Technology Strategy & Innovation Management provides students with a strategic perspective on management in complex, knowledge-intensive, and dynamic environments. These settings pose a different set of challenges to the identification and pursuit of competitive advantage than described in your previous strategy courses. Although tradeoffs between different resource allocation policies and forms of organization remain critical, we now need to consider how to evaluate investment proposals with extremely large (and uncertain) terminal values, whether to capture value from knowledge assets in “product” or “knowledge” markets, and how to organize to simultaneously exploit existing advantages and to explore new opportunities.

The course is organized around three broad questions: How do firms create value through investment under high levels of uncertainty; how can managers capture value from these investments; and how might managers assemble and organize knowledge resources to optimize their innovative output in dynamic settings? In considering these questions we will develop and apply a series of conceptual models that illustrate interactions between patterns of technological, market, competitive, and organization structure. The models introduced in the course will enable students to answer questions such as: In what type of technologies should a given firm invest? In the face of technological change, who wins and who loses? Why do many existing firms fail to incorporate new technology in a timely manner? How do firms innovate and profit from innovation? How should a firm organize to create and capture value from its technological investments?

Technology Strategy & Innovation Management has been created to help students identify the different types of technological, market, and organizational problems that occur at various stages in a technology or products life cycle. In so doing, the course helps students’ identify the underlying patterns of change that affect economic activity and to gain experience applying conceptual tools in dynamic settings. The course is likely to be of particular interest to students interested in managing technology-oriented firms, creating technology-driven startups, consulting to such firms, or valuing technology for financial institutions. Students with interests in public policy may also find the course rewarding.
## Course Outline

### Creating Value: Patterns of Change in Technologies and Markets

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Reading</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/6</td>
<td>Introduction</td>
<td>• Christensen, C., M. Raynor, &amp; M Verlinden. 2001.</td>
<td></td>
</tr>
<tr>
<td>1/15</td>
<td>Real Options and Investment Under Uncertainty</td>
<td>• Luehrman, T., 1998.&lt;br&gt;• Leiblein &amp; Ziedonis, 2007</td>
<td>• Assignment 1 Due.</td>
</tr>
<tr>
<td>1/20</td>
<td>Industry Transformation: First Mover Advantages</td>
<td>• Suarez, Fernando F., and Gianvito Lanzolla. 2005.</td>
<td>• Synthes</td>
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### Capturing Value: Profiting from innovation & the market for ideas

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<tr>
<th>Session</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1/22</td>
<td>Industry Transformation: Technological Disruption</td>
<td>• Christensen, C., 1997. pp 3-28.</td>
<td>• Eli Lilly Diabetes Care</td>
</tr>
<tr>
<td>1/29</td>
<td>Complementary Assets</td>
<td>• Teece, D., 1998.</td>
<td>• Studio Realty</td>
</tr>
<tr>
<td>2/3</td>
<td>The Influence of Standards</td>
<td>• Cusumano, Mylonadis &amp; Rosenbloom, 1992.</td>
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### Delivering Value: Organizational Competence

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<tbody>
<tr>
<td>2/5</td>
<td>Stimulating (Different Types of) Innovation</td>
<td>• Henderson, R.M. and K. Clark, 1990.</td>
<td>• Assignment 2 is due.</td>
</tr>
<tr>
<td>2/10</td>
<td>The Capability to Innovate</td>
<td>• Senge, P. 1990.</td>
<td>• Managing Innovation at NYPRO, Inc. (A)</td>
</tr>
<tr>
<td>2/17</td>
<td>Balancing basic and applied research</td>
<td>• Cohen, W. &amp; D. Levinthal, 1990.</td>
<td>• Intel Labs &amp; the crisis in photolithography (A)</td>
</tr>
<tr>
<td>2/19</td>
<td>Project Portfolios and Technology Platforms</td>
<td>• Wheelwright, S. &amp; K. Clark, 1992.</td>
<td>• Linking Strategy to Innovation: Materials Technology Corporation</td>
</tr>
<tr>
<td>2/26</td>
<td>Outsourcing</td>
<td>• Leiblein, Reuer, &amp; Dalsace, 2002.&lt;br&gt;• Leiblein &amp; Machner, 2007.</td>
<td>• Molding the impossible: The Nypro /Vistakon Disposable Contact Lens Project</td>
</tr>
<tr>
<td>3/3</td>
<td>Collaboration Strategies</td>
<td></td>
<td>• Discovering the Future: R&amp;D Strategy at Merck</td>
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### Technology Strategy in Practice

