Managing Innovation for Products, Systems, and Services: MGT 3520
EMC High Tech MBA
Winter 2005
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(Class Office Hours: call for an appointment.)

Purpose

The course seeks to provide an overview of the key issues facing technology-based firms. We will address:

- managing the challenge of technology and product obsolescence,
- market segmentation for the purposes of enterprise growth and customer needs assessment
- understanding and integrating perceived and latent customers needs into next generation designs
- validating product design features with market research methods, including conjoint analysis.
- managing the evolving complexity of systems and software
- designing new services
- organizing multifunctional teams for new product development
- leveraging technologies and skills into new markets
- understanding brand, channel, and business model issues for new market applications

You will be challenged to think "out of the box," to conceive and design products and services that can obsolete the way your company and your competitors currently do business. You will be asked to seek endorsement for your project work from executives in your corporation.

Bottom line: this course is a lot of work. Hopefully you will learn a new way of looking at innovation and business growth, and that perspective just might make a difference for your immediate and future career.

Your instructor:

This course will be taught by Marc H. Meyer. Dr. Meyer is a director of the High Tech MBA, ranked amongst the country's best technology focused MBA programs by ComputerWorld and IEEE. He has also led the development of Northeastern’s entrepreneurship program, now ranked #4 in the U.S. by Forbes. Dr. Meyer's research focuses on new product development. He was a cofounder of a real-time embedded systems company and has helped a number of entrepreneurs start and grow companies. He has also worked extensively in the computer, financial services, healthcare and consumer products industries for companies that include IBM, HP, P&G, and Masterfoods. You will be reading his book, The Power of Product Platforms, and during lectures, be presented with much of the material of his forthcoming book, Innovation and Corporate Growth: Developing Next Generation Products for New Market Applications. Dr. Meyer holds degrees from Harvard and MIT, and was the 2002 recipient of the Holland Award from the Industrial Research Institute.

Now, PLEASE READ THE REST OF THIS SYLLABUS CAREFULLY FOR PROJECT WORK, CLASS QUESTIONS, and CLASS MILESTONES. THANK YOU!
**Required Texts:**


**Reading Package** (provided by the HT MBA administrators). Specific readings for specific classes.

*Sawtooth Software* (Conjoint Analysis). [www.sawtoothsoftware.com](http://www.sawtoothsoftware.com) -> *Academic Aids*. We have acquired an educational license for conjoint analysis software for your use. Conjoint is a pragmatic tool to operationalize research on how different types of users react to product features and price. You will be applying this technique on your Group Projects where it makes sense, (and on your Individual Projects if you want to do so.) Sawtooth provides tutorials on conjoint methods under the area labeled Academic Aids. Go there, and work through the materials. The educational version is just that: there is a limit on to 4 attributes and 50 respondents.

**Grading components:**

- **Class preparation and classroom participation** are important for doing well in this class. That means good listening and good feedback to your classmates, as well as being prepared to present your own materials in a concise, professional manner. Following the study group questions that we have developed for each class. You may be called upon to show your company’s market segmentation, organization of R&D, and its processes for new product development. Attendance, participation, and the quick assignments comprise **20% of your final grade**.

- **AN INDIVIDUAL PROJECT. 50% of your grade.** The term project is an application of the key concepts presented and discussed in the class regarding the identification and integration and new markets with new technologies for new or renewed lines of products or services, or the revitalization of existing product lines. Most students use this project as a way to get their superiors to listen to a well-conceived, well-researched plan to grow their particular business unit or service function - and ask them for the job of executing the plan! Get a project identified soon! **The paper is due on the 6th Class!**

- **A GROUP PROJECT. 30% of your grade.** We will divide the class into teams to study disruptive technologies and emerging disruptive solutions. These projects and teams will be developed in class with the help of your instructor. A *Powerpoint presentation and executive memorandum on your findings is due on the 7th and final class meeting.* Any team laggards that come to the attention of the professor will be penalized a full Grade Point in their final grade.
Guiding Questions for Your Individual Project

As you think about your term, please consider the following questions.

1. **A Next Generation Product Architecture and the Product Line based on that Architecture**: Can you design a next generation architecture that employs new technologies? What are the benefits of that architecture relative to your company’s current offerings? What are the new products that could be based on that architecture?

2. **Product or Process Platform Development**: Are there opportunities to dramatically improve efficiency or costs by sharing subsystems and processes between product or service lines that do not share much at the present time? Is there an opportunity to bring substantial efficiency to your product development or product testing processes?

3. **Business Planning for a Specific New Market Application**: Are there emerging markets, or unserved niches within existing markets, that might be potentially addressed by current or newly emerging technology? Can you grow revenue? Can you conceive of a product or service line, a go to market strategy, a team and organization strategy, and an investment package needed for a successful outcome?

Any one of these four questions is the basis of a term project. You must also consider who is the **sponsoring executive** that would be most interested in your project. How can you attain access to that executive to “sponsor” your term project?

