

MKTG 548: New Products Management
EMGT 510/610 FEM: Front End Management for New Product Development

Fall Term 2008
Tuesday, 1740-2120
SBA 290

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Course Websites	http://www.sba.pdx.edu/faculty/roberth/roberth.html http://antonie.jetter.googlepages.com	
Required Text	Crawford, C. Merle and C. Anthony DiBenedetto (2008), <i>New Products Management</i> , 9 th Ed., Boston, MA: McGraw-Hill.	

STUDENT ELIGIBILITY:

MKTG 548 New Products Management (4 Credits) is an elective course in the MBA program. Students must be an admitted MBA student to take this course. MS and Ph.D. students from approved graduate programs are eligible to take the course as well. *EMGT 510/610 FEM Front End Management for New Product Development* (4 Credits) is an elective course in the Engineering and Technology Management program.

JOINT COURSE DESCRIPTION:

For Fall Term 2008 the Marketing Area of the School of Business and the Engineering and Technology Management program continue their collaboration in order to offer students from both graduate schools the opportunity to work together to explore new products management from a perspective that integrates marketing and engineering management concepts.

EMGT 510/610 FEM. The focus of Front End Management for New Product Development has been on the very early phases of new product development – ideation, concept development and concept evaluation. These phases are often referred to as the “fuzzy front end” of innovation since they involve the often ill-structured decisions that are made under great uncertainty. Though it is widely accepted that the front end is vital for product success, many managers rely on “gut feel” rather than analytic decision making and even doubt that the front end can be managed at all. This course takes a different viewpoint and introduces students to the various questions managers face in early product development, as well as to systematic approaches to dealing with them.

MKTG 548. Traditionally, *New Products Management* examines the role of product innovation as the core focus of marketing strategy. The course encompasses the entire new products management process from the identification of the market need through planning for commercialization. The topics focus on marketing role in the design and development of new products including opportunity identification, concept generation/evaluation, development, and launch

This joint course that integrates advanced concepts from marketing and technology management will provide the student with a strong foundation for future contributions to the field of new product development from both practitioner and academic perspectives. The course is intended to serve as a

complement for courses in *product design and development, technology marketing, and services marketing*.¹

LEARNING GOALS:

New Products Management (as the joint course) is focused on the issues that confront the senior product management and marketing executives as they address aligning innovation with the dynamics of the marketplace. It is the primary objective of the course to provide students with an applied understanding of the product innovation and management process. The course will cover:

1. The product development process as it applies across a broad range of firms that develop and/or use technology as a core element in their value propositions.
2. Understanding of front-end innovation management concepts.
3. The use of customer value concepts in product design.
4. The tools used in new products management.

ASSIGNMENTS:

1. READINGS

Please refer to the book and article reading assignments listed in the Weekly Outline. In addition, students are encouraged to regularly read the technology section of publications such as the *Wall Street Journal, the Economist, Financial Times, Business Week* and other leading publications with new products and products management coverage. Students should complete all weekly reading assignments prior to class time and be prepared to discuss the material.

2. RESEARCH PROJECT: New Products Management Issue, Method, or Strategy Paper.

Choose a topic that focuses on an NPM issue, process method, or strategy and develop a well-researched academic or practitioner oriented paper. The paper should survey both the academic and business periodical literature. Doctoral students may wish to focus on NPM topics that are related to their dissertation research.

Standard practice is to address this project on a team basis. You may, subject to instructor approval, propose a project on an *individual* basis (especially for doctoral students). Due to presentation time limitations in weeks 9 and 10, it is anticipated that no more than 8 teams will be formed.

Deliverables:

- a. **Project Proposal (Due Week 2).** Develop a two-page précis that identifies and describes your topic. Briefly explain its importance to the advancement of the understanding of new products management. Construct a tentative bibliography with at least five (05) sources. Subject to instructor approval.
- b. **Midterm Draft Submission (Due Week 6—50 pts).** Prepare a written article of academic journal quality (approximately 12-15 single-space pages plus exhibits and bibliography) for the chosen topic. You may use the manuscript style of the *Journal of Product Innovation Management* or the *Journal of Marketing* for your work. Review comments will be provided on the midterm draft. Make the revisions for your final class presentation and paper submission. A completed midterm 360-Review form should be submitted by email.

¹ As we continue to develop this collaborative course, changes to the syllabus may occur. As always, your comments and suggestions for improvement are welcome and greatly appreciated!