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<th>Assignment</th>
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<tbody>
<tr>
<td>3/10</td>
<td>Analytical Tools</td>
<td></td>
<td>• We've got Rhythm! Medtronic Corporation's Cardiac Pacemaker Business&lt;br&gt;• Assignment 3 is due.</td>
</tr>
<tr>
<td>3/12</td>
<td>Wrap-Up &amp; Summary</td>
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Course Requirement and Grading

Required Materials:

- Readings marked “PACKET” are available in the case packet that may be purchased from the Tuttle UniPrint store. It is possible to order your course packet online by navigating to UniPrint’s homepage at http://uniprint.osu.edu/ and then navigating through “Order Online” and “Course Packets: Tuttle.” The “Course Packets: Tuttle” page will also provide information regarding the status of the packet.
- Readings marked “DOWNLOAD” are available at no charge through the OSU library system. To download these articles, navigate to http://library.osu.edu/, click the “research database” quicklink and search for the “Business Source Complete” tool. If you are accessing the site from an off campus location you will need to provide your “name.number” OSU email username and password. Once you’ve found the Business Source Complete database you may search and download PDF files.

Popular Textbooks in Technology Strategy:

There is no required textbook, but the following are useful references:


Instructional Procedure:

This course will be taught in discussion format using a mixture of readings, lectures, and cases. The assigned readings are intended to provide background conceptual material for each session. The cases generally contain background information on the objective of the activity, the people involved, and a series of events and administrative difficulties that confront the responsible executive. Naturally, the data in a given case will be incomplete. Thus, an answer such as “the protagonist needs more data” or “the firm needs to do such and such analysis” is not particularly helpful, even if it may be true. In part, the intent of case analysis is to provide you with the opportunity to make complex decisions with limited information and to sort through data that is available to a decision-maker, some of which may be superfluous. In preparing cases, the following guidelines may be helpful: (1) recognize that the data in a case are invariably incomplete, (2) do not overlook the data that are available, (3) if an essential piece of data is missing, make reasonable and explicit assumptions, and (4) believe the facts and data in a case, but be suspicious of stated opinions. You are not required to get data from other sources to analyze cases in this class.

Attendance:

The primary source of your learning in this course will take place in the classroom as you and your colleagues share your insights and debate alternative courses of action available to the actors presented in the case. Although the assigned readings provide background material, attending class is necessary for a satisfactory evaluation on the contribution component of the final grade. The class will start promptly on time and will run for the entire session. Arriving late or leaving early disrupts the class and lessens your contribution; please do so only when absolutely necessary.

Technology:

The use of computers is not allowed in class. While I see benefits to their use, they have considerable negative externalities and I have found that their disadvantages ultimately outweigh their advantages. All mobile phones and pagers should be turned off during class.
Academic Integrity:

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University’s Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University’s Code of Student Conduct and this syllabus may constitute “Academic Misconduct.”

The Ohio State University’s Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University’s Code of Student Conduct is never considered an “excuse” for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University’s Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

Students enrolled in the course are expected to adhere to the Fisher College honor code. In this particular class the honor code asks that students agree: (1) not to discuss a case or receive notes on a case that has not yet been discussed in class and (2) that written case assignments reflect you or your team members effort. Please feel free to ask for clarification in “gray” areas. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Evaluation:

The grading plan describes the relative importance attached to each of the individual activities used to assign a course grade. Your course grade will reflect your performance in terms of (1) class contribution (25%), (2) a sequence of group two page papers (20%), (3) a group project (25%), and (4) a final exam (30%). Details on each of the grade components are provided below.

