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TECHNOLOGY MANAGEMENT SECTION

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From the Chair's Desk

— Sarfraz Mian

After serving the Technology Management Section for eight long years as Newsletter Editor, Program Chair, and now the Section Chair, I shall be your past chair after the Denver meeting. I have thoroughly enjoyed this association and am passing on the mantel to a slate of highly capable section officers and a Section with a number of accomplishments, and ongoing initiatives. To mention a few, we have now our basic features like timely newsletters, a web page and a list-serve, an active dissertation award, distinguished speakers, and now a service award fully established. The Section has a relatively stable membership and is in a very healthy financial situation.

This year, for Denver the TMS has put together an exciting program comprising 12 sessions with 40 excellent presentations — thanks to the dedicated efforts of Moren Lévesque, our Program Chair. Participants who attend TMS sessions in Denver can expect several things:

The program covers a vast array of technology management subject areas including knowledge management, strategic use of patents, problem management in complex product development projects, managing risk and uncertainty in emerging technology industries, innovation and entrepreneurship, technology and strategy, modern technical and professional work, innovations in organizations and on markets, and managing speed as managing technology. Scholars from the US and Canada, Europe, and South America, representing 20 major universities are presenting their cutting edge research results. Additionally, this year TMS is hosting (with NPD) an interesting panel discussion by editors from four prominent technology management journals. We are fortunate to have a young prolific scholar, Scott Shane, from Case Western Reserve University, as our Distinguished Speaker (see page 2 for details). Professor Shane's presentation will dwell on academic entrepreneurship — a key area of technology and knowledge management.

Though this year we received much fewer doctoral dissertations compared to what we had last year (6 versus 22), we considered this a blessing in disguise and availed the opportunity to revamp our review process making it more rigorous yet less time consuming for the reviewers (see page 3). Diane Bailey, TMS Chair-Elect led this effort for which she deserves our appreciation. I will urge everyone of us to help encourage more submissions for the next year (for deadlines, see announcement on our web site).

This year our Executive Committee decided to offer the TMS Distinguished Service Award to encourage participation in our professional activities and recognize outstanding service by colleagues. Thanks to the cooperation of INFORMS staff, we were able to establish the award starting this year. The winner of this year's award is Jeffrey Liker – congratulation Jeff for this well

(Continued on page 18)

DENVER BUSINESS MEETING

The Technology Management Section business meeting will be held on Monday, October 25, 2004, 18h00 - 19h00. A wine and cheese reception will follow and you will get to meet with the TMS officers and other distinguished colleagues. Please do not miss this networking opportunity.

IN THIS ISSUE

Scott Shane
The TMS Distinguished Speaker
— Sarfraz Mian

Professor Shane's talk is titled: "Academic Entrepreneurship: University Spinoffs and Wealth Creation." The presentation will explain the formation of university spinoff companies and their role in the commercialization of university technology and wealth creation in the United States and elsewhere. It provides analysis of the four major factors that jointly influence spinoff activity: the university and societal environment, technology developed at universities; the industries in which spinoffs operate, and the people involved. The presentation will document the process of company creation, focusing on the formation of spinoffs, the transformation of the spinoff's technology into new products and services, the identification and exploitation of a market for these new products and services, and the acquisition of financial resources. Also discussed will be the factors that enhance and inhibit the performance of university spinoffs as well as the effect that they have on the institutions that spawn them.

Dr. Scott Shane is professor of economics at Case Western Reserve University and academic director of the Center for Regional Economic Issues. His previous faculty appointments include University of Maryland, Massachusetts Institute of Technology, and Georgia Institute of Technology. The author of over 50 scholarly articles on entrepreneurship and innovation management, Dr. Shane's work has appeared in Management Science, Organization Science, Academy of Management Journal, Academy of Management Review, Strategic Management Journal, Decision Sciences, and Journal of Economic Behavior and Organization, and International Journal of Industrial Organization, among other journals. He has written or edited five books, Finding Fertile Ground: Identifying Extraordinary Opportunities for New Ventures; Academic Entrepreneurship: University Spinoffs and Wealth Creation, A General Theory of Entrepreneurship: The Individual-Opportunity Nexus, Foundations of Entrepreneurship, and Entrepreneurship: A Process Perspective (with Robert Baron). Dr. Shane has served as editor of special issues of Research Policy on "Technology Entrepreneurship" and Management Science on "University Entrepreneurship and Technology Transfer". He currently serves as editor of the R&D, Innovation, and Entrepreneurship Division of Management Science and the associate editor of Journal of Business Venturing. Dr. Shane's Ph.D. is from the Wharton School of the University of Pennsylvania. His current research examines: (1) how entrepreneurs discover and evaluate opportunities, assemble resources, and design organizations; (2) university spin-offs and technology transfer; and (3) business format franchising. Dr. Shane has consulted to numerous large and small organizations, and has taught in executive education programs in Norway, Poland, New Zealand and the United States.

The lecture is scheduled on Monday, October 25, 2004 from 16h30 to 18h00 (please see the schedule for room location). After the lecture there will be a wine and cheese reception at 18h00 followed by the TMS business meeting. Please do not miss this networking opportunity.

TMS Doctoral Dissertation Award 2004 Winner is Corinne Post

— Diane Bailey

The 2004 INFORMS TMS Best Doctoral Dissertation Award was announced this year in August. The winner is **Corinne Post** for her dissertation entitled, "Allocating Favorable Work Contexts in Industrial R&D: The Role of Race/Ethnicity, Gender, Family Characteristics, and Organizational Setting."

The dissertation was completed at Rutgers, The State University of New Jersey, with Professor Nancy DiTomaso as advisor. Corrine is Assistant Professor of Management at the Lubin School of Business, PACE University.

Congratulations to Corinne! In recognition of her achievement, Corinne has been invited to present a talk based on her dissertation at the upcoming INFORMS meeting in Denver, Colorado. The session is scheduled for Monday, October 25th, 10:00 - 11:30 a.m. We look forward to hearing her presentation! Corinne will also receive a check and a plaque from TMS.

We would like to thank the TMS reviewers who evaluated the dissertations submitted for this year's award: Tonya Boone, Riitta Katila, Rob Lowe, Julie Rennecker, Aleda Roth, and Annique Un. TMS officer Diane Bailey coordinated the review process.

TMS OFFICERS 2004

Chair:	**Sarfraz Mian** (mian@oswego.edu)
Chair-Elect:	**Diane Bailey** (dbailey@leland.stanford.edu)
Vice Chair Programs:	**Moren Lévesque** (mxl101@cwru.edu)
Vice Chair Membership & Communication:	**Sebastian Fixson** (fixson@umich.edu)
Information Officer:	**Ken Hung** (khung@suffolk.edu)
Past Chair:	**Glenn Dietrich** (gdietreich@utsa.edu)

TMS Distinguished Service Award 2004 goes to Jeffrey K. Liker

— Sarfraz Mian

Jeffrey K. Liker, Professor, Industrial and Operations Engineering, University of Michigan is the recipient of INFORMS Technology Management Section's first Distinguished Service Award. While conferring this award the TMS award committee noted that Professor Liker's past several years of contributions to the field of technology management are varied and numerous.

Besides being a well-published researcher, a successful teacher, and a consultant of international repute, Professor Liker has performed outstanding service in leading the technology management profession at various professional foras including TMS. He has simultaneously served two leading technology management related professional organizations — INFORMS Technology Management Section (1996-2001) and the Technology and Innovation Management Division of the Academy of Management (1995-2000), where he was elected Chairperson for both. In this capacity, he provided visionary leadership in encouraging scholarship through collaboration and engineered stability via institution building. One salient example of promoting collaboration was his efforts in instituting joint TMS-TIM doctoral dissertation award in 2000. Keeping the spirit of collaboration, the same year, Liker successfully led the merger of INFORMS Management of Productivity and Technology Section with TMS and promoted close cooperation with the New Product Development Section, which continues to this day. Another significant example in institution building was his leadership in establishing a new organizational infrastructure and bylaws for the Technology Management Section. After his term as Section Chair was over, he continued to help in evolving a succession system for managing the affairs of TMS, which provided organizational stability and renewal of talent. More recently, he has served as TMS representative to the INFORMS Subdivisions Council for 2004. Dr. Liker continues to make himself available for mentoring his junior TMS colleagues and providing advice to the Section when requested.

