Georgia Tech Ernest Scheller Jr. College of Business

MGT 8812-EX3: TECHNOLOGY STRATEGY

Modality: In-person with two virtual sessions. One asynchronous class is based on a set of guest speakers with a related assignment. A second asynchronous class is based on a final group-based presentation.

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Course Description

Like financial and human resources, technology has critical importance in organizations, and the management of technology is an essential business function. Just as we need financial or human resource strategies, organizations must develop a technology strategy, which serves as a basis for the overall company strategy.

In this course, technology strategy will be studied by analyzing the economic and strategic factors that guide – or should guide - firms' decisions regarding the generation, commercialization, protection, and adoption of technological innovations. The emphasis is on the development and application of economic and strategy tools, which are critical for insightful long-term planning when deciding the sources of innovation (internal vs. external), how much to invest in internal R&D, whether to seek intellectual property protection, whether to develop and commercialize an invention in-house or sell it through arm's-length licensing contracts, or other cooperative strategies such as joint ventures or the sale of a technology-based firm's equity. Technology markets are analyzed from both a seller's and buyer's perspective. Internal technology commercialization may entail exploiting first-mover advantages or specialized downstream capabilities. Other topics covered include the analysis of situations increasingly observed in several high-tech industries, where firms create and accumulate technological innovations without exploiting them directly, using them instead for technological negotiations with other firms or preempting potential rivals from entering an industry.
We will use a combination of lectures, cases, readings, and several recorded guest speaker sessions to discuss specific managerial issues associated with the class.

Main Learning Objectives

To develop your capacity to **think strategically** about a company's technology decisions related to how much to invest in R&D, how to protect and commercialize innovations, and how to improve and sustain a firm's performance through the generation and adoption of technological innovations.
To build your skills in conducting strategic analyses about technology commercialization in a **variety of industries and competitive situations**, with a particular focus on high-tech industries.
To give you **hands-on experience (through virtual seminars with practitioners and the case study method)** in crafting a technology strategy integrated with the company's overall strategy, reasoning carefully about strategic options, using analytical frameworks to evaluate action alternatives, and making sound strategic decisions.

Outcomes

By accomplishing the above learning objectives, you will leave the class with a greater appreciation for strategic issues in managing technology and innovation. In addition, these outcomes are valuable for students interested in technology-driven businesses, entrepreneurship, and innovation, as well as

consultants and senior executives, because they must help make technology strategy decisions that affect the organization.

Course Requirements & Grading

Grading Components

Your course grade will is based on the following components and percentage allocations:

Component:	Weighting
Individual class participation	30%
Individual writeups on virtual sessions of guest speakers	20%
In-class group presentations on assigned cases	20%
Virtual group presentation on the chosen application case	30%
Σ =	100%

Course Structure

We will approach the class material in various formats, especially the case analysis and the application to current issues with practitioners, as well as a final group project. While required readings and lectures will cover concepts, research, and theories relevant to the strategic management of technology, most of the course is concerned with applying these intellectual tools to real-world situations.

Case Analysis

Part of the class discussions will be organized around assigned business cases. They are designed to simulate many of the decision-making characteristics in the real world. There is too much information about specific areas and not enough about others, and there is little accurate guidance on what is essential and what is unimportant. The first stage in analyzing a case involves sifting through this mass of information to identify critical patterns and issues. In doing this, you will be guided partially by the formal analytic frameworks developed in this class and partly by your overall judgment about the industry and firm – a judgment that is formed by your critical thinking about the case as a whole. Because some essential factors will only become apparent when we discuss the case together, you will need to strike a balance between focusing on what you consider to be the crucial points/facts in the case and making sure that you know enough about the other elements of the case to be able to follow the class discussion if it begins to veer into an area different from the one you anticipated.