Class Contribution:

Class contribution is one of the best and most reliable ways that students can demonstrate their understanding of the ideas presented in class and their ability to apply these models to real business situations. In-depth case preparation and active class contribution are also excellent ways to prepare for the final exam. This is “your course” in the fullest sense—what each person takes away from the course is a direct function of the effort that they and the rest of the group put forth in the debate. The class contribution grade is composed of an overall (1) evaluation by the professor and (2) peer evaluation. These components are discussed below.

Overall Professor Evaluation. For each class session, I will have a list of five to seven questions that help to identify the issues underlying the discussed business problem or issue. These questions may or may not correspond to the study questions that are provided for the day. I will call on students to answer each of these questions. After each class, I will take notes on students’ contributions to the class session. While my preference is to rely on voluntary contribution, I may call upon you at any time, whether to open the case discussion with a summary of the key issues, to discuss the required readings, or to answer a specific question on a case. I will assume that all students are prepared for each session. Preparation implies that you have completed the assignments and that you are prepared to discuss them thoughtfully in class. If for some reason you are not prepared for the discussion, please signal this by placing your name card FACE DOWN. If your name card is not up, I will assume you are unprepared and make a note of that for your class contribution grade.
The following criteria will be used to judge in-class performance. Effective class contribution entails providing good answers to case questions. Good answers to case questions indicate that you are actively listening to others and are providing comments relevant to the ongoing discussion. Relevant comments add to our understanding of the underlying conceptual material, challenge and clarify the ideas expressed by others, integrate material from past classes or other courses, and show evidence of analysis rather than mere opinion or “gut feeling.” Excellent responses demonstrate that the student has thought deeply about the case and can develop creative and innovative insights through this analytic effort. Excellent answers to core case analysis questions can be the basis of class discussion for 20 minutes or more. Effective class contribution does not entail faking answers, monopolizing “air time,” ignoring the contributions of others, or repeating case facts without analysis. Students may earn additional contribution points by identifying articles from the academic and/or popular press (e.g., WSJ, Economist, Business Week) that illustrate a concept used in class. I will award “good” contribution points to students who identify and present to me articles that I select to use in class.

**Overall Peer Evaluation.** Attached to your syllabus is a Peer Class Contribution Evaluation Form. Each student will be asked to list on this form up to four people in the class who, in their opinion, demonstrated excellent class contribution throughout the quarter. Students may not list themselves on this form. Although student evaluations will be kept confidential, for accounting purposes, each student will need to sign their Peer Class Contribution Evaluation Form. The Peer Class Contribution Evaluation Form must be returned to the Professor no later than the end of class on March 10. Students who fail to turn this form in on time will not receive the highest class-contribution grade.

“2 Pagers”:

During the quarter I will ask you to write a series of very brief (no more than two pages) papers. These “2-pagers” should illustrate the application of one or more of the frameworks developed during the previous sessions to an industry and/or firm of your choice. All the papers should be about the same industry or firm—you should see me if this proves to be impossible. The papers may be completed either individually or in small groups of two, three or four individuals. The papers should use 1” margins, 1 and ½ line spacing, and 11 pt or 12 pt font sizes. I will provide feedback on the "2-page" assignments in an effort to help each group to develop excellent final projects over the quarter. In assessing the assignments I am looking for evidence that the team's have: (a) assessed each of the perspectives outlined in the appropriate module, (b) determined which of these perspectives is most pertinent to the situation described in their paper, and (c) can apply insights from that perspective based on the evidence that they have regarding the situation that they are examining. I will use similar criteria when assessing the final project.

**Assignment 1 (A hardcopy is due in class on January 15):**

Plot and describe the relevant technology S curve(s) for a product (or service) in a given industry. My intent in assigning this exercise is to provide you with an opportunity to consider the concepts underlying the technology S-curve and to see whether data (with all the implied measurement error) supports Foster's claim. Thus, the bulk of your effort will likely be in describing what you found and explaining why (or why not) the data fits the theory. It may be helpful to consider how effort is related to technical performance in your setting, whether technical performance is subject to “natural technological limits,” and whether this area has or is likely to experience a “disruption?” It is important to choose your industry wisely because I will ask you to write about this area in later assignments. An appropriate industry is one in which you can (1) access information on the performance of a particular innovation or family of innovations over time, (2) access information about the resources that created the innovation and how they were organized & (3) describe the organization structure used by at least one firm to create the innovation.
Assignment 2 (A hardcopy is due in class on February 5):