Therefore, it is with great personal pleasure and professional admiration that I on behalf of the TMS award committee am announcing Jeffery K. Liker to be the recipient of its first Distinguished Service Award to be presented during its annual 2004 meeting in Denver. Congratulations Jeff!

Who is the INFORMS Technology Management Section today?

— Sebastian Fixson

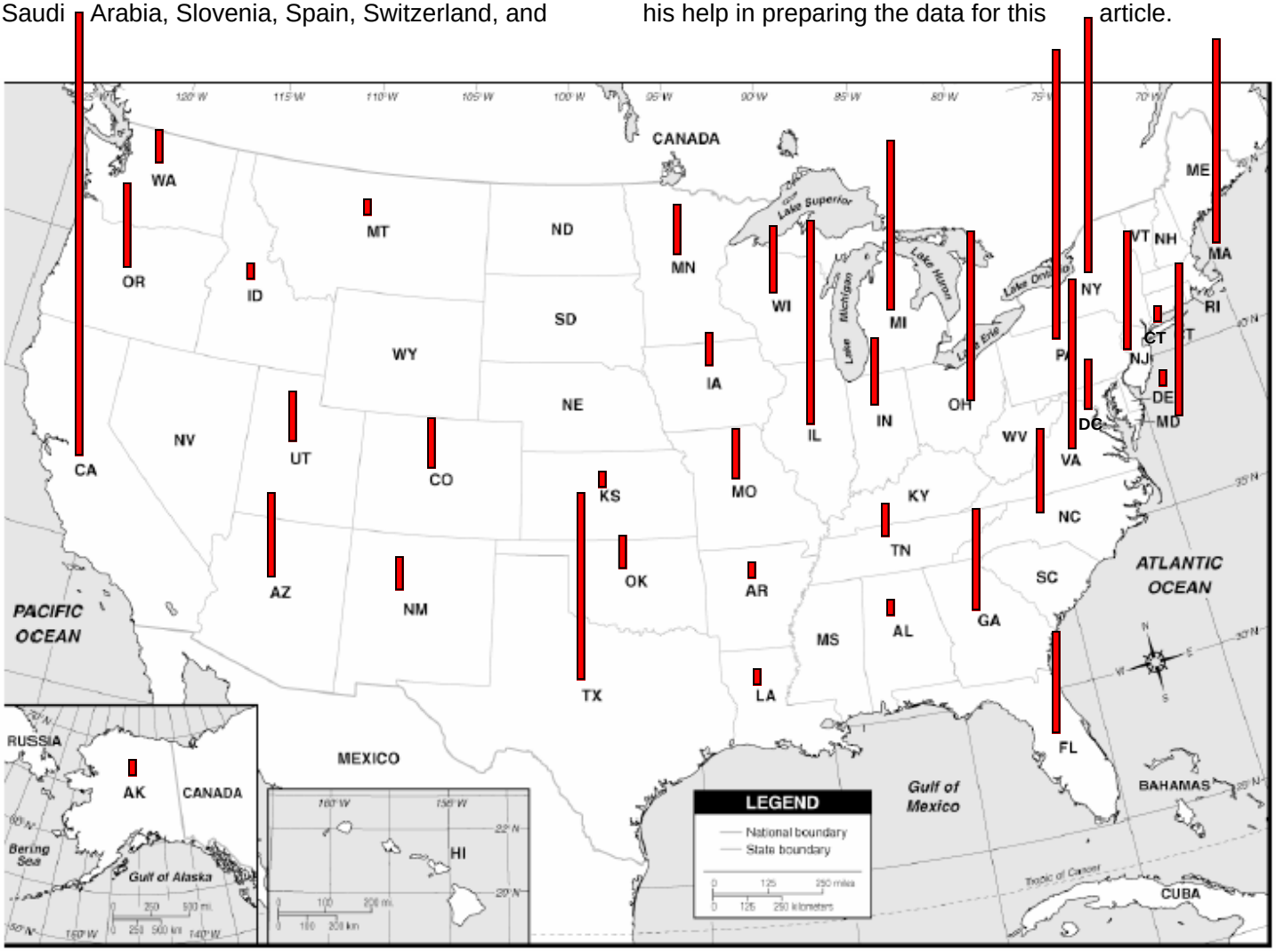
Last year, Moren Lévesque presented in this column a brief history of the Technology Management Section of INFORMS. Her article described the origin and legacy of this interesting section within INFORMS. This year, I would like to present a closer look at the Technology Management Section of today. Who is this section? Who are its members? What do they do and where do they come from?

An analysis of the membership files of the Technology Management Section in September 2004 reveals that its members come from 30 different countries: USA (208), Canada (9), Japan (7), Germany (6), France (5), India, Singapore, Taiwan United Kingdom (all 3), Italy (2), Argentina, Austria, Belgium, Bolivia, Brazil, Croatia, Denmark, Finland, Hong Kong, Indonesia, Israel, Korea, Netherlands, Philippines, Portugal, Saudi Arabia, Slovenia, Spain, Switzerland, and United Arab Emirates (all 1). Note that the membership files reflect our members' business addresses. Of our members that work in the United States, the largest fraction resides in California (26), followed by Pennsylvania (17), and New York (15). The map below shows the distribution for 34 other states.

Concerning their occupation, the majority of our members works in academia for various Universities (192). Within Universities our members work for a wide range of schools and colleges, ranging from engineering to management, to public policy. A smaller fraction works in commercial firms (29), and a small number is employed by the Government (5). For the rest (43) no data was available indicating the sector in which they are active.

In sum, the current membership of our section shows a community that is diverse along multiple dimensions. We are looking forward to the exchanges and discussion of interesting ideas that this diversity can contribute to Technology Management research and teaching.

The newsletter editor would like to thank Ken Hung for his help in preparing the data for this article.



INFORMS -Technology Management Section
Denver, CO, '04
Sponsored/Invited Program
(Oct 24 - 27, Sun-Wed)

—Moren Lévesque

The TMS sponsored cluster for the INFORMS 2004 Annual Meeting is comprised of over thirty five research talks in the area of technology management and entrepreneurship. Our ten paper sessions are complemented by talks by our Distinguished Speaker, Dr. Scott Shane of Case Western Reserve University, and our Dissertation Award winner, Dr. Corinne Post of Pace University. Our program also includes a panel discussion jointly hosted by TMS and the New Product Development (NPD) group entitled "Editors' Views on Multidisciplinary Research." In addition, we offer a panel discussion on the Engineering and Technology Management Education and Research Council and a tutorial entitled "Technology Development Envelop." We hope you will participate in those presentations and discussions.

The program begins on *Sunday, October 24th* with four paper sessions. The first two sessions focus on organizational learning and knowledge management. Topics include modeling learning – and its dynamics – by watching and doing, as well as the management of knowledge creation for R&D firms. These talks cover various industries including semiconductor and airline. The third session focuses on the strategic use of patents to address issues such as the complementarity between different types of appropriability mechanisms and the decision to disband technological assets. The day concludes with a session on the management of technology, including papers on complex product development projects, management of transportation and logistics outsourcing, and managing the risk and uncertainty of emerging technologies.

Monday, October 25th starts off with a paper session on innovation and entrepreneurship. Topics in this session include an empirical analysis of e-business, innovation and financial performance, a comparison of novelty and imitation in market entry, and a theoretical analysis of competition and collaboration in new ventures. Special events mark the rest of the day. The Dissertation Award winner, Dr. Corinne Post, speaks in the morning on allocating favorable work contexts in industrial R&D, followed by a panel discussion with NPD after lunch. In the afternoon, this year's Distinguished Speaker, Dr. Scott Shane, talks about "Academic Entrepreneurship: University Spinoffs and Wealth Creation." We will hold the TMS business meeting directly after Dr. Shane's talk. Please join us for news, updates, and refreshments.

On Tuesday, *October 26th* the first session focuses on technology and strategy. Topics in this session include ERP adoption, first mover advantage and business process differentiation, knowledge sharing among employees, and B2B e-service capability. The next session considers modern technical and professional work at GM, with topics that range from defining, measuring and improving dimensions of work to a study of engineering tasks and activities. The third session discusses innovations in organizations and markets. Papers investigate institutional and behavioral economics in organizational technology and knowledge management, intermediation in innovation, and experimental evidence on reciprocity with video file sharing. The day ends with a session on managing speed as managing technology to address issues such as firm performance in drug development, entry timing and the advantages of moving first, and synchronizing investments in product and process.