The **IDEAL PROJECT IS ONE THAT CAN LEAD TO INCREASED RESPONSIBILITIES AND PROMOTION IN THE COMING THREE to EIGHTEEN MONTHS**. Any one who gets promoted during the semester as a result of project work has a super leg up on getting an ‘A’ in the class.

Planning or thinking **“templates” are provided on the Professor’s Web site.** Look at them, use them! Go to marchmeyer.com, enter the teaching section, go to our Innovation Course, and hit the Templates button. They are in Spreadsheet format, so you can adjust them easily. Don’t use all the templates, but just those that help you think about your project. Model your project with those templates that make sense for you, and then write the text! **A style guide for the projects is also available on the Professor’s Web site and also accompanies this syllabus.**

We want the report to be of strategic value to your corporation, something that you would be proud to present to your executive management team. **All reports will be treated as confidential material.**

Guiding Questions for the Group Project

The focus of the group project is for teams to explore the implications of either technological discontinuities or entirely new market applications for EMC’s business.

We will use the management framework in the first class to identify both technological discontinuities and new market applications. From this list, students will select their preferred project. We will then suggest a specific team structure, and student will then be provided time to organize themselves at the end of the first class. **A Group Project style guide is presented at the end of this syllabus.**

As part of this, the groups will be asked to develop a simple conjoint survey that is in some manner related to their group project, and have some of their friends take the survey, and run the analyses. This will be handed in during Class #5.
## Class Schedule

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<th>Class</th>
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<td><strong>The Enterprise Growth Framework</strong>&lt;br&gt;- Ice story&lt;br&gt;- IBM Corporate Renewal&lt;br&gt;- Consumer Products Organization&lt;br&gt;<strong>Set up Group Projects Based on the Framework</strong></td>
<td>Levitt - Marketing Myopia&lt;br&gt;Abernathy and Wayne – Limits of Learning Curve&lt;br&gt;Bower and Christensen - Disruptive Technologies&lt;br&gt;See Study Questions for Class 1&lt;br&gt;Identify the Executive With Whom You Wish to Network had have sponsor your work.</td>
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<td>3. Managing Architecture</td>
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<td>Meyer &amp; Lehnerd, Chap 4, 7, 8&lt;br&gt;Johnson &amp; Broms, Profit Beyond Measure (Ch 4)&lt;br&gt;Meyer &amp; Detore, “Product Development for Services”&lt;br&gt;See Study Questions for Class 3&lt;br&gt;Hand-in Assignment: Segmentation&lt;br&gt;Work on your Conjoint Exercise !</td>
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<td>Meyer &amp; Lehnerd, Chapter 5&lt;br&gt;Wheelwright and Clark, “Organizing and Leading Heavyweight Development Teams”, Chapters 8&lt;br&gt;SaveMe Software Case (Discuss in study groups)&lt;br&gt;See Study Questions for Class 4&lt;br&gt;HAND -IN Assignment: Organization</td>
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<td>Aaker, “Should You Take Your Brand to Where the Action Is?” HBR 97501</td>
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<td>Meyer &amp; DeTore, “Creating a Platform-based Approach for New Services”</td>
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Email any questions on assignments, deliverables, and study questions to: mhm@neu.edu
Study Questions:

Class 1: Strategy and Technology

- **Leavitt**: Look at your industry as it has progressed over the past twenty years and identify when your company or others have lost competitive advantage due to the reasons/causes identified by Leavitt. In other words, are there times, including the present moment, when your management team has viewed its market too narrowly? How has that limited the scope of technological innovation as well as targets for revenue growth?

- **Abernathy and Wayne**: In a similar line of questioning, has there been a time, including the present moment, when your company's manufacturing or production process has become a barrier to product and process innovation because it was so fined-tuned to volume production of the then current generation architecture?

- **Bower and Christensen**: Have there been times, including the present moment, when your management has failed to identify and provide solutions for new emerging customers needs and markets because it was too focused on its traditional mainstream users?

Class #2: Managing Markets:

- **Moore**: Is your company presently facing difficulties in its "growth" product lines in terms of the various "chasms" identified by Moore (in the Technology Life Cycle Model)?

- **Draw a segmentation on how your company traditionally segments its markets. Then, draw a segmentation (the same or different) that shows a novel approach, and new areas in which to leverage the companies technologies and services.** Download and print the market segmentation template as a starting point.

Class #3: Managing Technology and Architecture:

MARKET SEGMENTATION ASSIGNMENT DUE

- **Revise and submit your market segmentation exercise for your company. Make an overhead transparency or put your project on a memory stick - we might look at it during class.**

- **Meyer & Lehnerd**: These readings work through the processes of composite design and modularization for products, systems, and information services.

- **Johnson & Broms**: Is there any semblance of an orderly, systematic application of product or process architecture, and the development of robust interface between subsystems, as seen in Scania? Who manages or is supposed to the discipline of architectures in your company?

- **Meyer & DeTore: Product Development for Services**: This is the application of composite design and latent needs to services. If you presently work in a services business, or if you manage an internal service at
your company, how do the concepts in this paper apply to you? Can you draw a new composite design chart for the next generation of that service?