My intent in assigning this exercise is to provide you with an opportunity to consider whether and how the value capture mechanisms discussed in the second module affect the ability of innovators to capture value from an innovation. The assignment asks you to identify a specific recent innovation commercialized by a firm in your industry. The innovation could be embedded in a product or service or be organizational in nature. Briefly describe the innovation and evaluate the innovating firm’s ability to capture value from this innovation. To what extent are mechanisms such as patents, technical know-how, complementary assets, etc likely to protect this firm’s position? Will this change in the future?

Assignment 3 (A hardcopy is due in class on March 10):

My intent in assigning this exercise is to provide you with an opportunity to consider how resource allocation policies and organizational coordination mechanisms discussed in the 3rd module affect the ability of firms to generate innovation. The assignment asks you to consider the knowledge bases (e.g., specific technical, manufacturing, or consumer knowledge) that were combined by management in developing this innovation? Why were these particular resources chosen? How were these resources organized (e.g., outsourced, in cross-divisional teams, in a product or functional structure)? Describe the costs and benefits of these choices. What alternatives (other resources or ways of organizing these resources) could have been considered and why were these alternatives not chosen? How is the structure of this chain likely to change in the future as technology and consumer preferences evolve?

Group Project.

The group project is designed to give students an opportunity to customize the course to their specific interests. The choice of topics framework(s), research methodology, and presentation format is entirely up to the project team. I have left the guidelines intentionally broad in order to allow you to study a particular strategy or firm of interest in depth. The goal of providing you this alternative is for you to be able to pursue your interests, to apply the course concepts in a meaningful way, and to better understand the merits and challenges of various technology strategies. My goal is to support you in writing about a topic that interests you.

In considering a topic, it may be helpful to consider the problems and frameworks covered in this course. Prior successful projects typically: (1) illustrate the application of one of the (value creation, value capture, and organizational) frameworks developed in the class to a specific industry or firm, (2) develop a set of general implications from a detailed examination of the development or diffusion of a particular innovation, or (3) draw conclusions regarding a firm’s innovative capacity based on its organizational structure and systems. I will post examples of papers associated with past projects to the course website. To ensure everyone gets off to a good start on these projects you are asked to turn in a one page project proposal on January 8. I will then discuss the proposal with each team and once approved, expect you to conduct read more deeply about that topic. This reading may involve academic articles, popular business press, secondary reports on a particular firm (i.e., annual reports, financial disclosure for public firms), as well as primary research involving interviews or surveys of appropriate managers, analysts, employees or customers. I will monitor your progress through the 2-page assignments and encourage all groups to schedule meetings and/or discussions with me as needed.

The group project presentation will be evaluated in terms of a team’s ability to critically evaluate and generate new insights regarding the chosen framework, phenomenon, or organizational decision. Excellent projects often are clearly focused on a particular framework and issue. They demonstrate a thorough understanding of the situation, the relevant framework, and provide support for any resulting conclusions. This support will likely take the form of empirical data and/or quotations from managers, consumers, or industry analysts. Good projects typically suffer from limitations in at least one of these areas. For instance, good projects often demonstrate that a team understands the theories or the context, but not both. The least successful projects generally provide a summary of information from the business press, articulate few linkages to the frameworks presented in this class, and generate few, if any, new insights.
Team Evaluation:
In general, each team member will receive the same grade on all team assignments. Unfortunately, however, there may be times when one or more members of a group “free ride” on the work of others. The grades of such free riders will be substantially reduced if consistent evidence of free riding is found. To discover free riding, each team member is provided the opportunity to submit an individual Team Evaluation Form at the time of each team assignment. An example Team-Evaluation Form is included with this syllabus. If someone does not submit a Team-Evaluation Form, I will assume that, from this student’s perspective, no free riding problems existed.

Final Exam.
The final exam will be a written analysis of either a case or a series of newspaper articles. The exam questions will distributed near the end of the module. The final exam must be completed independently. The exam will be evaluated in terms of the following general criteria.