Wednesday, October 27th completes our schedule with one paper session, a tutorial, and a panel. The paper session focuses on hierarchical decision modeling with topics such as integrating patterns of technology and competitive strategies, and quantifying strategic value of emerging technologies. The following session offers a tutorial on technology development envelope by Nathasit Gerdsri of Portland State University. The day, and our sponsored cluster, ends with a panel discussion on the Engineering and Technology Management Education and Research Council (ETMERC).

We look forward to this year conference and hope to interact with our many TMS members.

Sunday, October 24th

SA14 08h00 - 09h30 Organizational Learning and Knowledge Management - 1
Chair: **Anita Tucker**, University of Pennsylvania, 551 Jon M. Huntsman Hall, 3730 Walnut Street, Philadelphia, PA, 19104-6340, United States, tuckera@wharton.upenn.edu

P1. *Innovative Knowledge Creation Management for R&D Organizations.* **Kiyoshi Niwa**, The University of Tokyo, Komaba 3-8-1, Meguro-ku, Tokyo, 153-8902, Japan, niwa@idea.c.u-tokyo.ac.jp
Abstract: This paper discusses three methods for innovative knowledge/concepts creation. The first involves a method to create new knowledge relationships by combining tacit human knowledge and explicit computer knowledge. The second involves the empowerment of concept creators separated from project execution to create discontinuous concepts. The third method involves innovation initiatives to allow direct communications between top executives and researches at corporate education centers.

P2. *A Production Economic Framework for Modeling Learning by Watching and Doing.* **David Moore**, Colorado School of

Mines, Economics and Business, 816 15th St., Golden, CO, 80401, United States, dmoore@mines.edu
Abstract: Production economics help define a space of feasible input-output combinations modeling opportunities to learn by watching and doing within a production system. The scope and level of aggregation represented in this space determine the identifiable opportunities for fruitful knowledge transfer. Optimal learning curves may be forecasted using the current production space and applied to planning, scheduling and capacity decisions. Implications for semiconductor manufacturers are discussed.

P3. *The Dynamics of Learning by Doing under Constraints.* **Brad Morrison**, MIT Sloan School of Management, 50 Memorial Drive E53-339, Cambridge, MA, 02142, USA, morrison@mit.edu, **Nelson Repenning,** nelson@mit.edu.
Abstract: Traditional learning curve theory considers production in isolation from other demands for resources. Yet many learning situations force tradeoffs of the learner's time between a new skill and a habitual means of accomplishing tasks to meet output goals. Building on learning curve theory, we incorporate a minimum throughput constraint on the learner. We use simulation analysis, characterize the tipping point between two modes of behavior, and discuss implications for managing implementation.

P4. *Outsourcing: Enabler or Inhibitor of Innovation? Evidence From the Semiconductor Industry.* Marcin Strojwas, Harvard Business School, Soldiers Field Rd., Boston, MA, USA, mstrojwas@hbs.edu
Abstract: What types of projects are being outsourced and how do they perform? I examine this question with data from 461 chip projects. I find that vertically integrated firms possess distinct advantages when they outsource manufacturing on a leading edge product while specialized design firms possess efficiency advantages on projects that utilize more mature technologies. I isolate which effects are due to a single firm possessing integrated internal design and manufacturing 1) EXPERTISE vs 2)CONTROL.

SB14 10h00 - 11h30 Organizational Learning and Knowledge Management - 2

Chair: **Charles Weber**, Portland State University, P.O. Box 751, Portland, OR, 97207, USA, charles.weber@etm.pdx.edu

P1. *Organizational Learning Curves for Customer Dissatisfaction: Heterogeneity across Airlines.* **Michael Lapré**, Vanderbilt University, Owen Graduate School of Management, 401 21st Avenue South, Nashville, TN, 37203, USA, michael.lapre@owen.vanderbilt.edu, **Nikos Tsikriktsis**
Abstract: Does customer dissatisfaction follow a learning-curve pattern? With complaint data against the 10 major US airlines, we test H1: complaint rates follow a U-shaped function of experience, H2: focused airlines learn faster to reduce complaint rates than full-service airlines, and H3: organizational learning curves for complaint rates are heterogeneous across airlines. H1 and H3 are supported, H2 is rejected. We extend a knowledge-based view of managing learning curves from factories to airlines.

P2. *An Empirical Test of the Value of Focus in Developing and Implementing Improvement.* **Ingrid Nembhard**, Harvard University, Boston, MA 02163, USA, inembhard@hbs.edu
Abstract: We present data from 23 neonatal intensive care units (NICUs) that collaboratively developed 93 guidelines for improving care in one of seven areas (i.e. infection, pain control, etc.). We examine speed of implementation—how fast the NICUs changed their practices in accordance with these guidelines. Specifically, we test whether focus—undertaking fewer changes or limiting changes to a targeted area—resulted in faster implementation, controlling for organizational factors such as leadership..

P3. *Orchestrated Learning in Highly Differentiated Organizations.* **Charles Weber**, Portland State University, P.O. Box 751, Portland, OR, 97207, USA, charles.weber@etm.pdx.edu.
Abstract: An empirically grounded model of the VLSI circuit manufacturing lifecycle indicates that organizational performance constitutes a delayed reward for prolonged continuous improvement efforts, which occur at the subsystem level and are not reflected in organization-level metrics. By coordinating the activities of subsytems, organizations can orchestrate timed, punctuated surges in organizational performance, which tend to occur years after they have been planned.

SC14 13h30 – 15h00 Patently Critical - Insights from Studies on the Strategic use of Patents

Chair: **Robert Lowe,** Carnegie Mellon University, Tepper School of Business, 5000 Forbes Avenue, Pittsburgh, PA, 15213, USA, roblowe@andrew.cmu.edu, Co-Chair: **Francisco Veloso**, Carnegie Mellon University, fveloso@cmu.edu.

P1. *Hiding in the Patent's Shadow.* **Stuart Graham**, Georgia Tech, United States, stuart.graham@mgt.gatech.edu.
Abstract: This paper examines firms' uses of secrecy and patenting to explore an elementary question of firm intellectual property strategy: Is there complementarity between different types of appropriability mechanisms? I argue that the use of the "continuation" procedure affords patent applicants a strategic opportunity arising from the added term of secrecy. This paper examines continuation data in the United States from 1975-1995.

P2. *Patent Enforcement through the International Trade Commission Patent Enforcement through the International Trade Commission.* **Deepak Somaya**, Assistant Professor, University of Maryland, R.H. Smith School of Business, College Park MD, United States, dsomaya@yahoo.com, **Christine McDaniel**, International Trade Administration, Department of Commerce, Washington DC, United States, Christine_McDaniel@ita.doc.gov.
Abstract: U.S. patents can be enforced against foreign importers through either the International Trade Commission (ITC) or the federal district courts. We examine this forum choice in patent litigation by combining, for the first time, patent suit filings from the U.S. district courts with so-called section 337 case filings from the International Trade Commission. Our findings shed light on how differences in patent enforcement between forums affect forum choice.

P3. *Knowledge Partitioning in Interfirm Innovation under Technology-Forcing Regulation.* **Jaegul Lee**, Carnegie Mellon University, USA, jaegull@andrew.cmu.edu.
Abstract: This paper examines interfirm knowledge partitioning in development of automotive emission control technologies. Analysis of patenting activity shows that, faced with technology-forcing regulations, manufacturers increase their share of component innovation and decrease their share in architectural innovation while suppliers behave in the opposite direction. These finding support the claim that innovation under uncertainty requires knowledge domain overlap between manufacturers and suppliers.

P4. *Patently Wrong? Firm Strategy and the Decision to Disband Technological Assets.* **Francisco Veloso**, Carnegie Mellon University, USA, fveloso@CMU.EDU
Robert Lowe, Carnegie Mellon University, Tepper School of Business, 5000 Forbes Avenue, Pittsburgh PA 15213, United States, roblowe@andrew.cmu.edu.
Abstract: We show how a firm's R&D strategy leads to discernable differences in research outputs and in turn explains why some firms abandon a greater share of their assets. Results suggest that the decision of a pharmaceutical firm to pursue an exploratory versus an exploitative R&D strategy greatly influences the likelihood of patent renewal. Our findings raise intriguing questions regarding the impact of R&D strategies on success and suggest the need for more research on asset abandonment.

SD14 16h30 – 18h00 Management of Technology - A Matter of Degree?