**Class #4: Managing Organization:**
**HAND-IN ORGANIZATION ASSIGNMENT**

- **The SaveMe Software Case.** The case takes us into the depths of a typical software company that has no real market strategy (it sells to anyone and everyone), no shared architecture of platforms, a functional organization that is broken, and no structured communication processes between marketing and engineering. How would you fix the company?!
  
  It is best to discuss this case in your study groups.

- **Meyer and Lehnerd:** How does the "Charter" presented in Chapter 5 of our Book apply to your Individual Project? How does the Comic Picture at the end of Chapter 5 apply to your company?

- **HAND-IN:** How is your company organized for new product development and what are the shortcomings? Hand this in as a two page assignment. Don’t forget to put your name on the assignment.

**Class #5: INNOVATION PROCESSES:**
**CONJOINT EXERCISES DUE**

- **Revise, administer, and hand-in the results page of your conjoint exercise.** Bring a laptop with your survey running on it! We might browse through it in class.

- **R&D Processes:** The Aggregate Project Plan and Stage Gate Control Process have become fairly mainstream in large corporate R&D. Does your company use these processes for its new product planning? If not, what does it use? If you do not work in product development, find out how product managers and engineering managers in your company plan new architectures and new products.

  How do projects get started, and how do they survive or die within the standard process?

  How might the market segmentation and platform planning methods that you have learned in this class fit into or otherwise integrate with planning processes used in your own company? Be prepared to discuss this point in class.
Class #6: Venturing

INDIVIDUAL PAPERS DUE

• **Aaker: Branding**: How does your company think about, and manage its brands? Do your company's products tend to live up to its brand message? Has your company tried to address a new set of users that require a different brand communications message? Have these efforts succeeded, or did the company try to pitch the same message to a new set of users who needed to hear something quite different?

• **Meyer & DeTore: The LincolnRe Case**: Has your company faced pressures to commoditize its products? What has it done to try to address that problem?

• **The Ventro/Chemdex Case**: What are the distinct business models that Ventro has pursued in its brief history? Did any of them "work?" Why, or why not? Why are new business models so difficult to understand and implement for your company?

• **Your Individual Projects are due. One hardcopy is required.** Make sure your name and contact information is on the cover pages. Try to spell your professors’ names correctly!

Class #7: Disruptive Technologies and Businesses

GROUP PROJECTS DUE

• **Your Group Projects are Due.** Make sure your team names are on the cover page, with contact information.
Managing Innovation for Products, Systems, and Services

The Individual Project & Style Guide
10 Pages Plus Exhibits

The purpose of the individual project is integrate and apply the concepts from class to a near term project that you would like to lead at your company. Think about a project that could be accomplished within an 18 month time frame, where you would have a direct role in managing the project, (with a significant promotion and accolades for a successful result!)

The types of projects most commonly performed are:

- Creating the next generation product/service architecture that addresses unmet latent needs in your current target market.
- Leveraging an existing architecture into new, emerging markets to increase revenue
- Creating a new architecture and or platform subsystems that can be shared across products and/or processes to reduce costs
- Improving core processes in manufacturing or service delivery that will offer "big impact" in cost of goods or delivery cycles.

Within these types of projects are plenty of room for market innovation, organizational innovation, and process innovation. What might you do in this course that could lead to career advancement for you personally?

The format of the project is:

Executive Summary (Clearly state the purpose of the project, resources required, and actions steps)

Main Content:

2. The Next Generation Solution: Technologies, Products, Services (use architecture, subsystem scalability, and product line mapping templates where appropriate)
3. Organization Recommendations (use organization templates where appropriate)
4. Resource Recommendations (use financial templates where appropriate)

Actions Steps (time line, resources required, and your role)

The style of the project is an executive memorandum that is clear and concise, and contains exhibits that can be used in a presentation to executives.

The papers should show obviously show an understanding and application of the major frameworks presented in class.
The purpose of the group project is to integrate and apply the concepts from class as a multifunctional team to either a technological discontinuity or a new market application. Focus on the market dimension of the opportunity as much as the technology dimensions: Market Segments, User Needs, Competitive Analysis, and Go to Market Strategies - as much as Technology and Architecture.

The hand-in will be a Powerpoint presentation, plus an Executive Memorandum that both critiques and provides suggestions with respect to the following:

1. Identify any disruptive technologies, and assess IP issues
2. Identify buyer and/ or the end-users, and specify their needs, both perceived and latent, for products based on the technologies in (1)
3. A competitive benchmark on function and price, e.g. of products currently addressing these users.
4. The product line that could emerge from the technologies show in (1) that would meet the buyers in (2).
5. The requirements for a "go to market" strategy, and how it compares to an optimum strategy for this product.

Roles for Team Members:

Not everyone can do everything, or be responsible for everything. We suggest that you organize your team in accordance with the team organization principles that we discuss in class, a trial application for your group projects.

- Project facilitator and devil’s advocate
- Technology and IP diggers
- Segmentation & competitive analysis researcher
- User needs diggers and product designers
- Go to market / channel experts

Each team should divide its resources to accomplish these tasks. If someone is not working, the professor wants to hear about it well before the end of the semester!