Excellent exam answers demonstrate both a student’s understanding of the theories and models discussed in class and in the readings as well as a student’s ability to apply these theories and models to generate insights about real business situations facing firms.

Good exam answers demonstrate either that a student understands the theories and models or that a student can generate insights about a real business situation facing firms, but not both.

Poor exam answers demonstrate neither an understanding of the theories and models nor an ability to generate insights about real business situations facing firms.

Grade Appeals:
Grades on exams and assignments are intended to reflect the overall quality of performance of the student. You may appeal your grade on a particular assignment or the final project. To appeal a grade, submit a clear written explanation describing why you believe the assigned grade is inappropriate within one week after your work is returned. I will carefully consider all such appeals. I will not re-grade an individual question or portion of an assignment; rather I will re-grade the entire assignment. As a result, the final grade for the re-graded assignment may be greater than, less than, or equal to the original grade.

Suggestions:
If you have special inquiries or constructive suggestions concerning the progress of the class, please feel free contact me in my office (Fisher 848), via phone (292-0071) or email (leiblein.1@osu.edu) at any time.
ABOUT YOUR INSTRUCTOR

Michael J. Leiblein is an Associate Professor in the area of Strategic Management. Michael received his Ph.D. from Purdue University as well as an M.B.A. and a B.S. in Electrical Engineering from Rensselaer Polytechnic Institute. Prior to his doctoral studies, Michael worked as a consultant for Andersen Consulting (now Accenture) and as an electrical engineer for Johnson Controls.

Professor Leiblein teaches the Technology Strategy, Advanced Competitive Analysis, and the Business Consulting (BST) elective courses in the MBA Program at the Fisher College. He has previously taught the core MBA business and corporate strategy courses as well as an elective on corporate strategy. He was recognized as the outstanding core MBA course instructor in 2000 and 2002. Michael has consulted in the United States, Europe, and Africa for a wide variety of organizations and associations and his research has been profiled in popular business outlets such as the Financial Times of London.

Michael’s academic research focuses on the relationship between organizational form and firm performance in technology-intensive industries. His work has been published in leading academic journals such as the Strategic Management Journal, the Academy of Management Journal, the Journal of Industrial Economics, and the Journal of Management. Michael’s academic papers have been recognized with several awards including the 1994 Glueck Best Paper Award, an honorable mention for the 1995 Best Paper Award in Technology and Innovation Management, and 2005 and 2007 Distinguished Paper Awards from the Business Policy and Strategy division of the Academy of Management. His dissertation research on the adoption of new technologies in the U.S. semiconductor industry was recognized by the Academy of Management as one of the best dissertations in the field of strategic management (1997 Free Press Award).

Michael has been appointed to serve on several prestigious editorial boards including the Strategic Management Journal (since 2004) and the Academy of Management Review (2005-2007; 2008-2011). In addition, he currently serves as associate editor for the Journal of Management. He has previously been elected to serve on the executive committee for leading societies supporting the creation and dissemination of management science including the Business Policy & Strategy division of the Academy of Management and the Competitive Strategy division of the Strategic Management Society. He currently serves as associate program chair for the Competitive Strategy division of the Strategic Management Society.

In his free time, Michael enjoys attending collegiate sporting events, opera, and hiking through the American Southwest.
# Technology Strategy & Innovation Management

## Module I:
**Creating Value: Patterns of Change in Technologies & Markets**

### Session 1
**Introduction to Course**
- **Reading:**

**Supplemental Reading:**
- Porter, ME, & J. Rivkin, 2000. Industry Transformation (HBS # 9-701-008 (MBA 980)).

**Study Questions:**
1. Think back to a firm that you know well. How would you define this firm’s strategy? How does this organization create value (i.e., Monopoly rents, Ricardian (resource-based) rents, or Schumpetarian (innovation) rents? Do you believe its value proposition is sustainable?
2. What organizational mechanisms would you put in place to help identify future profitable opportunities? Why?
3. How would you identify (describe) a good managerial theory? How would you discriminate between managerial prescription and theory?