- c. **Knowledge Notebook (Check Week 6, Final Due Week 11—35 pts).** The Knowledge Notebook is the data warehouse for your paper. It is a valuable tool to organize and document your research project. Build a first version at the beginning of the quarter and continuously improve it. The final version needs to be submitted electronically on a CD-R. It should contain the following folders:
- i. Knowledge Summary
 - Summary of the issue, process or NPM strategy
 - Key research questions and issues.
 - New Ideas and implications
 - Research findings
 - Potential applications
 - ii. Research Taxonomy
 - Paradigms, research streams
 - Key research findings
 - Key relationships
 - Taxonomy chart
 - iii. Working Bibliography
 - Bibliography in journal format
 - Summaries and annotations of individual articles
 - iv. Source Material
 - Copies of important source material keyed to the bibliography.
 - v. Individual team member folder with reviews of assigned articles (03) and other individual contributions.
- d. **Final Presentation and Submission of the Term Project**
- i. **Class presentation (Due Week 10—50 pts).** A 30-minute PowerPoint presentation of the key findings of your term research project is required. Please e-mail an electronic copy of your Presentation to the instructors. Bring handouts for each student and instructor. The Presentation should cover the following topics.
 - Title Slide
 - Introduction to the topic.
 - Literature review—key paradigms, research streams, taxonomies, and research findings from the existing literature.
 - Key research questions.
 - Models, cases, and/or implementation examples
 - Analyses and results.
 - Recommendations.
 - Future research.
 - ii. **Revised Written Project (Due Week 11—100 pts).** Final Knowledge Notebook and final 360-Review are due.

3. OTHER ASSIGNMENTS

- a. **Reading Briefs (15-pts each—45 pts total).** A 2-page (max), single spaced, reading brief is required for **three (03)** of the articles on the reading list (your choice). Reviews are due the following week after they are assigned in the Weekly Outline. No more than one review per person may be submitted in any given week. ****Be prepared to lead/participate in class discussion on all articles.****

Reading briefs consist of the following 6 chapters

- i. **Title:** Full article citation, article number according to reading list, your name, course number, date.

- ii. Article Overview / Abstract: Briefly summarize the thesis, goals, findings and conclusions of the work (30% of space).
- iii. Key Learning Points: What are the key learning points / main findings of the article? Identify, define, and critically assess – a simple summary is not sufficient (30% of space).
- iv. Follow-On Research: What other work has been done in this area *since the publication* of the article? Compare and contrast critically. Include follow-on article(s) citation(s) under “References” at end of the review. Research the topic on PSU Library online (20% of space).
- v. Applications: What insights from the article apply to the new products management process as discussed in class? (20% of space).
- vi. References: in journal format

CLASS CONTRIBUTION:

Class contribution will be evaluated by each student’s performance on class attendance and cogent participation in class discussions **(100 pts)**.

GRADING PROCEDURES:

A numerical grade will be assigned to each of the activities delineated below. The activity grades will be averaged in order to produce a final grade based on the following standards:

Assignment/Activity	Points	Grading
Research Project—Proposal (Week 2)	-	Grades will be assigned in increments of A, A-, B+, and so on. An average of 92.5 points or greater = A.
Research Project—Midterm Draft Submission: (Week 6)	50	
Research Project—Presentation (Weeks 9 and 10)	50	
Research Project—Final Draft (Week 11)	100	
Knowledge Notebook CD (Check in Week 6, Final Week 11)	35	
Article Reviews (3 @ 15-pts each)	45	
360-Reviews—Midterm and Final Group Evals	20	
Your class contribution (attendance + discussion, etc.)	100	
Total	400	

CLASS POLICIES:

- a. Academic honesty is a requirement for passing this course.
- b. Late papers are not considered without a valid medical reason. If you cannot attend class when an assignment is due, please make arrangements for its timely delivery.
- c. Assignment submissions should be in *hardcopy* form. Word, PowerPoint, and Excel are standard. Emailed copies of assignments are not acceptable unless specified.
- d. No recording device whatsoever may be used in this class without instructor approval.
- e. All materials for this class are for your personal and private use only. They may not be posted or transferred to others under any circumstances.
- f. Computers may be used for class purposes. No email, other online communications, or web surfing are permitted during class time.
- g. If you have a special need, please notify the instructors.