Class Participation

Because much of this course is organized around case analyses, much of the action happens in class or online forum discussions. For this reason, a healthy part of your grade will depend on your participation in these discussions. Each student is expected to actively participate in case discussions and offer meaningful analyses and convincing arguments for the positions you take. Your grade on class participation can be earned by contributing your assessments and judgments to the discussion. It would help if you, therefore, made a conscientious effort to be sufficiently prepared to make intelligent, timely comments regarding the managerial issues raised in the cases – this entails reading the assigned cases and preparing notes for the study questions. Participation points can also be gained after class through the online discussion board. Finally, each student must pick another group's online presentation (due for virtual session 2) and provide online, during the two weeks following the due date of each presentation, at least one question addressing a weakness or missed opportunity of the work presented and one comment highlighting its major strength. In sum, consistent participation is expected. Lack of preparation or repeated absence from discussions may significantly affect the participation grade.

Attendance

In-person attendance according to Executive MBA policy.

Deliverables (due dates on Canvas)

1) Two group-based in-class presentations on assigned cases. This presentation entails leading the class discussion and providing quality comments around the questions indicated in the syllabus for that case. Groups (composed of 3-4 students) and case choices will be finalized during the first class. For the first week, groups will summarize answers during the in-person break-out sessions using paper or, preferably, laptops, through the Canvas Case Discussion board. For sessions 3-4, slides should be used and turned in before class through a Canvas Assignment.
2) Four individual writeups on virtual guest speakers (cf. Session 5 - Virtual class 1 – below).
3) One virtual group presentation on the application case (cf. Session 6 -Virtual class 2 – below).

Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:
A: 90-100%; B: 80-89%; C: 70-79%; D: 60-69%; F: 0-59%.

Detailed grading criteria and rubrics for assignments will be provided on Canvas. Students are responsible for understanding how each component contributes to their final grade.

Course materials

Required and optional material such as news articles, papers, or book chapters are available in electronic form through the course website.

Student Use of Laptop or Mobile Devices in the Classroom

A laptop or tablet is recommended during class sessions to access course material such as handouts. Laptops or mobile devices are only allowed for class-related material and activities.

Communication

I will use both the class website and the class group email distribution list to post information on class changes, upcoming assignments, grades, and the like. This syllabus may be updated during the semester. Any changes will be communicated via Canvas and will apply equally to both the public syllabus and the version used in class. If you do not use your Georgia Tech email, I suggest that you arrange to have your GT email forwarded to an account you often check. Do not hesitate to contact me by email at any time with any issue or concern about the class. I typically answer emails within the day or sooner.

Student-Faculty Expectations

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulates some basic expectations that you can have of me and that I have of you.

Academic Honesty/ Honor Code

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review the Student Code of Conduct and the Academic Honor Code, especially Appendix A: Graduate Addendum to the Academic Honor Code.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Allegations of scientific or scholarly misconduct are handled in accordance with the procedures outlined by the Policy for Responding to Allegations of Scientific or Other Scholarly Misconduct.

Use of Artificial Intelligence (AI) Tools

AI-based tools may be used for support purposes such as brainstorming or editing. However, all submitted work must reflect the student's own understanding and original analysis. Students are responsible for the accuracy and integrity of their work. Improper or undisclosed use of AI tools may be considered a violation of the Academic Honor Code.

Disability or special needs

Please let me know if you have a disability or special need that requires accommodation. Georgia Tech offers accommodations to students with disabilities. If you need classroom accommodation, please get in touch with the Office of Disability Services (https://disabilityservices.gatech.edu/).

CARE Center, Counseling Center, Stamps Health Services, and the Student Center

Some students may need help in dealing with stress and mental health. The **Counseling Center** and **Stamps Health Services** will offer in-person and virtual appointments. Student Center services and operations are available on the **Student Center** website. For more information on these and other student services, contact the Dean of Students or the **Division of Student Life**.

Sessions' outline, readings, and questions

SESSION 1
APPROPRIATING RETURNS FROM INNOVATION

Case 1: **TiVo: Pioneering the DVR**

Questions: 1. What is TiVo's Strategy? Does the company have a sustainable competitive advantage?
2. Evaluate TiVo's commercialization strategy related to the DVR. Is Tivo's business model conducive to success? What factors determine the extent to which Tivo can capture the returns from its innovation?
3. What should TiVo's strategy be going forward?

