learned in this course will also assist you if you decide to delve into technology entrepreneurship in high-tech / biotech / clean-tech industries.

In particular, these tools and frameworks will help you in insightful strategic planning while deciding which technologies to invest in and which to avoid, how to structure those investments and how to anticipate and respond to the behavior of competitors, suppliers, and customers. You will also learn to recognize the interactions between competition, patterns of technological and market change, and the structure and development of organizational capabilities. An expertise in crafting and repeatedly applying these tools and frameworks will help you lead your organization / firm / business unit in development of the needed technology / product / solutions strategies as a meaningful and integral part of its business strategy.

Businesses that will survive and thrive in today's Global Village will do well to recognize that customer markets, labor markets, supply markets, and capital markets are becoming more and more global, dynamic, competitive. As a business and technology leader in your firm, should you out-source, dual source, or have flexible labor contracts? When should you file for patents and when should you keep your trade a secret? As product innovation and rapid technological change gives way to maturing technologies / markets and process innovation, should "service innovation" be your focus, and should you consider your customers a part of your firm's ecosystem? As a business / marketing leader in your product or services oriented firm, how do you find the right revenue balance and then "servitize" products to create new value added opportunities and "productize" services to deliver them more efficiently and flexibly?

As a manager / business leader, will you be able to create more value by moving beyond conventional thinking about strategy / capabilities to compete on the basis of platforms / complements as is being done by Salesforce.com / Facebook / iPhone? Beyond Google AdWords / AdSense, how do you use the Internet / Social Media (Facebook / Twitter) / Blogs / Collaborative Content / Web 2.0 as an effective marketing and distribution channel? You will be able to brainstorm all this and more in the last class with the professor, who will bring not only a global perspective, but also 20 years of experience in the technology industry (including 10 years in Silicon Valley) to the Class Room.

Course Requirements and Grading

PARTICIPATION / PAPERS	WEIGHT
Class attendance and discussions	40%
Mid-term paper and presentation (5 to 10 power-point slides)	30%
Final paper (8 to 10 pages)	30%

Class Attendance and Class Discussions

Most of your participation grade will be based on attending class on time and adding value during class discussions. Your grade in class discussions will test not only whether you have grasped the business case and/or the reading material, but also whether your contributions are linked to the contributions from the others.

Mid-term Paper Presentation

Please submit a 4-page to 5-page printed hard copy. This will be an individual paper.

Please also be prepared to present your paper for 30 minutes (including 15 minutes of Q&A) to the entire class using power-point slides. Please follow the 10-20-30 powerpoint rule when preparing slides. Please limit your presentation to 10 power-point slides. Please carry your power-point slides on a thumb drive or please email it to sambit@alum.mit.edu by Sep 28.

Final Paper

Choose an industry / firm you would like to cover, and write a paragraph about it and submit it on Oct 1. It will be approved on Oct 2. If you are currently working, you can choose your industry / firm and / or a competitor to analyze. You should use the frameworks taught in the class for your analysis. You are encouraged to build your own frameworks to develop your own analysis, as required.

Group work produces better results and is encouraged. Groups be may have 1, 2, or 3 members. One final paper per group will be required. The paper should be 8 to 10 pages long. Please email your paper as a **PDF file** to sambit@alum.mit.edu.

Timeline for Papers

Oct 01: Mid-term “Five-pager” printed hard copy + verbal presentation via 5 to 10 power-point slides (if you are not going to carry your power-point slides on a thumb drive on Oct 01 / Oct 02, you must e-mail it to sambit@alum.mit.edu on or before Sep 28).

Oct 20: Final "Ten-pager" PDF file. Please email it to sambit@alum.mit.edu.