### Session 2
**The Evolution of Technologies and Markets**

**Reading:**

**Supplemental Reading:**

**Study Questions:**
1. What determines the limits of an S curve? Can such limits be determined ex post? How would one determine what to map on the vertical axis of an S curve?
2. Compare and contrast the concept of a technology S-curve with the concept of a diffusion curve? How is the phenomenon outlined by Christensen related to Foster’s S-curve?

### Session 3
**The Evolution of Technologies and Markets**

**Case:**
- PACKET. EMI & the CT Scanner (A)

**Supplemental Reading:**

**Case Questions:**
1. Where is the technology headed, and why?
2. Forecast the future demand for the CT scanner. Why was the scanner initially so profitable? Is this likely to continue?
3. What strategy would you recommend EMI pursue, and why?
### Session 4: Real Option Logic & Investment Timing

**Reading:**

**Case:**
- None

**Supplementary Reading:**

1. **Discussion Questions:** Why are traditional DCF techniques such as NPV limited? How might one distinguish between contexts that support growth or deferral option value on real assets?

### Session 5: First Mover Advantages, Disadvantages, and Real Option Logic

**Reading:**

**Case:**
- Synthes

**Supplementary Reading:**

1. **Discussion Questions:** What environmental, technological, and firm conditions suggest when first mover advantages are most likely to exist?

Case.
1. Are “bioreusable implants” worth the risk for Synthes?
2. What are the risks of coming out with a biorusable product? What is the worst that could happen? The best? What are the risks of not coming out with a biorusable product? What is the worst that could happen? The best?
3. What should Synthes do?

### Module II: Capturing Value: Profiting from Innovation & the Market For Ideas

### Session 6: Industry Transformation: Technological Disruption

**Reading:**
- PACKET. Eli Lilly Diabetes Care

**Supplemental Reading:**

Case.
1. Going back in history, what mistakes did Lilly make in its product development efforts?
2. Why do you think those mistakes were made?
3. Applying the “lessons learned” from this history, what projects on Larry Ellingson’s agenda do you think he should pursue? Is he pursuing the right opportunities? What should he do to insure the success of Lilly’s efforts?

### Session 7: Managing Intellectual Property I
### Reading:
- US Copyright Office (paragraphs 1 & 2) [http://www.copyright.gov/circs/circ1.html](http://www.copyright.gov/circs/circ1.html).

### Case:

### Supplemental Reading:
- The Protection of Intellectual Property in the United States (HBS Note #9-897-046)

### Study Questions:
1. Assume you seek advice regarding a valuable technology that your firm has just developed. After meeting with lawyers and patent attorneys, you decide to contact Professor Winter, a prominent economist and author (book chapter). Based on the arguments put forth in their articles, what advice do you think that (a) the patent attorney and (b) Professor Winter would provide regarding the development of this technology?

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### Session 8  
**Complementary Assets**

### Reading:

### Case:
- PACKET. Studio Realty

### Supplemental Reading:

### Study Questions:
1. What is the difference between the market for ideas and the product market?
2. When does it make sense for a team of entrepreneurs to 1) Enter the market directly? 2) Attempt to sell their ideas?
3. How does the relative importance of appropriability and complementary assets change over the life cycle of an industry?

### Case:
1. What benefits did Connor’s Electronic Open House offer to the various players in the real estate industry?
2. What is the basis of competition amongst Realtors?
3. Do you think that Connor can succeed in using his technology to begin selling real estate over the internet? If so, what should Connor do in order to accomplish this objective?
### Session 9: The Influence of Standards

**Reading:**

**Case:**
- See Carmen for contemporary articles regarding standards battles.

**Supplemental Reading:**

**Study Questions:**
1. Why do some markets “tip” to a single standard?
2. Can you list the sources of the externalities that led to tipping in the case of VHS vs. Beta? How are these sources similar and different from those that affected the cases of QWERTY vs. DVORAK keyboards? Windows CE and Palm? HD DVD and Blu-Ray DVD? TiVo vs. Generic DVR’s?

### Module III: Delivering Value: Developing an Organizational Competence

### Session 10: What is Innovation?

**Reading:**
- SKIM. *Note on Problem Solving*.
- SKIM. *The creativity machine*.
- SKIM. *A structured innovation process*.