ASSIGNED NEW PRODUCTS MANAGEMENT ARTICLES (See Weekly Outline)

1. Armstrong, J. Scott and Roderick Brodie (1999), "Forecasting for Marketing," in Hooley, G. and M. Hussey (Eds). *Quantitative Methods in Marketing*, (London: International Thompson Business Press), 2nd Ed, 92-119.
2. Cooper, R.; Edgett, S.; Kleinschmidt, E.J. (2001), "Portfolio Management for new product development: results of an industry practice study", *R&D Management*, Vol. 31(4), 361-380.
3. Danneels, Erwin (2004) "Disruptive Technology Reconsidered: A Critique and Research Agenda," *Journal of Product Innovation Management*, Vol. 21, 246-258.
4. Ettlie, John and Matthew Kubarek (2008), "Design Reuse in Manufacturing and Services," *Journal of Product Innovation Management*, Vol. 25(5), September, 457-472.
5. Khurana, A.; and Rosenthal, S.R. (1997), "Integrating the fuzzy front end of new product development", *Sloan Management Review*, winter, 103-120.
6. Koen, P. et al. (2005), "Fuzzy Front End: Effective Methods, Tools and Techniques" in Belliveau, P.; Griffin, A.; Somermeyer, S. (Eds.): *The PDMA Tool Book for New Product Development*, New York (John Wiley & Sons), 5-35. Available from the author's website <http://www.stevens-tech.edu/cce/>
7. Reid, Susan E. and Ulrike de Brentani (2004) "The Fuzzy Front End of New Product Development for Discontinuous Innovations: A Theoretical Model," *Journal of Product Innovation Management*, 21, 170-184.
8. Schoemaker, P. J. H. (1995), "Scenario Planning: A Tool for Strategic Thinking", *Sloan Management Review*, Vol. 36, Issue 2, winter, 25-38.
9. Schmidt, Glen M. and Cheryl T. Druehl (2008), "When Is a Disruptive Innovation Disruptive?", *Journal of Product Innovation Management*, Vol. 25(4), July, 347-369.
10. Schreier, Martin and Reinhard Prugl (2008), "Extending Lead-User Theory: Antecedents and Consequences of Consumers' Lead Userness," *Journal of Product Innovation Management*, Vol. 25(4), July, 331-346.
11. Skold, Martin and Christer Karlsson (2008), "Multibranded Platform Development: A Corporate Strategy with Multimanageial Challenges," *Journal of Product Innovation Management*, Vol. 24(6), November, 554-566
12. Veryzer, Robert W. and Brigitte de Mozota (2005), "The Impact of User-Oriented Design on New Product Development: An Examination of Fundamental Relationships," *Journal of Product Innovation Management*, 22, 128-143.

WEEKLY OUTLINE:

Week	Dr. Jetter Lecture Topics	Dr. Harmon Lecture Topics	Readings/Assignments
1 9/30/08	Introduction The Fuzzy Front End <ul style="list-style-type: none"> Importance of the “Fuzzy Front End” (FFE) The FFE defined Empirical findings about the FFE – the state of the art” 	Introduction to customer-value focused NPD <ul style="list-style-type: none"> NPD customer value orientation NPD process overview 	Read: <ul style="list-style-type: none"> NPM: 1 & 2 Articles : #5 (Khurana & Rosenthal) <ul style="list-style-type: none"> Syllabus / Assignment of “TBPs”
2 10/7/08		Opportunity Identification <ul style="list-style-type: none"> Product Innovation Charter (PIC) Product platform issues NPD Policy Issues <ul style="list-style-type: none"> Politics and Regulation Product liability, environment, ethical issues 	Read: <ul style="list-style-type: none"> NPM: 3 & 20 Articles: #6 (Koen et al.), #11 (Skold and Karlsson) Turn in: <ul style="list-style-type: none"> Project topic proposal
3 10/14/08	A brief review of “Strategic Management” Product and Portfolio Strategy <ul style="list-style-type: none"> Scenario planning + Scenario planning class exercise 		Read: <ul style="list-style-type: none"> NPM: pp. 119-123; 516-517 Articles: #8 (Schoemaker)
4 10/21/08	Concept Generation <ul style="list-style-type: none"> Market pull / Technology push Collecting existing product ideas Identifying technological opportunities Sources of new product ideas <ul style="list-style-type: none"> Lead User Method Ethnography/Empathic Design 		Read: <ul style="list-style-type: none"> NPM: 4 & 5 + pp. 509-514 Articles: #12 (Veryzer and de Mozota)
5 10/28/08		Understanding What Customers Want Measurement Approaches <ul style="list-style-type: none"> Identifying customer needs Value analysis 	Read: <ul style="list-style-type: none"> NPM: 6 & 7 Articles: #10 (Schreier and Prugl)
6 11/4/08	Concept/Project Evaluation <ul style="list-style-type: none"> The concept evaluation system Cumulative expenditures curve ATAR model The Full Screen <ul style="list-style-type: none"> Portfolio management Multi-criteria approaches Indices Managerial judgment The scoring model 	Concept Testing <ul style="list-style-type: none"> Definitions Market analysis activities Benefit segments Valuing the concepts Sales Forecasting and Financial Issues Product Protocol <ul style="list-style-type: none"> Customer requirements Engineering characteristics 	Read: <ul style="list-style-type: none"> NPM: 8-12 Articles: #2 (Cooper, R., et al.), #9 (Schmidt and Druehl), #1 (Armstrong & Brodie) Turn in: <ul style="list-style-type: none"> Midterm Paper Draft