Chair: **Sebastian Fixson**, Industrial & Operations Engineering, University of Michigan, 1205 Beal Avenue, Ann Arbor, MI 48109, USA, fixson@umich.edu.

P1. *Problem Management in Complex Product Development Projects.* **Phil Gouel**, University of Michigan, 1205 Beal Avenue, IOE, Ann Arbor MI 48109, United States, pgouel@umich.edu, **Sebastian Fixson**, fixson@umich.edu.
Abstract: In the development of complex engineering products or systems problems often become visible only late in the product development (PD) process when the design information is converted into manufacturing information. We investigate two technology management processes in this type of PD system: problem detection and problem treatment. With examples from the auto industry, we develop a categorization scheme to classify problem types and problem treatment strategies.

P2. *Managing Transportation and Logistics Outsourcing in the Automotive Industry.* **Kingsley Reeves**, University of Michigan, 1205 Beal Avenue, Ann Arbor MI 48109, United States, kareeves@umich.edu.
Abstract: This research examines two contrasting approaches to technology management in the automotive industry. The "technology", as broadly defined by Perrow, is the provision of transportation and logistics services. Two contrasting case studies are examined. In one case, an American automaker has selected an organizational model that is closer to pure, arms-length outsourcing. This is contrasted with a Japanese automaker, which has selected an organizational model that is much more integrated.

P3. *Managing Risk and Uncertainty in Emerging Technology Industries.* **Elicia Maine**, Simon Frasier University, 7272 - 515 West Hastings, Vancouver BC V6B 5K3, Canada, emaine@sfu.ca.
Abstract: The combination of risk, uncertainty, and R&D costs in the emerging technology industries of software, biotech, and advanced materials provide some unique valuation and resource allocation challenges for investors and managers. To better illustrate these challenges, real options valuation is applied to a case study in each industry.

P4. *Substitutes for "Management": Practices for Complex Product Development in Free/Open Source Software.* ***Karim Lakhani,*** MIT Sloan School of Management, 50 Memorial Drive, Cambridge MA 02138, United States, lakhani@mit.edu.
Abstract: In an extreme form my research question can phrased as: "Why do we need managers? And what are the substitutes for management?" To explore this matter, I focus on an empirical study of the coordination practices in Free/Open Source software (F/OSS) projects. F/OSS communities produce high quality software products without much of the direct managerial control and intervention that exists in similar firm-based software projects.

Monday, October 25th

MA14 8h00 – 9h30 Innovation and Entrepreneurship

Chair: **Moren Lévesque**, Case Western Reserve University, 10900 Euclid Avenue, Cleveland OH 44106, United States, moren.levesque@weatherhead.cwru.edu.

P1. *IT Does Matter: An Empirical Analysis of e-business, Innovation, and Financial Performance.* **Philipp Koellinger**, DIW Berlin, Koenigin-Luise-Str. 5, Berlin 14195, Germany, pkoellinger@diw.de.
Abstract: The study analyses two questions: (1) How much innovative activity can be attributed to Internet-based technologies? (2) Do Internet-enabled innovations translate into financial success of a company? The analysis is based on a recent cross-sectional survey of more than 7,000 enterprises in Europe. A fixed-effects error component model is used to control for unobserved heterogeneity of firms.

P2. *One of These Things Is Not Like the Others: Novelty versus Imitation in Market Entry.* **Steven Michael**, University of Illinois, 1206 S. Sixth St., College of Business, Champaign IL 61820, United States, smichael@uiuc.edu.
Abstract: Establishing why ventures succeed and fail is central to entrepreneurship research. Existing research asserts novelty is the heart of entrepreneurship. By contrast, being different exposes firms to the risk of being perceived as illegitimate. To test these ideas, we examine entry into industries marked by discretion. As a result, theoretical richness is added to our existing studies, as well as practical advice for the entrepreneur. He or she does not want to be just like the others.

P3. *Competition and Collaboration in New Ventures.* **John Angelis**, Case Western Reserve University, 10900 Euclid Avenue, Cleveland OH 44106, United States, jna@cwru.edu, **Moren Levesque**, Case Western Reserve University, 10900 Euclid Avenue, Cleveland OH 44106, United States, moren.levesque@weatherhead.cwru.edu.
Abstract: Entrepreneurs invest in awareness advertising because new products may face a lack of reputation and trust in the market place. Under certain conditions, investing in awareness advertising and market expansion for the entire industry can yield greater profit than taking away some of the competition's market share. This paper will investigate financial investment strategies and tradeoffs between increasing market share and size of a potential market for substitutable/innovative products.

P4. *Institutions and Mechanisms for Nurturing Knowledge-Based Firms: A Study of the Selected US Regional.* **Sarfraz Mian**, SUNY Oswego, NY, United States, mian@oswego.edu.
Abstract: The author presents results of his recent national survey of selected regional institutional mechanisms in the form of science parks, technology incubators, and related incubation support programs. The study reveals some unique characteristics of the regional innovation systems and their planned nurturing environments providing insights for entrepreneurs and benchmarking data for regional policy makers.

MB14 10h00 – 11h30 TMS Dissertation Award
Chair: **Diane Bailey**, United States, debailey@leland.stanford.edu

Best Dissertation Award to **Corrine Post**, Lubin School of Business, PACE University, 861 Bedford Road, Pleasantville NY 10570, United States, cpost@pace.edu.
Abstract: Meritocratic factors have not fully explained why women and minorities perform less well and are promoted less quickly than men and whites. I examine what work contexts help differentiating low- and high-performers; whether inequalities in access to work contexts help explain those differences; and whether inequalities are pervasive across companies..

MC14 13h30 – 15h00 Joint NPD/TMS Panel: Editors' Views on Multidisciplinary Research
Chair: **Vish Krishnan**, University of Texas at Austin, Department of Management, Austin TX 78712, United States, Vish.Krishnan@mccombs.utexas.edu.

Abstract: This panel will explore some of the issues relating to publishing scholarly research articles in technology management and product development journals. It will draw on the experience of the Editors at major journals.

Vish Krishnan, University of Texas at Austin, Department of Management, Austin TX 78712, United States, Vish.Krishnan@mccombs.utexas.edu. **Michael Badawy**, Virginia Polytechnic Institute and State University, 7054 Haycock Road, Falls Church VA 22043, United States, mbadawy@vt.edu. **Anthony DiBenedetto**, Temple University, Philadelphia PA, United States, tonyd@temple.edu. **Jeffrey Liker**, University of Michigan, Ann Arbor MI 48109, United States, liker@umich.edu. **Scott Shane**, Case Western Reserve University, 10900 Euclid Avenue, Cleveland OH 44106, United States, sas46@cwru.edu.

MD14 16h30 – 18h00 Technology Management Section Distinguished Speaker
Chair: **Sarfraz Mian**, State University of New York-Oswego, School of Business, 310 Rich Hall, Oswego NY 13126, USA, mian@oswego.edu.

"Academic Entrepreneurship: University Spinoffs and Wealth Creation" **Scott Shane**, Case Western Reserve University, sas46@cwru.edu.
This presentation will explain the formation of university spinoff companies and their role in the commercialization of university technology and wealth creation in the United States and elsewhere.

M 18h00 – 19h00 TMS Business Meeting
Chair: **Sarfraz Mian**, State University of New York-Oswego, School of Business, 310 Rich Hall, Oswego NY 13126, USA, mian@oswego.edu.

Tuesday, October 26th

TA14 8h00 – 9h30 Technology and Strategy
Chair: **Pedro Oliveira**, School of Economics and Management, Catholic University of Portugal, Palma de Cima, Lisbon PT 1649-023, Portugal, poliveira@fcee.ucp.pt. Co-Chair: **Aleda Roth**, University of North Carolina, Kenan-Flagler Business School, McColl 4708, Chapel Hill NC 27599, United States, Aleda_Roth@unc.edu.

P1. *ERP Adoption, First Mover Advantage and Business Process Differentiation.* **Andrea Masini**, Assistant Professor, London Business School, Regent's Park, London NW1 4SA, United Kingdom, amasini@london.edu.
Abstract: This paper discusses the mechanisms through which ERP adoption determines changes in productivity at the industry level. It suggests that the increased process standardization resulting from ERP adoption cause two main effects: i) an increase of average industry productivity over time and ii) a decrease of productivity differences across firms within the same sector. Operational and strategic implications are also discussed.