**Supplemental Reading:**

**Study Questions:**
1. How do you define innovation?
2. What are the organizational problems facing managers attempting to increase innovation in their firms?
3. Do you believe that tools such as the creativity machine or TRIZ may be used to generate competitive advantage?

### Session 11: The Capability to Innovate

**Reading:**

**Case:**
- PACKET. Managing Innovation at NYPRO, Inc. (A)

**Supplementary Reading:**

**Case:**
1. How would you characterize Lankton’s mental model of his business (using the definition provided in Senge)?
2. What is the process employed at Nypro to identify and standardize upon important innovations?
3. Can you make any generalizations about the sorts of innovations that are likely to thrive within NYPRO’s “internal marketplace” for technologies? What sorts of innovations are likely to languish?
4. How should Lankton roll out the Novaplast technology?
### Session 12  
**Assembling & Organizing Knowledge Sets**

**Reading:**

**Case:**
- [PACKET](#) IDEO Product Development

**Supplemental Reading:**

**Study Questions**

**Preparation Questions:**
1. How would you characterize IDEO's process, organization, culture and management?
2. Decision point: should IDEO accept the Visor project as is (on a dramatically reduced schedule)? Should they try to persuade Handspring's management to change its aggressive launch schedule? Or should they simply decline the project? In your discussions, please consider the IDEO and Handspring perspectives.

### Session 13  
**Balancing Basic & Applied Research**

**Reading:**

**Case:**
- [PACKET](#) Intel Labs & the Crisis in Photolithography (A)

**Supplemental Reading:**

**Study Questions:**
1. How much “basic” research should a firm invest in?
2. Should “basic” and “applied” research be managed differently?

**Case:**
1. What is Intel’s view towards basic research? Why is it so different from IBM’s view?
2. What are the strengths of Intel’s approach to R&D? Do you see any weaknesses?
3. Should Intel follow its traditional philosophy towards R&D in lithography? Why or why not?
4. What should Sandy Wilson do?

### Session 14  
**Project Portfolios and Technology Platforms**

**Reading:**

**Case:**

**Supplemental Reading:**

**Study Questions:**
1. How would you characterize the various projects MTC has undertaken in the framework proposed by Wheelwright & Clark?
2. Is this the right set of projects for MTC?
3. How many projects does MTC have the capacity to have underway at a given point in time?
4. If you were advising Spencer Quinn on how to build MTC into a successful company, what would you tell him?


Session 15
Learning Before Doing

Reading:


Case:

- PACKET. ITT Automotive: Global Manufacturing Strategy

Study Questions:
1. What are the implications for both cost and flexibility of automation? Do you agree with the assertion made by one of the managers in the case: “If you automate, you stagnate?”
2. What are your recommendations regarding the issues of automation and standardizing process technology across all plants? How do the various options fit into the broader corporate strategy of ITT Automotive? Support your answers.

Session 16
Outsourcing and Innovation

Reading:


Case:

- PACKET. Molding the Impossible. The NYPRO/ Vistakon Disposable Contact Lens Project

Study Questions:
1. When it is advisable to outsource a value-added activity in which you do not have a “core competence?”
2. When might it be important to develop that competence in-house?
3. What are some barriers to creating close problem-solving relationships between suppliers and customers? Can an organizational capability exist in the interface between companies?

Case.
1. Using your regression analysis skills, are there any hypotheses you can develop from the data in Exhibits 8 & 9 about the problem that Nypro and Vistakon are facing?
2. Whose job should it be to guide the selection of customers in a manufacturing company like Nypro?
3. What has the Vistakon project done for Nypro? If you were Gordon Lankton, which of the capabilities of Jones’ team is developing would you consider the most valuable? How would you transfer this capability to other parts of the Nypro organization?
4. What could Dennis Jones do to create a more productive working relationship with the Vistakon team?

Session 17
Collaborative Strategies

Reading:

Case:

- Discovering the Future: R&D Strategy at Merck

Study Questions:
1. Evaluate Merck’s strategy for perusing alliances. What are the pros and cons associated with this strategy?
2. What are the real challenges facing Merck’s R&D organization? Do you think that forming alliances will help overcome these challenges?
Session 18  
Evolution of the Value Chain

Reading:

Case:
• Abgenix and the Xeno Mouse.