WEEKLY OUTLINE (Cont'd)

Week	Dr. Jetter Lecture	Dr. Harmon Lecture	Readings/Assignments
7 11/11/08	Veteran's Day Holiday University Closed		
8 11/18/08	Development Team Management (Ch. 14) <ul style="list-style-type: none"> • Team structure • Projectization • Team building • Culture • Managing the team • Overcoming barriers • Globally dispersed teams Implementation of the Strategic Plan (Ch 17)	Design <ul style="list-style-type: none"> • Meeting NPD goals • Ecological design • User-oriented design • Intangible design factors Product Use Testing Market Testing Launch Management	Read: <ul style="list-style-type: none"> • NPM: 13-17, Skim 18-19 • Articles: #4 (Ettlie and Kubarek), Article: #7(Reid & Brentrani), Article: #3 (Danneels)
9 11/25/08	Final Project Presentations		
10 12/2/08	Final Project Presentations		
11 12/9/08	Finals Week		Hand in: Written final projects due

ADDENDUM 1:**RESEARCH TOPICS****Group 1—Lead User Method**

- NPM p 97
- Downloads from Eric von Hippel's homepage (<http://web.mit.edu/evhippel/www/>), especially *The Sources of Innovation*, New York: Oxford University Press, 1988.

Group 2—Empathic Design / Ethnography

- NPM p. 111 on Observation
- Sanders, E.: "Special Section: Ethnography in NPD Research How "applied ethnography" can improve your NPD research process"; *Visions Magazine*, April 2002 (online <http://www.pdma.org/visions/apr02/applied.html>).

Group 3—Value Engineering

- Park, Richard (1998), *Value Engineering: A Plan for Invention*, Boca Raton: St. Lucie Press.
- Dell'Isola, Alphonse (1997), *Value Engineering: Practical Applications for Design, Construction, and Maintenance Operations*, Kingston, MA: Reed Construction Data
- www.value-engineering.com
- www.npd-solutions.com

Group 4—Open Innovation

- Chesbrough, Henry (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press.
- www.openinnovation.net

Group 5—User-Oriented Design

- www.user-centereddesign.com
- Veryzer, Robert W. and Brigitte de Mozota (2005), "The Impact of User-Oriented Design on New Product Development: An Examination of Fundamental Relationships," *Journal of Product Innovation Management*, 22, 128-143.

Group 6—Ecological Design

- Ben-Gal, Irad, Roni Katz, and Yossi Bukchin (2008), "Robust Eco-design: A New Application for Air Quality Engineering," *IIE Transactions*, Vol. 40, 907-918.
- McClennan, Jason (2004), *The Philosophy of Sustainable Design*, Ecotone Publishing.
- Shina, Sammy (2008), *Green Electronics Design and Manufacturing*, Boston: McGraw-Hill
- Vakili-Ardebili, Ali and Abdel Boussabaine (2007), "Design Eco-drivers," *Journal of Architecture*, Vol. 12 (3), 315-332.
- Van der Ryn, Sim and Stuart Cowan (2007), *Ecological Design*, Island Press.
- <http://www.bioneers.org/ecodesign>