P2. *Realizing Benefits from Enterprise Resource Planning: Does Strategic Configuration Matter?* **Jeff Stratman**, Georgia Tech, 800 West Peachtree Street NW, Atlanta GA 30332-0520, United States, jeff.stratman@mgt.gatech.edu.
Abstract: A key driver of the recent wave of ERP implementations was the assumption that benefits would accrue from the integration of business information, yet realized benefits have varied widely. Survey data from North American manufacturing firms are used to evaluate the proposition that firms with different strategic configurations will realize different operational benefits from the adoption of ERP systems.

P3. *Knowledge Sharing among Employees.* **Enno Siemsen**, University of North Carolina at Chapel Hill, Kenan Flagler Business School, McColl Building, CB 3490, Chapel Hill NC 27599-3490, United States, siemsene@kenan-flagler.unc.edu. **Sridhar Balasubramanian**, University of North Carolina at Chapel Hill, Kenan Flagler Business School, McColl Building, CB 3490, Chapel Hill NC 27599-3490, United States, Sridhar_Balasubramanian@kenan-flagler.unc.edu, **Aleda Roth**, University of North Carolina, Kenan-Flagler Business School, McColl 4708, Chapel Hill NC 27599, United States, Aleda_Roth@unc.edu.
Abstract: This research investigates how employees learn from each other through sharing work related knowledge. Our specific research questions are: What drives employees to share their knowledge with each other or alternatively, to hoard it? What can management do to increase knowledge sharing among employees? We empirically test the antecedents of employee knowledge sharing and their effect on successful sharing.

P4. *B2B E-Service Capability.* **Pedro Oliveira**, Catholic University of Portugal, School of Economics and Management, Palma de Cima, Lisbon PT 1649-023, Portugal, oliveirp@bschool.unc.edu. **Aleda Roth**, University of North Carolina, Kenan-Flagler Business School, McColl 4708, Chapel Hill NC 27599, United States, Aleda_Roth@unc.edu.
Abstract: This research investigates the following questions: How can the business-to-business (B2B) e-service capability construct be operationally defined? What are the operational antecedents that influence B2B e-service capability? To what extent does e-service capability influence business performance? A model is empirically tested using data gathered from 181 service companies that have deployed B2B e-services.

TB14 10h00 – 11h30 Modern Technical and Professional Work
Chair: **Diane Bailey**, Stanford University, 428 Terman, Stanford CA 94305-4026, United States, diane.bailey@stanford.edu.

P1. *GM Work Systems: Improving White-Collar Work.* **William Jordan**, GM R&D Center, MC 480-106-256, 30500 Mound Road, Warren MI 48090-9055, United States, william.c.jordan@gm.com. **Jan Benson**,

jan.benson@gm.com. **Susan Owen**, susan.owen@gm.com.
Abstract: From Adam Smith's division of labor principles to lean manufacturing principles, work principles have been very effective for improving manufacturing productivity. Different principles are needed, however, for improving white-collar work system performance. This talk defines what we mean by work systems and principles, proposes work system dimensions that require different principles for effective performance, and describes our proposed approach to improving work system performance.

P2. *GM Work Systems: Defining and Measuring Dimensions of Work.* **Jan Benson**, GM R&D Center, MC 480-106-256, 30500 Mound Road, Warren MI 48090-9055, USA, jan.benson@gm.com. **William Jordan**, william.c.jordan@gm.com. **Susan Owen**, susan.owen@gm.com.
Abstract: We identify important dimensions of work that have been studied in the psychological and social science literatures and have a relationship with performance. We also describe dimensions of work important to the industrial engineering/ operations research literature. We will discuss the development of a survey to assess the fourteen identified dimensions of work, ten of which have measurement scales of previously demonstrated reliability and validity.

P3. *GM Work Systems: Applying Principles to Improve IE Work.* **Susan Owen**, GM R&D Center, MC 480-106-256, 30500 Mound Road, Warren MI 48090-9055, USA, susan.owen@gm.com. **Jan Benson**, jan.benson@gm.com. **William Jordan**, william.c.jordan@gm.com.
Abstract: We review a case study focused on the work performed by a group of Industrial Engineers (IEs). Specifically, we describe efforts to understand the content of their work, to identify principles for improving that work, and to develop and deliver a workshop for teaching those principles. In addition to generating initiatives to improve the IEs' work, the workshop provided valuable lessons on methods for applying principles to improve work performance.

P4. *What Engineers Do: A Close Study of Engineering Tasks and Activities.* **Hallie Kintner**, GM R&D Center, MC 480-106-359, 30500 Mound Road, Warren MI 48090-9055, USA, hallie.kintner@gm.com, **Diane Bailey**, Stanford University, 428 Terman, Stanford CA 94305-4026, USA, diane.bailey@stanford.edu.
Abstract: In this observational study of engineers at work, we examine engineers' tasks and activities to develop a rich description of engineering work. In particular, we go beyond broad generalizations as reflected in terms like "design" and "analysis" by detailing the types of activities that engineers engage in when carrying out these higher-order purposes. We comment upon the time engineers spend working alone and with others as well as the nature of their interactions with people and technology.

TC14 13h30 – 15h00 Innovations in Organizations and on Markets

Chair: **Christian Schade**, Humboldt-Universität zu Berlin, Spandauer Str. 1, Berlin D- 10178, Germany, schade@wiwi.hu-berlin.de.

P1. *Institutional and Behavioral Economics in Organizational Technology and Knowledge Management.* Michaela Haase, Freie Universität Berlin, Otto-von-Simson-Str. 13/15, Berlin D- 14195, Germany, mhaase@wiwiss.fu-berlin.de.
Abstract: The paper illuminates the knowledge conditions of organizational technology management whose prospective success depends on the managerial ability to combine and steer different but interrelated knowledge processes. The paper explicates contributions of institutional economics to the design of organizational arrangements suited for the coordination of knowledge-based social actions. It also considers impact and scope of the behavioral economics.

P2. *Optimal Assortment and Inventory Control Policy in a Make-to-Stock.* **Susan Xu**, Penn State University, The Smeal College of Business Adm., University Park PA 16802, United States, shx@psu.edu.
Abstract: We consider the joint assortment and inventory optimization problem for a periodic reviewed Make-to-Stock system with technology innovations. Our analysis provides insights about how the optimal assortment changes as the technology evolves and the optimal timing to introduce new products or discontinue the old ones.

P3. *Intermediation in Innovation.* **Alexander Erdmann**, Humboldt University, Spandauer Strasse 1, 10178 Berlin, Berlin D, Germany, alex_erdmann@hotmail.com, **Christian Schade**, Humboldt-Universität zu Berlin, Spandauer Str. 1, Berlin D- 10178, Germany, schade@wiwi.hu-berlin.de.
Abstract: The transfer of patents from universities, research institutes and free inventors to potential commercial users of patents (companies) may be arranged with patent brokers which act as intermediation companies. This presentation contains the embodiment of a three-stage model for the intermediation process of innovation. The model is based on simultaneous market entry games under asymmetric distribution of information and it reveals an explanation for the economic necessity of this intermediation.

P4. *Reciprocity with Video File Sharing: Experimental Evidence.* **Christian Schade**, Humboldt-Universität zu Berlin, Spandauer Str. 1, Berlin D- 10178, Germany, schade@wiwi.hu-berlin.de, **Henrik Sattler**, Universität Hamburg, Von-Melle-Park 5, 20146 Hamburg, Germany, uni-hamburg@henriksattler.de; **Thomas Nitschke**, thomas.nitschke@uni-hamburg.de
Abstract: We report on findings of a controlled experiment on consumer reciprocity. The experiment resembled a purchasing situation in an online video on demand (VOD) system. Payments and video purchases had real consequences. We find that individuals largely differ in their propensity to reciprocate by sharing videos just bought with other participants. Differences in reciprocal behavior between individuals are related to bidding behavior in a mutual ultimatum bargaining game. Implications are discussed.

TD14 16h30 – 18h00 Time Matters: Managing Speed as Managing Technology

Chair: **Nile Hatch**, Marriott School, Brigham Young University, 790 TNRB, Provo UT 84602, United States, nile@byu.edu.

P1. *Firm Performance in Drug Development: Integrating Knowledge-Based and Transaction Cost Explanations.* **Jeffrey Macher**, McDonough School of Business, Georgetown University, Washington DC 20057, United States, jtm4@georgetown.edu, **Christopher Boerner**, Genentech, Inc, 1 DNA Way, South San Francisco CA 94080-4990, United States, cboerner@gene.com.
Abstract: We study how performance in new drug product development differs across pharmaceutical firms and what factors account for these differences. Combining transaction cost economics and the knowledge based view, we explore how organizing drug development activities affects performance.