Course Schedule

<u>Date / Time</u>	<u>Topic / Concepts / Grading</u>	<u>Readings</u>
9/17/2011 8:30 AM - 10:45 AM	Introducing Technology Strategy The Industry Life Cycle Dominant Designs	<p>(Notes on URL links: If any link does not work, please copy and paste the entire http link into your browser).</p> <p>Sam Mishra, Strategic Case Analysis: Business Concepts, Strategy Frameworks, and Solved Cases as Socratic Dialogues. ISBN: 9780979835407 pages 156 to 158 on TALC (Technology Adoption Life Cycle) Listen to TALC Talk by downloading the MP3 Podcast at http://bit.ly/k7HrP</p> <p>Clayton M. Christensen, Fernando F. Suarez, and James M. Utterback "Strategies for Survival in Fast Changing Industries", <i>Management Science</i>/Vol 44, No. 12, December 1998, Pages S207-S220</p> <p>Utterback, James. "Dominant Designs and Survival of Firms." Chapter 2 in <i>Mastering the Dynamics of Innovation</i>. Cambridge, MA: Harvard Business School Press, 1994. ISBN: 9780875843421.</p> <p>Utterback, James. "Innovation and Industrial Evolution." Chapter 4 in <i>Mastering the Dynamics of Innovation</i>. Cambridge, MA: Harvard Business School Press, 1994. ISBN: 9780875843421.</p> <p>Tushman, Michael, and Rosenkopf, Lori "Organizational Determinants of Technological Change: Towards a Sociology of Technological Evolutions" <i>Research in Organizational Behavior</i>, VOL 14, pages 311-325 (COMPULSORY), Rest of the Pages (OPTIONAL)</p> <p>Listen to the MP3 podcast on Technology Cycles and Dominant Designs by downloading http://bit.ly/dvgSOY The accompanying framework can be viewed at</p>

9/17/2011 11 AM - 1:15 PM S-Curves / Technological Trajectories Product Strategy

<http://bit.ly/mYKM72>

Sam Mishra, Strategic Case Analysis: Business Concepts, Strategy Frameworks, and Solved Cases as Socratic Dialogues. ISBN: 9780979835407 pages 158 to 160 on S-Curves Listen to McNeal S-Curves MP3 Podcast which can be downloaded at <http://bit.ly/qoxTq>

(OPTIONAL) Read up on SOA (Service Oriented Architecture) at <http://bit.ly/1h5tnd>

Foster, R. "The S-curve: A New Forecasting Tool." Chapter 4 in Innovation, The Attacker's Advantage. New York, NY: Summit Books, Simon and Schuster, 1986, pages. 88-111. ISBN: 9780671622503.

Dosi, Giovanni: "Technological Paradigms and Technological Trajectories" *Research Policy*, Vol. 11, (1982) 147-162

BUSINESS CASE: ORACLE ACQUIRES SUN

Listen to Webcasts from Oracle on Product Strategy: Solaris Strategy, JAVA Strategy SOA Strategy, Middleware (Application Servers) Strategy (URL links will be posted on Blackboard)

9/17/2011 2:15 PM - 4:30 PM Market Evolution Market Segmentation to Chasms? (Myth or Reality)

Sam Mishra, Strategic Case Analysis: Business Concepts, Strategy Frameworks, and Solved Cases as Socratic Dialogues. ISBN: 9780979835407 pages 7 to 11 on STP (segmenting, targeting, positioning) and pages 161 to 162 on Apple iPhones Practice Case (Come ready with your prepared presentation to Steve Jobs; Listen to the mapping of Steve Jobs on the VALS-2 Segmentation grid (pages 154 to 155) by listening to the podcast on STP & VALS-2 by downloading the MP3 file at <http://bit.ly/qaWWRX>

Moore, G. *Crossing the Chasm*. Revised ed. New York, NY: Harper Collins, 1999. (Read chapter 1 "High-Tech Marketing Illusion," and chapter 2