Case 2: **Fonar Corporation: Profiting from MRI patents**

Questions: 1. Evaluate Fonar's Intellectual Property strategy from its founding to today. Was its IP strategy effective in capturing returns from innovation? (Evaluate the early approach during the 80s, the intermediate period of the 90s, and more recent years).
2. Compare Fonar to TiVO. Identify key similarities and differences and explain how these similarities and differences relate to these companies' success (or not).
3. Does Fonar have a sustainable competitive advantage in the MRI industry?

Reading 1: You need an innovation strategy, by G.P. Pisano.

Reading 2: Strategic Management of Intellectual Property: An Integrated Approach, by W.W. Fisher II and F. Oberholzer-Gee ***[read first seven pages till section titled "Selling," p. 164]***

Reading 3: Complementary Assets, by M. Ceccagnoli.

SESSION 2
TECHNOLOGY LICENSING AND R&D JOINT VENTURES

Case 1: **Arm Holdings**

Questions: 1. How can we explain ARM's near-monopoly in the embedded RISC processor market?
2. What are the key elements of Arm's licensing strategy that account for its spectacular success?
3. Arm has had a spectacular performance for more than 20 years. How sustainable are Arm's competitive advantage and economic performance?

Case 2: **Abgenix and the XenoMouse**

Questions: Which offer should Abgenix take? Evaluate the economic factors, risks, and long-term strategic implications of each option.

Reading 1: Understanding the licensing option, by D.J. Teece

Reading 2: Collaboration strategies, by S. Shane

SESSION 3
PLATFORMS, OPEN SOURCE, AND OPEN INNOVATION

Case 1: **Google's Android**

Questions:
1. What are the key drivers of the success of the Android platform?
2. What factors make Android-based phones a relatively attractive platform for developing applications?
3. How does Google benefit from Android?
4. How does the forking and fragmentation of Android impact Google's long-term profitability?

Case 2: **Olay and the Skin Care Advisor Platform**

Questions:
1. Weigh the benefits and costs of closed vs open innovation. What conclusions do you draw?
2. How can strategic collaborations such as the one between Olay and Parc affect a company's competitive advantage?

Reading 1: Platform in the Digital Age, by M. Lenox.
Reading 2: Reaching Beyond Your Organization, by B. Kerr.

SESSION 4
TECHNOLOGY ACQUISITIONS AND CORPORATE VENTURE CAPITAL

Case 1. **Intel Capital**

Questions:
1. What is the role of corporate venture capital (CVC)?
2. Evaluate Intel's CVC strategy. What is your assessment of Intel Capital?

Case 2: **$19B 4 txt app WhatsApp...omg!**

Questions:
1. What are the costs and benefits of the acquisition?
2. Will the acquisition create or destroy value?

Reading 1: R&D meets VC: The promise of corporate venturing, by J. Lerner
Reading 2: Success and Failure in Technology Acquisitions-Lessons for Buyers and Sellers, by Graebner et al.

SESSION 5
(Virtual class 1)
GUEST SPEAKERS

These are individual assignments and part of the 1st Virtual Session. Please respond to the two prompts below using the text entry form provided with the assignment:

1. Discuss one or two key takeaways from for four guest speakers, two from section A and two from Section B (listed below). Explain how these insights align—or conflict—with class topics or assigned materials. *(350–400 words max; 100 points)*
2. What question would you ask the speaker? *(Optional, not graded)*

Each report should be uploaded separately with different due dates/assignments indicated on Canvas .

Grading Criteria – A strong response includes:

1. Staying within the word limit.
2. Clear discussion of one or two learning points, with your position (agree/disagree) and reasoning.
3. Thoughtful integration of the speaker's points with class concepts and discussions. Strong answers show critical thinking, personal reflection, and an understanding of both the speaker's perspective and class material. Consider challenges in applying the insights, or whether the talk challenged your assumptions.
4. Tone: Professional and academic—avoid a casual or conversational style.