Using novel firm-level proxies for organizational competence, we show that organizing and managing drug development and regulatory approvals are key sources of competitive advantage in the pharmaceutical industry.

P2. *Making it Pay to be First: Determining Entry Timing and the Advantages of Moving First.* **Nile Hatch**, Marriott School, Brigham Young University, 790 TNRB, Provo UT 84602, United States, nile@byu.edu, **Douglas Johnson**, Krannert Graduate School of Management, Purdue University, West Lafayette IN 47907, USA, johnsond@mgmt.purdue.edu..
Abstract: Competitive advantage through moving first typically requires large investments in a race to beat rivals to market. Beating rivals reveals the need for game theory while investments in uncertain assets points to real options analysis. We integrate these methods and find that rivals exhibit heterogeneous preferences for moving first that depend on their capabilities. Thus, competitive advantage through first-mover advantages requires transforming capabilities to make early entry profitable.

P3. *Synchronizing Investments in Product and Process Throughout the Product Life Cycle.* **Janice Carrillo**, Warrington College of Business, University of Florida, PO Box 117169, Gainesville FL 32611-7169, United States, janice.carrillo@cba.ufl.edu, **Richard Franza**, Kennesaw State University, 1000 Chastain Road, #0404, Kennesaw GA 30144-5591, United States, rfranza@coles2.kennesaw.edu.
Abstract: Firms must develop appropriate design and production capabilities to bring valuable new products to market in an efficient manner. We introduce a normative model which yields insights concerning the appropriate timing of investments in product design and process capacity during the product life cycle.

Wednesday, October 27th

WA33 08h30 – 09h30 Hierarchical Decision Modeling for Technology Management

Chair: **Dundar F. Kocaoglu**, Department of Engineering and, P.O. Box 751, Portland OR 97207, USA, kocaoglu@etm.pdx.edu

P1. *Integrating Patterns of Technology and Competitive Strategies in a Technology Evaluation Model: A Case of Taiwan Semiconductor Foundry Industry.* **Jonathan C. Ho**, Department of Business Administration, Yuan Ze University, 135 Yuan-Tung Road, Chungli, Taoyuan, Taiwan, jch@saturn.yzu.edu.tw, **Dundar F. Kocaoglu**,
Abstract: The emergence of technology changes the competitive landscape of business. Evaluation of these technologies on a firm's strategic position requires a systematic approach. This paper integrates the strategic patterns of technology and competitive strategies in a technology evaluation model that aligns the technologies with strategies and competitive goals. A technology evaluation method is developed and applied to Taiwan semiconductor foundry industry as a case. The method demonstrates the capability of distinguishing the impacts of emerging technologies on overall competitiveness in the industry and aligns the technologies with various technology strategies and with differentiated competitive goals. The method can be generalized to other industries and intends to conjunct with a company's strategic planning process.

P2. *Sensitivity Analysis in Hierarchical Decision Models.* **Hongyi Chen**, Department of Engineering and Technology Management, Portland State University, P.O. Box 751, Portland OR 97207, USA, hongyi_chen@hotmail.com, **Dundar F. Kocaoglu**, kocaoglu@etm.pdx.edu
Abstract: This paper presents a new, robust model for analyzing the sensitivity of decisions affecting the preferential ordering of alternatives as the relative values assigned to higher level decision elements are modified in hierarchical decision models. The model is explained and validation of the results is discussed with examples.

P3. *Quantifying Strategic Value of Emerging Technologies.* **Nathasit Gerdsri**, Engineering and Technology Management Department, Portland State University, Portland OR 97201, USA, nathasitg@etm.pdx.edu, **Dundar F. Kocaoglu**,
Abstract: This paper presents a quantitative model used for evaluating the impact value of emerging technologies on a company's objective. The hierarchical decision making approach is applied to construct the model. Both quantitative and qualitative aspects of technology evaluation are integrated into the model development process. The impact of technologies on a company's objective is calculated as a composite index called Technology Value.

WB33 10h00 – 11h30 Tutorial: Technology Development Envelope (TDE) - A New Approach to Building a Technology Roadmap for Managing Emerging Technologies

Lead: **Nathasit Gerdsri**, Engineering and Technology Management Department, Portland State University, Portland OR 97201, USA, nathasitg@etm.pdx.edu. Co-Author: **Dundar F. Kocaoglu**, kocaoglu@etm.pdx.edu
Abstract: Technology Development Envelope (TDE) is a new concept and methodology for identifying the optimum path in developing a technology roadmap in which technology strategies and business strategies are combined. TDE allows the executive level decision makers in corporations, as well as the policy level decision makers in governments to incorporate disruptive technologies and radical innovations in the development of technology strategies. The method combines the judgments of technology developers and technology implementers to assure that the technology strategies are in full support of corporate goals and objectives. This special presentation explains the methodology and processes used in the formation of TDE along with the fundamental review of technology roadmap. An example is presented for a detailed application of the TDE concept to emerging electronic cooling technologies in computer industry.

WC33 12h00 – 13h30 Panel Discussion: ETMERC - Engineering and Technology Management Education and Research Council

Chair: **Dundar F. Kocaoglu**, Department of Engineering and, P.O. Box 751, Portland OR 97207, USA, kocaoglu@etm.pdx.edu
Lead: **Dundar F. Kocaoglu**, Co-Author: **John Aje**, V.P.-Education, ETMERC, University of Maryland University Campus, United States, **Anthony Bailetti**, V.P.-Research, ETMERC, Carleton University, Canada, **Antonie de Klerk**, President, ETMERC, University of Pretoria, South Africa, **William Flannery**, V.P.-Membership, ETMERC, , Univ. of Texas San Antonio, United States, **Tinus Pretorius**, Executive Vice President, ETMERC, University of Pretoria, South Africa.
Abstract: ETMERC (Engineering and Technology Management Education & Research Council) was established in 2003 to address educational and research issues common to all educational institutions in this field. The Council is made up of the department/program heads and their designees in educational programs under various titles including engineering management, technology management, engineering administration, management of technology and many others. The Council's activities include conducting benchmark studies, developing curriculum guidelines, establishing quality criteria, defining research agenda among others. All of the Council activities are conducted by the educators in the field. ETMERC will be explained; its activities will be described; and an open discussion will be held on strategic issues, future directions and members' pro-active roles in defining the field and bringing it to higher levels of recognition and visibility.

INFORMS – New Product Development, Denver, CO '04
Sponsored/Invited Program
(Oct 24 - 26, Sun-Wed)

— Taylor Randall

The New Product Development cluster will feature 13 sessions with nearly 40 speakers on topics ranging from product variety management to supply chains for product design. The cluster will begin with a panel session on Sunday morning that examines research issues at the intersection of new product development and supply chain management. New to this years cluster will be a Product Development Deep Dive session where authors will present papers followed by a rigorous review of the paper by a discussant. Also, featured will be two sessions examining the role of empirical research in new product development and operations management in general.

Sunday, October 24th

SA43 08h00 - 09h30 Panel: Intersection of Product Development and Supply Chain Management Research
Chair: **Nitin Joglekar**, Boston University, 595 Commonwealth Avenue, Boston MA 02215, United States, joglekar@bu.edu.

Abstract: Developing products that take advantage of supply chain capabilities is a growing phenomenon in the practitioner community. This panel will discuss emerging product development research that can account for recent innovations in capacity management, close loop supply chains, inventory placement, postponement, product-process integration, sensor technologies and variety management practices.

Nitin Joglekar, Boston University, 595 Commonwealth Avenue, Boston MA 02215, United States, joglekar@bu.edu, **Edward Anderson**, University of Texas, 1 University Station B6300, Austin TX 78733, United States, Edward.Anderson@mccombs.utexas.edu, **Eric Johnson**, Tuck School of Business, Dartmouth College, Hanover NH 03768, United States, m.eric.johnson@Dartmouth.EDU, **Kamalini Ramdas**, United States, Ramdask@Darden.virginia.edu, **Gilvan C. Souza**, University of Maryland, The Robert H. Smith School of Business, 4311 Van Munching Hall, College Park MD 20742-1815, United States, gsouza@umd.edu, **Jayashankar Swaminathan**, UNC Chapel Hill, CB# 3490, McColl 4717, UNC- Chapel Hill, Chapel Hill NC 27599, United States, msj@unc.edu.