Group 7—Value Networks

- Li, Feng and Jason Whalley (2002), "Deconstruction of the Telecommunications Industry: From Value Chains to Value Networks," *Telecommunications Policy*, Vol. 26, 451-472.
- Pagani, Margherita and Charles Fine (2008), "Value Network Dynamics in 3G-4G Wireless Communications: A Systems Thinking Approach to Strategic Value Assessment," *Journal of Business Research*, Vol. 61, 1102-1112.
- <http://www.santafe.edu>
- <http://www.value-networks.com>

Group 8—Models for New Service Development

- Cooper, Robert G. and Scott Edgett (1999), *Product Development for the Service Sector: Lessons from Market Leaders*, Cambridge, MA: Perseus Books
- Erl, Thomas (2008), *SOA: Principles of Service Design*, Upper Saddle River, NJ: Prentice-Hall
- Thomke, Stefan (2007), *Managing Product and Service Development*, Boston: McGraw-Hill Irwin
- <http://www.almaden.ibm.com/asr/SSME/>
- <http://wpcarey.asu.edu/csl>

ADDENDUM 2:

Recommended Periodicals and Journals:

Journal of Product Innovation Management	InfoWorld	Financial Times
Journal of Product & Brand Management	EWeek.com	The Wall Street Journal
MIT Technology Review	Electronic Business	Electronic Markets
Journal of Marketing	R&D Management	Business Week
Journal of Marketing Research	PC Magazine	Long Range Planning
Visions (PDMA)	Research Management	IEEE Transactions
Research-Technology Management	Business 2.0	Planning Review
ComputerWorld	IEEE Spectrum	Foreign Affairs
InformationWeek	The Economist	The Futurist

Recommended NPM Books:

- Akao, Yoji (1990), *Quality Function Deployment: Integrating Customer Requirements into Product Design*, Cambridge, MA: Productivity Press.
- Allen, Thomas B. (1987), *War Games: The Secret World of the Creators, Players, and Policy Makers Rehearsing WWII Today*, New York: McGraw-Hill.
- Amram, Martha and Nalin Kulatilaka (1999), *Real Options: Managing Strategic Investment in an Uncertain World*, Harvard Business School Press.
- Bernstein, Peter (1998) *Against the Gods: The Remarkable Story of Risk*, Wiley.
- Brown, Shona L. and Kathleen Eisenhardt (1998), *Competing on the edge: strategy as structured chaos*, Harvard Business School Press.
- Chesbrough, Henry (2003) *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press.
- Cooper, Robert G., et al. (1998), *Portfolio Management for New Products*, Perseus Books.
- Cooper, Robert G. (2001), *Winning at New Products: Accelerating the Process from Idea to Launch*, Perseus Publishing.
- Christensen, Clayton M. (1997), *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business School Press.
- Christensen, Clayton M. and Michael Raynor (2003) *The Innovator's Solution: Creating and Sustaining Successful Growth*, Harvard Business School Press
- Christensen, Clayton, Anthony, Scott D. and Erik A. Roth (2005) *Seeing What's Next: Using Theories of Innovation to Predict Industry Change*, Harvard Business School Press.
- Clark, Kim and Steven Wheelwright (1993), *Managing New Product and Process Development*, Harvard Business School Press.
- Fahey, Liam and Robert Randall (1998) *Learning from the Future: Competitive Foresight Scenarios*, Wiley
- Foster, Richard and Sarah Kaplan (2001) *Creative Destruction: Why Companies That Are Built to Last Underperform the Market—and How to Successfully Transform Them*, Currency, New York: Doubleday.
- Hall, Wayne Michael (2003), *Stray Voltage: War in the Information Age*, Annapolis: Naval Institute Press.