	<p>BUSINESS CASE: Amazon Kindle Vs. Apple iPad Vs. Tablet PCs</p>	<p>"High-Tech Marketing Enlightenment," pages. 9-62.) ISBN: 9780066620022</p> <p>Seth Godin TED TALK on the Hype of Chasms (To be Posted on Blackboard)</p> <p>Selected Webcasts and Readings from the Internet to be Posted on BlackBoard</p> <p>Association of University Technology Managers Manual, 1-43: Kathleen R. Terry, "Patent Filing in the United States," <i>AUTM Manual, Part IV: Chapter 2.1</i>, pages IV-2.1-Page 1 to IV-2.1-Page12 Nita L. Lovejoy, "Copyright" <i>AUTM Manual, Part IV: Chapter 2.3</i>, pages IV-2.3-Page 1 to IV-2.3-Page 25 Jon Sandelin, "Trademarks" <i>AUTM Manual, Part IV: Chapter 2.4</i>, pages IV-2.4-Page 1 to IV-2.4-Page 5</p> <p>Reverse Citation Analysis at http://www.franteractive.net/citation-analysis.html</p> <p>R. Dana Ono / Lita L. Nelson "The Lifeblood of Biotechnology: University – Industry Technology Transfer" from "The Business of Biotechnology: From the Bench to the Street" Chapter 3, pages 39 – 73 (Published by Butterworth-Heinemann)</p>
<p>9/17/2011 4:45 PM - 7 PM</p>	<p>Patents -Copyrights Trademarks Citation / Reverse Citation of Patents</p>	
<p>9/18/2011 9 AM - 11:15 AM</p>	<p>Tight Appropriability Complementary Assets Speed</p> <p>Technology Invasion and Speed to Market</p>	<p>Teece, D.J. (1987). "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing, and Public Policy." <i>The Competitive Challenge</i>, ed. D. Teece, Ballinger Publishing, Cambridge (MA), pages 185-219 (Chapter 9)</p> <p>Christensen, Clayton. "How Can Great Firms Fail? Insights From the Hard Disk Industry." Chapter 1 in <i>The Innovator's Dilemma</i>. Cambridge, MA: Harvard Business School Press, 1997, pages 3-28.</p> <p>Listen to the Podcast on "Technology Invasions" by downloading the podcast at http://bit.ly/8ZhF2S The accompanying framework can be viewed at http://www.franteractive.net/tech-invasion.html</p>

9/18/2011
11:30 AM -
1:30 PM

Architectural Vs. Radical
Innovation

Henderson, Rebecca, and Kim Clark.
"Architectural Innovation: The Reconfiguration of
Existing Product Technologies and the Failure of
Established Firms." Administrative Science
Quarterly 35 (1990): 9-30.

Evolution of Business
Computing from Mainframes to
n-tier architectures:
Mainframe (Dumb Terminals --
- IBM), Mainframe (Server-
Requester models, eg, Tandem),
Client-Server models, Internet
Browsers (eg, Netscape),
Application Servers (Weblogic,
Websphere, IIS), Database
Servers (MySQL, SQL Server,
Oracle, DB2), 3-Tier
Architecture (Client,
Application Server, Database
Server), n-Tier Architecture
(Presentation, Presentation
Logic, Business, Data Access,
Data)

(More URLs will be added on the blackboard)
<http://n-tier.com/articles/csovervw.html>

9/18/2011
2:30 PM -
4:30 PM

**TWO BUSINESS CASES -
Big Biotech & Start-up
Product Strategy**

Sam Mishra, Strategic Case Analysis: Business
Concepts, Strategy Frameworks, and Solved Cases
as Socratic Dialogues. ISBN: 9780979835407
1. Pages 89 - 95, Big Biotech (Solved Case #7)
2. Pages 114 -121, Product Strategy for a Silicon
Valley Software Start-up (Solved Case #10)

What frameworks did the
consultant used? How could you
have solved the case better?

9/18/
2011
4:45 PM -
7 PM

Standard Driven Markets
Network Effects
-Threshold Network Effects
- Extensive Network Effects

Carl Shapiro and Hal Varian, "The Art of
Standards Wars" California Management Review,
Volume 41, Number 2, Winter 1999

Brian Arthur, "Increasing Returns and the New
World of Business" Harvard Business Review,
July 1, 1996

Michael A. Cusumano, Y. Mylonadis, and R.
Rosenbloom, "Strategic Maneuvering and Mass