Supplemental Reading:

Study Questions:
1. How do you think Abgenix can best exploit the Xeno Mouse?
2. Does Pharmacol or BioPart represent a better way to go for Abgenix? Why?
3. What factors would you focus on in choosing a partner? Which of these factors are most important?
4. What should Scott Greer do? Go it alone through Phase II trials? Sign with Pharmacol? Sign with BioPart?

Session 19  
Analytical Tools

Reading:

Case:
• PACKET. We’ve got Rhythm! Medtronic Corporation’s Cardiac Pacemaker Business

Supplemental Reading:

Study Questions:
1. Why did things go so badly wrong at Medtronic?
2. Of all the things that Medtronic did to “fix” its process, what do you think was the most important? Why?

Session 20,  
Summary and Wrap-Up
Your name: ______________________________________________________________________
(Print)

Please list up to five people in the course who, in your opinion, demonstrated consistent excellent class participation throughout the quarter. Do not list your own name. Please sign your name at the bottom of this form.

As a reminder, excellent class participation is defined as: a student consistently attends class, consistently and appropriately contributes to case discussions, and occasionally contributes unusually insightful comments in these discussions. Please print legibly!

1. __________________________________________

2. __________________________________________

3. __________________________________________

4. __________________________________________

Sign here
This information will be used in assessing the quality of work provided by your teammates on the group projects. Please write the name of each of your group members, including your own, in the space provided immediately below this paragraph. Place the initials of each person in the space provided above the evaluation matrix. Objectively rate each of the team members, including yourself, on each of the evaluation criteria using the scale below. The sum of the contributions should generally total 100 points. In extreme cases where group members have jointly not performed up to an acceptable standard the total may be less than 100. You may deliver the form to me in class, in a sealed envelope to my Fisher office (Room 848), or email a copy of this form to (Leiblein.1@cob.osu.edu) with Technology Strategy Peer Evaluation Form in the subject line. Of course, if you have any pressing suggestions or concerns, you may email or call me anytime.

Group Members (Full Names)
1. ______________________  2. ______________________ 3. ______________________
4. ______________________  5. ______________________

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<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Group Members (Write Down the Initials in boxes below)</th>
<th>Sum</th>
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<tbody>
<tr>
<td>1. Comes to meetings prepared for task</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>2. Completes assigned tasks on a timely basis</td>
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<td>100</td>
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<tr>
<td>3. Is willing to assume fair share of work</td>
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<td>4. Performs a meaningful role in the group</td>
<td></td>
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<td>5. Is willing and able to resolve conflicts</td>
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<td>100</td>
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<tr>
<td>6. Works compatibly with other members of the group</td>
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<td>100</td>
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<tr>
<td>7. Encourages others to participate in creative ways</td>
<td></td>
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<tr>
<td>8. Participates frequently</td>
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<tr>
<td>9. Overall quality of work</td>
<td></td>
<td>100</td>
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<tr>
<td>10. Overall contribution to the team</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Overall Sum</td>
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Please Provide Additional Comments Below:
### TECHNOLOGY STRATEGY READING LIST

**MBA 848**  
**Winter, 2009**

<table>
<thead>
<tr>
<th>Packet</th>
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- Synthes (9-502-008)  
- Eli Lilly & Company: Innovation in Diabetes Care (9-696-077)  
- Studio Realty (9-697-036)  
- Managing Innovation at NYPRO (9-696-061)  
- IDEO Product Development (9-600-143)  
- Intel Labs & the crisis in photolithography (A) (9-600-032)  
- Linking Strategy & Innovation: Materials Technology Corp. (5-698-082)  
- ITT Automotive: Global Manufacturing Strategy (9-695-002)  
- Molding the impossible: The Nypro /Vistakon Disposable Contact Lens Project (5-694-062)  
- Discovering the Future: R&D Strategy at Merck (9-601-086)  
- Abgenix and the Xeno Mouse (9-501-061)  