A) VIRTUAL GUEST SPEAKERS ON SESSION 1-2 TOPICS

a) Profiting from innovation by enforcing patents: A Fortune 500 company's view.

i. Scott M. Frank (President and CEO, AT&T Intellectual Property Inc.).

b) Selling, buying, and licensing patents.

i. Samir Armaly (Former Head of IP Strategy @ TiVo).

c) Monetizing innovation: Perspectives from serial technology entrepreneurs.

i. Jennifer Hasler (Georgia Tech Regents Entrepreneur);

ii. Aaron Enten (CEO at Insight Optics, Inc.);

iii. Chris Lee (CEO and Co-founder, Huxley Medical).

d) IPO as an exit strategy for technology startups and current updates on capital markets

i. Vineet Chhangani (Managing Director - Technology Investment Banking at Morgan Stanley)

B) VIRTUAL GUEST SPEAKERS ON SESSION 3-4 TOPICS

a) Profiting from proprietary and open-source technologies with network effects.

i. Alex Heublein (Former President, Adaptigent).

& Neil Bornstein (Linux and Open Source Professional, SUSE).

ii. Peter Evans (Chief Strategy Officer, Platform, Marketplace and Ecosystem Strategy & Design)

b) Open innovation: current opportunities and challenges.

i. Mariano Maluf (Global Director Digital Innovation, Kimberly-Clark).

c) Innovative business models in corporate venturing.

i. John Wesley (Investment Director at NVentures, NVIDIA's venture capital arm);

ii. Jonathan King (Investor @ Coinbase Ventures)

d) Strategy and acquisitions, focusing on technology: Overview and current issues.

i. Mark Satisky (Senior FinTech and Technology Executive; CFO/Managing Partner, North Highland).

SESSION 6
(Virtual class 2)

ONLINE PRESENTATION ON THE APPLICATION CASE OF THE A GROUP'S CHOICE

OBJECTIVES: The primary aim of this group assignment is to practice using the class material, frameworks, and ideas covered during the course. The secondary objective is to enrich the learning process by leveraging participants' prior experiences or future interests to show how course concepts can be applied in various business settings.

TOPIC: A challenge facing a specific firm concerning exploiting, protecting, licensing out or selling technology, licensing in, or acquiring (via means other than licensing) its innovations. If you wish, you can focus on a firm within the industry related to your current or expected career path. ***Originality is encouraged***. A rubric for grading criteria will be available on Canvas. Examples from recent sections of the class include the analysis of OpenAI technology strategy, including its intellectual property strategy and strategic R&D alliances; the commercialization of AWS Walk-Out technology; or how Delta uses its technology strategy to enhance the customer experience. Sample slides are available on Canvas. The professor will provide a topic for you if needed.

GROUP: Your Application case project is group-based. You should form a group of 4 members. We will form groups during the first session, and the professor will facilitate project development in class and via email or zoom meetings.

DELIVERABLE: A PowerPoint-based online presentation. Prepare a set of 8-15 slides so that you can give a 20-25' online presentation about your topic. Each team member will be required to present part of the report of their choice. You can record your presentation, including video or only audio. The project's due date will be available on Canvas.

INSTRUCTIONS: Upload in Canvas either a PowerPoint-based presentation with a video-based presentation (there is a 500 MB size limit). I will then publish these videos/files using one discussion board per group for online Q&A that will take place during the two weeks right after posting (see further below on this). You can use Teams or Zoom for Video.

ONLINE Q&A (INDIVIDUAL): Recall from the participation section of this syllabus that each student must pick another group's online presentation and provide online (adding a comment to the related Canvas discussion board) during the two weeks following the due date of the presentation deliverables, at least one question addressing a weakness or missed opportunity of the work presented and one comment highlighting its major strength. Such an effort will count as individual participation.