SB43 10h00 - 11h30 Product Variety Management
Chair: **Aydin Alptekinoglu**, University of Florida, Warrington College of Business, Decision and Information Sciences, Gainesville FL 32611-7169, United States, aalp@ufl.edu.

P1. *Optimizing Supply Chain Structure under Delayed Product Differentiation.* **Ting Shen**, Stanford Univerity, Dept. of Manag. Sci. & Eng., Stanford CA 94305, United States, tingshen@stanford.edu.
Abstract: We develop a model in which a firm produces a product with N customizable components that can either be customized by the suppliers or by the producer. The objective is to determine the optimal supply chain structure-who should perform the customization tasks given the producer's customization capacity constraint. Our approach is to maximize the total net value from delayed product differentiation for the firm. We will discuss the basic model and its application at General Motors.

P2. *Product Variety and Supply Chain Coordination.* **Praneet Singh**, Simon School of Business, University of Rochester, CS 4341, Simon School, University of Rochester, Rochester NY 14627, United States, singhpr@simon.rochester.edu, **Harry Groenevelt**, Simon School of Business, University of Rochester, CS 3339, Simon School, University of Rochester, Rochester NY 14627, United States, groenevelt@simon.rochester.edu, **Nils Rudi**, Assistant Professor, Simon School of Business, University of Rochester, CS 3343, Simon School, University of Rochester, Rochester NY 14627, United States, rudi@simon.rochester.edu.
Abstract: We model the strategic pricing interaction between a manufacturer and retailer in a multi-product setting. The manufacturer sets the wholesale price and the retailer decides on the optimal assortment to offer and the associated quantities to stock. We demonstrate the structure of the retailer's optimal assortment and characterize the manufacturer's profit function. Finally, we study the performance of the supply chain and examine alternative coordinating contracts in a multi-product setting.

P3. *Variety Tradeoff between Mass Produced and Mass Customized Products.* **Aydin Alptekinoglu**, University of Florida, Warrington College of Business, Decision and Information Sciences, Gainesville FL 32611-7169, United States, aalp@ufl.edu, **Charles Corbett**, The Anderson School at UCLA, 110 Westwood Plaza, Box 951481, Los Angeles CA 90095, United States, charles.corbett@anderson.ucla.edu.
Abstract: Mass production, the dominant form of making products available in the market, emphasizes standardization (low variety) in the interest of supply chain efficiency, and usually targets zero delivery leadtime via a make-to-stock system. Mass customization offers the opposite proposition: very high variety, but some delay in delivery as it usually involves a make-to-order system. We explore the leadtime – variety tradeoff, which has been gaining prominence by the advent of mass customization.

P4. *Drug Development Portfolios: Selection and Valuation.* **Karan Girotra**, The Wharton School, University of Pennsylvania, Philadelphia PA 19104, United States, karang@wharton.upenn.edu, **Christian Terwiesch**, terwiesch@wharton.upenn.edu, **Karl Ulrich**, ulrich@wharton.upenn.edu.
Abstract: High failure rates, technological dependence between candidate compounds, high fixed costs and substantial premiums for swift development, all present some unique challenges with respect to evaluating and managing the risks and rewards associated with drug development portfolios. We study the selection and valuation of these portfolios consistent with the unique paradigm of the drug development process.

SC43 16h30 - 18h00 Examining Empirical Research Trends in OM/ New Product Development

Chair: **Anita Tucker**, University of Pennsylvania, 551 Jon M. Huntsman Hall, 3730 Walnut Street, Philadelphia PA 19104-6340, United States, tuckera@wharton.upenn.edu.

P1. *Publishing Empirical OM Work Using Alternatives to Survey and Case Studies.* **Thomas Gattiker**, Miami University, Richard T. Farmer School of Business, 307 Laws Hall, Oxford OH 45056, United States, gattiktf@muohio.edu, **Diane Parente**, Penn State Erie, Sam and Irene Black School of Business, 5091 Station Road, Erie PA 16563, United States, dhp3@psu.edu.
Abstract: There is considerable evidence that inducing practitioners to participate in survey research is increasingly difficult. Surveys are also problematic because key informant perceptions may distort the information provided. This presentation overviews some novel sources of empirical data and provides information on publishing empirical research. It also addresses some of the blind spots and limitations that various types of empirical data may create.

P2. *Empirical Research in Operations Management: Past research and future directions.* **Taylor Randall**, University of Utah, David Eccles School of Business, 1654 E. Central Campus Drive, Rm 108, Salt Lake City UT 84112, United States, acttr@business.utah.edu, **Marcelo Olivares**, The Wharton School, 500 JMHH, Philadelphia PA, United States, maolivar@wharton.upenn.edu, **Christian Terwiesch**, The Wharton School, University of Pennsylvania,, 3730 Walnut Street,, Suite 500, Philadelphia PA 19104, United States, terwiesch@wharton.upenn.edu.
Abstract: We review past empirical research in operations management. We note marked trends in quantity of publications and sophistication of methods. Using comparisons to other fields, we describe possible future directions for empirical research.

P3. *Title: Small Worlds and Innovation,* **Lee Fleming**, Harvard University, Morgan Hall T-95, Soldiers Field Road, Boston MA 02163, United States, lfleming@hbs.edu.
Abstract: Although small-world networks have attracted much theoretical attention and are widely thought to enhance creativity, fewer empirical studies of their evolution and influence on subsequent innovative productivity exist. Using patent coauthorship data, we illustrate crossovers from large- to small-world structures and the emergence and disappearance of giant components in regional collaboration networks. Based on a mix of qualitative and quantitative research, we find only qualified evidence to support the emerging consensus that small worlds improve innovation. We close with a discussion of the implications of regional collaboration networks for firms and policy makers.

SD43 16h30 - 18h00 Empirical Research in New Product Development II

Chair: **Anita Tucker**, University of Pennsylvania, 551 Jon M. Huntsman Hall, 3730 Walnut Street, Philadelphia PA 19104-6340, United States, tuckera@wharton.upenn.edu.

P1. *Methodological Fit in Empirical Operations Management Research.* **Anita Tucker**, University of Pennsylvania, 551 Jon M. Huntsman Hall, 3730 Walnut Street, Philadelphia PA 19104-6340, United States, tuckera@wharton.upenn.edu, **Amy Edmondson**, Harvard University, Morgan Hall T-93, Soldiers Field, Boston MA 02163, United States, aedmondson@hbs.edu, **Stacy McManus**, Harvard University, Gallatin Hall, Soldiers Field Road, Boston MA 02163, United States, smcmanus@hbs.edu.
Abstract: Methodological fit is an attribute of high-quality research that receives little explicit attention in the OM literature. Fit refers to internal consistency among elements of a research project –question, prior work, design, and contribution. We offer a contingency framework that relates prior work – the state of theory and research – to the design of a new research project, and discuss implications for educating OM researchers who wish to study and collect data from real organizations

P2. *Innovation in Operations Management: An Empirical Investigation.* **Aleda Roth**, University of North Carolina, Kenan-Flagler Business School, McColl 4708, Chapel Hill NC 27599, United States, Aleda_Roth@unc.edu.
Abstract: Not available

P3. *Empirical Research in Software Development: Lessons from the Field.* **Alan MacCormack**, Associate Professor, Harvard University, Morgan Hall Terrace, Soldiers Field Road, Boston MA 02163, United States, amaccormack@hbs.edu.
Abstract: Over the past 6 years I have embarked on a research trajectory that seeks to explore how firms should respond to the presence of uncertainty in their innovation processes. The work has employed a variety of empirical methods at multiple levels of analysis. In this talk, I will describe my overall trajectory, the logic behind the methods chosen and results to date. I will also discuss some personal lessons on the way to gather data on complex processes and ambiguous outcomes in the real world.

P4. *Value Added Services, Product Innovation and Switching Inertia.* **Rohit Verma**, University of Utah, David Eccles School of Business, 1645 Camcus Center Drive, Salt Lake City UT 84112, USA, rohit.verma@business.utah.edu, **Gerhard Plaschka**, DePaul University, Department of Management, 1 East Jackson Blvd, Chicago IL 60604, United States, gplaschka@allgrp.com.
Abstract: This study presents an econometric framework for assessing the relative impact of value-added services and technical innovation on new product development in industrial automation industry. Based on discrete choice modeling framework, empirical data for this multi-year study was collected from about 200 European and 500 US-based manufacturing organizations using individually customized computer-based survey of Sr. Executives. The results illustrate the role of value-added services and technical innovation in overcoming switching inertia in the product development process.