- Kosko, Bart (1993), *Fuzzy Thinking: The New Science of Fuzzy Logic*, Hyperion.
- Kuhn, Thomas (1996), *The Structure of Scientific Revolutions*, 3rd Ed., Chicago: University of Chicago Press.
- Landes, David S. (2000) *Revolution in Time*, Cambridge, MA: Harvard University Press/Belknap Press.
- Lilien, Gary and Arvind Rangaswamy (2001), *Marketing Engineering: Computer Assisted Marketing Analysis and Planning*, (2nd Ed.), Prentice Hall.
- Rheingold, Howard (2002) *Smart Mobs: The Next Social Revolution*, Basic Books
- Rogers, Everett (1995) *Diffusion of Innovations (4th Ed)*, Free Press.
- Romm, Joseph J. (2004), *The Hype About Hydrogen*, Washington, D.C.: Island Books.
- Schwartz, Peter (1996) *The Art of the Long View: Planning for the Future in an Uncertain World*, Currency Doubleday.
- Smith, Preston and Guy Merritt (2002), *Proactive Risk Management: Controlling Uncertainty in Product Development*, Productivity Press.
- Smith, Preston and Donald Reinertsen (1997), *Developing Products in Half the Time: New Rules, New Tools*, 2nd Ed., New York: John Wiley & Sons.
- Souder, William and J. Daniel Sherman (1994), *Managing New Technology Development*, McGraw-Hill.
- Sun Tzu (5th Century B.C.), *The Art of War*, Translated by Thomas Cleary (1988), Shambala Publications
- Taleb, Nassim Nicholas (2001) *Fooled by Randomness: The Hidden Role of Chance in the Markets and in Life*, Texere.
- Thomke, Stefan (2003) *Experimentation Matters: Unlocking the Potential of New Technologies for Innovation*, Harvard Business School Press.
- Toffler, Alvin (1990) *Powershift: Knowledge, Wealth, and Violence at the Edge of the 21st Century*, Bantam Books.
- Toffler, Alvin and Heidi (1993) *War and Anti-War: Making Sense of Today's Global Chaos*, Warner Books.
- Treacy, Michael and Fred Wiersema (1995) *The Discipline of Market Leaders: Choose Your Customers, Narrow Your Focus, Dominate Your Markets*, Addison Wesley.
- Urban, Glen and John Hauser (1993), *Design and Marketing of New Products*, Prentice-Hall.
- Von Hippel, Eric (1988) *The Sources of Innovation*, Oxford: Oxford University Press.
- Wind, Yoram, Brock, Colin and Robert Gunter (2005) *The Power of Impossible Thinking: Transform The Business of Your Life and the Life of Your Business*, Wharton School Publishing.
- Zaltman, Gerald (2003) *How Customers Think: Essential Insights Into the Mind of the Market*, Harvard Business School Press.

Recommended NPM/FEM articles:

- Carroll, J. Douglas and Paul E. Green (1995), "Psychometric Methods in Marketing Research: Part I, Conjoint Analysis," *Journal of Marketing Research*, Vol. 32, November, 385-91.
- Carroll, J. Douglas and Paul E. Green (1997), "Psychometric Methods in Marketing Research: Part II, Multidimensional Scaling," *Journal of Marketing Research*, Vol. 34, May, 193-204.
- Cooper, L. (2000), "Strategic Marketing Planning for Radically New Products", *Journal of Marketing*, Vol. 64, January, 1-16.
- Faulk, Stuart, Robert Harmon and David Raffo (2000), "Value-Based Software Engineering (VBSE): A Value Driven Approach to Product-Line Engineering," *Proceedings of International Conference on Software Product-Line Engineering*, 1-13.
- Gassmann, Oliver, Patricia Sandmeier, and Christopher H. Wecht (2006), "Extreme customer innovation in the front-end: learning from a new software paradigm", *International Journal of Technology Management*, Vol. 33, pp. 46-66.

- Griffin, A., L. N. Hoffman, R. L. Price, and B. A. Vojak (2007), "How Serial Innovators Navigate The Fuzzy Front End of New Product Development," *Institute for the Study of Business Markets*, Pennsylvania State University, 1-35.
- Harmon, Robert, David Raffo and Stuart Faulk (2003), "Incorporating Price Sensitivity into the Software Engineering Process," in Kocaoglu, et al. (Eds.) *Technology Management for Reshaping the World, (PICMET/IEEE)*, 316-323.
- Reid, S. E. and U. de Brentani (2004), "The Fuzzy Front End of New Product Development for Discontinuous Innovations: A Theoretical Model," *Journal of Product Innovation Management*, Vol. 21, 170-184.
- Schröder, H.H.; and Jetter. A. (2003), "Integrating market and technological knowledge in the fuzzy front end: an FCM-based action support system", *International Journal of Technology Management*, Vol. 26(5/6), 517-539.
- Verworn, B., C. Herstatt, and A. Nagahira (2008), "The fuzzy front end of Japanese new product development projects: impact on success and differences between incremental and radical projects," *R&D Management*, Vol. 38, 1-19.
- Zhang, Q. and W. J. Doll (2001), "The fuzzy front end and success of new product development: a causal model," *European Journal of Innovation Management*, Vol. 4, 95-112.