		<p>Dynamics: The Triumph of VHS over Beta.” The Business History Review, Spring 1992.</p> <p>Browse e-Book on Agile Methods / Spiral Modeling by Sam Mishra</p> <p>If the above link does not work, please try the URL http://bit.ly/dp5aNQ</p> <p>Rosenberg, N: “Directions of Technological Change: Inducement mechanisms and Focusing Devices.” <i>Economic Development and Cultural Exchange</i>, October 1969</p> <p>Cloud Computing by Sam Mishra, link --- http://software.franteractive.com/Concepts/cloud.html</p> <p>Google the following terms to get to the Wikipedia articles on the following: SCRUM AGILE</p> <p>(More URL links will be posted on the Blackboard)</p>
<p>10/01/2011 8:30 AM - 10:45 AM</p>	<p>"Agile" vs. "Waterfall" Product Agility vs. Process Agility (Business Process Agility, Lean Processes)</p>	
<p>10/01/11 11 AM - 1:15 PM</p>	<p>STUDENT PRESENTATIONS: First Four Mid-Term "Paper" Presentations as 5 to 10 Power-point Slides, 30 minutes each (15 minutes presentation + 15 minutes Q&A)</p>	<p>No readings. Please come prepared to listen to your class-mates present and actively participate in Q&A, which will go towards your class discussion points.</p>
<p>10/01/2011</p>	<p>STUDENT PRESENTATIONS: Second Four Mid-Term "Paper" Presentations as 5 to 10 Power-point Slides, 30 minutes each (15 minutes presentation + 15 minutes Q&A)</p> <p>Basic and Applied Research Absorptive Capacity</p>	<p>No readings. Please come prepared to listen to your class-mates present and actively participate in Q&A, which will go towards your class discussion points.</p> <p>David a Hounshell: “The Evolution of Industrial Research in the United States” pages 13-85 in</p>

<p>4:45 PM - 7 PM</p>	<p>Evolution of Industrial Research From Science to Technology (e.g., the Transistor)</p>	<p><i>Engines of Innovation</i>, R. Rosenbloom and W. Spencer, Eds. Harvard Business Review School Press, 1996.</p> <p>Cohen, W. and D. Levinthal (1990): "Absorptive Capacity: A New Perspective on Learning and Innovation", <i>Administrative Science Quarterly</i>, Vol 35, pages 128-138</p> <p>Nelson, R. (1962): "The Link between Science and Invention: The Case of the Transistor", <i>The Rate and Direction of Inventive Activity: Economic and Social Factors</i>, National Bureau of Economic Research, Princeton University Press, Princeton (NJ), pages 549-586</p>
<p>10/02/2011 9 AM - 11 AM</p>	<p>Technology Platforms (Platforms and Services, Not Just Products)</p> <p>"Servitize" products Vs. "Productize" Services?</p> <p>Network Effects Revisited</p> <p>BUSINESS CASE: Facebook vs. Google (The Battle for Identity Capture)</p>	<p>Cusumano, Michael A. "Platforms, Not Just Products" Chapter 1 in <i>Staying Power</i>. Oxford University Press, USA. 9780199218967, pages 22-67</p> <p>Cusomano, Michael A. "Services, Not Just Products (or Platforms)" Chapter 2 in <i>Staying Power</i>. Oxford University Press, USA. 9780199218967, pages 68-113</p> <p>Christensen, Clayton, M. and Bower, J.L. (1994) "Customer Power, Strategic Investment, and the Failure of Leading Firms," <i>Strategic Management Journal</i></p> <p>Web / Internet Postings on Platforms / APIs from Salesforce.com, Facebook, Apple's iPhone / iPad platforms, etc. (including Seth Godin's marketing blog entries on the iPad)</p> <p>Web / Blog Postings to be placed on the BlackBoard</p>
<p>10/02/2011 11:15 AM - 1:30 PM</p>	<p>STUDENT PRESENTATIONS: Third set of Mid-Term "Paper" Presentations as 5 to 10 Power-point Slides, 30 minutes each (15 minutes presentation + 15 minutes Q&A)</p>	<p>No readings. Please come prepared to listen to your class-mates present and actively participate in Q&A, which will go towards your class discussion points.</p>

<p>10/02/ 2011 2:30 PM - 4:45 PM</p>	<p>STUDENT PRESENTATIONS: -Fourth set of Mid-Term "Paper" Presentations as 5 to 10 Power-point Slides, 30 minutes each (15 minutes presentation + 15 minutes Q&A)</p>	<p>No readings. Please come prepared to listen to your class-mates present and actively participate in Q&A, which will go towards your class discussion points.</p>
<p>10/02/ 2011 5 PM - 7 PM</p>	<p>The "Process" of Technology Strategy</p>	<p>Wheelwright, S. and Clark, K. (1992). "The Concept of a Development Strategy," Chapter 2, "The Aggregate Project Plan," Chapter 4, and "Structuring the Development Funnel," Chapter 5 in <i>Revolutionizing Product Development</i>, The Free Press, New York (NY), pages 28 - 56</p>
	<p>Course Wrap-up & Take-Aways</p>	<p>Please review prior readings / podcasts.</p>