Monday, October 25th

MA43 08h00 - 09h30 Supply Chain Issues in Product Design

Chair: **H. Sebastian Heese**, Kelley School of Business, Indiana University, Bloomington IN 47401, United States, hheese@indiana.edu.

P1. *Bundling Profitability under Customer Demand Correlation and Variability.* **Jamison Day**, University of Houston, 401 E Allen St, Bloomington IN 47401, United States, jday@indiana.edu.
Abstract: In this presentation, we examine several properties of a simple pricing and bundling problem. Although it has been shown that negative correlation in reservation prices leads to profitable bundling opportunities, no information concerning how much profitability varies with different levels of correlation

is given. We investigate the relationship between optimal mixed bundling profitability and reservation price correlation and variability.

P2. *Should Multiple Points of Product Differentiation Coexist?* **Aydin Alptekinoglu**, University of Florida, Warrington College of Business, Decision and Information Sciences, Gainesville FL 32611-7169, United States, aalp@ufl.edu, **Christopher S. Tang**, UCLA Anderson School, 110 Westwood Plaza B512, Los Angeles CA, United States, ctang@anderson.ucla.edu.
Abstract: The main benefit of postponement comes from a demand pooling effect due to delayed allocation of generic parts into end-products. But, there could be an important downside: The longer the delay (in differentiating the product) the narrower is the breadth of product variety that can be produced from the generic part. We propose a model that allows multiple points of product differentiation in order to explore this tradeoff.

P3. *Developing New Technologies for Industrial Customers: More Functionality, More Performance or Both?* **Sanjiv Erat**, College of Management, Georgia Institute of Technology, 800 West Peachtree St. NW, Room 4309, Atlanta GA 30332, United States, sanjiv.erat@mgt.gatech.edu, **Stylianos Kavadias**, College of Management, Georgia Institute of Technology, 800 West Peachtree Street NW, Atlanta GA 30332, United States, stylianos.kavadias@mgt.gatech.edu.
Abstract: We develop a model of technology introduction to a market of competing industrial customers. Motivated by examples from the electronics industry, such as the introduction of the Digital Signal Processor (DSP) based solutions, where the technology providers can offer components with enhanced performance, or with rich functionality (e.g. bare-bones components with emphasis on performance, or a feature-rich component that combines multiple systems), we examine the drivers for the two approaches.

P4. *The Private Label Threat: Manufacturer-Retailer Interactions in Product Line Design.* **H. Sebastian Heese**, Kelley School of Business, Indiana University, Bloomington IN 47401, United States, hheese@indiana.edu.
Abstract: In a simple supply chain setting with one manufacturer and one retailer, we examine how the retailer should position a private label product vis-à-vis a competing national brand product, when positioning takes place on a quality-type dimension. We focus on how a strategic manufacturer could mitigate losses associated with such an entry by choosing the appropriate product positioning and wholesale pricing strategy.

MB43 10h00 - 11h30 Role of Technology in New Product Development

Chair: **Vish Krishnan**, University of Texas at Austin, Department of Management, Austin TX 78712, United States, Vish.Krishnan@mccombs.utexas.

P1. *Are all Forms of Modularity Equally Effective in Improving the Development Process?* **Nitin Joglekar**, Boston University, 595 Commonwealth Avenue, Boston MA 02215, United States, joglekar@bu.edu, **Paulo Gomes**, Universidade Nova de Lisboa, Campus de Campolide, 1099-032, Lisboa, Portugal, Portugal, pgomes@fe.unl.pt.
Abstract: Some organizations have been mandating the use modular technologies in order to improve development process performance. We introduce a series of measures for observing task level modularity. These measures are used to explore the relationship between engineering design decisions and the drivers of transaction costs in a distributed software development environment.

P2. *Virtual Customer Environments: Technology-based Forums for Customer Co-innovation and Value Creation.* **Satish Nambisan**, Rensselaer Polytechic Inst., Lally School of Management, 110 & 8th Street, Troy NY 12180, United States, nambis@rpi.edu.
Abstract: Organizations have employed virtual customer environments (VCEs) to facilitate customer-firm partnering for product innovation and value creation. In this presentation, I draw on my research on VCEs conducted over the past four years and focus on the following issues: customers' value creation roles in VCEs, customers' interaction experience in VCEs and its impact on their value co-creation behavior, and strategies for the effective appropriation of the value created externally by customers.

P3. *Impact of Technology on Project and Product Management* **Vish Krishnan**, University of Texas at Austin, Department of Management, Austin TX 78712, United States, Vish.Krishnan@mccombs.utexas.edu, **Indranil Bardhan**, bardhan@utdallas.edu.
Abstract: Technology's impact on improving productivity in new product development has been mixed. While some firms have realized gains, many others have found the benefits to be elusive. We propose that firms focusing on the operational benefits of information technology are associated with greater gains from the deployment of technology . An index is proposed and tested for the operational benefits of technology in project and product management.

MC43 13h30 - 15h00 Session on NPD Research

Chair: **Debasish Mallick**, University of Minnesota, Carlson School of Management, 321-19th Avenue South, Minneapolis MN 55455, United States, Dmallick@csom.umn.edu.

P1. *A Learning Model for New Product Introduction*. **Debasish Mallick**,University of Minnesota, Carlson School of Management, 321-19th Avenue South, Minneapolis MN 55455, United States, Dmallick@csom.umn.edu.
Abstract: We focus on the comparative treatment given to two factors: knowledge and skill in managing new product introduction and capture insights obtained from the technology S-curve and manufacturing learning curve literature into a comprehensive framework. Using optimal control theory, we explore how new product introduction affects competitive advantage and business performance of firms.

P2. *Coordinating New Product Development Projects*. **Thomas Roemer**, MIT Sloan, E53-387, Cambridge MA 02142, United States, troemer@mit.edu.
Abstract: This research addresses challenges arising from inter-project and intra-project planning and scheduling during product development. In particular, to structure the front end activities and to minimize the makespan for development activities, we provide a structured, graph-based approach to forming conceptual design teams. A mathematical model assigns experts to projects and coordinates multiple concurrent projects. Research motivation, setting and application are from the aerospace industry.

P3. *Product Development in a Supply Chain Network.* **Changyue Luo**, University of Minnesota, United States, cluo@csom.umn.edu.
Abstract: This study reflects an effort in extending current literature on Inter-firm collaborative product development from individual dyadic level to a supply chain level. We study the relationship between manufacturer-customer collaboration and manufacturer-customer collaboration, as well as how these

collaborations affect the duration of different CPD stages. The refutable hypotheses are empirically tested using the data of Sixty-two projects.

P4. *Simultaneous Channel and Quality Design for Channel Discriminating Customers.* **Dilip Chhajed**, University of Illinois at Urbana-Champaign, 350 Wohlers Hall, Champaign IL 61820, United States, chhajed@uiuc.edu, **Chongqi Wu**, University of Illinois at Urbana-Champaign, 1206 S. Sixth St., Rm. 339, Champaign IL 61820, United States, cwu5@uiuc.edu.
Abstract: We study simultaneous channel and quality design problem when both direct and indirect channels belong to the manufacturer. The market has two types of customers. Customers' direct channel preference has uniform distribution. Results show that the target customers, prices and quality depend on the channel strategy and the market conditions characterized by the size of the two market segments and the amount of customers who prefer direct channel to indirect channel.

MD43 16h30 - 18h00 Product Development Deep Dive
Chair: **Vish Krishnan**, University of Texas at Austin, Department of Management, Austin TX 78712, United States, Vish.Krishnan@mccombs.utexas.edu.

P1. *Introduction of New Technologies to Competing Industrial Customers.* **Stylianos Kavadias**, College of Management, Georgia Institute of Technology, 800 West Peachtree Street NW, Atlanta GA 30332, United States, stylianos.kavadias@mgt.gatech.edu, **Sanjiv Erat**, sanjiv.erat@mgt.gatech.edu.
Abstract: Motivated by several examples from industry, we consider a technology supplier that develops and introduces an innovation to a market of OEMs. The employed technology impacts the end-product quality, and the end-product market demand is allocated based on the quality. T We examine the impact of downstream competition on technology introduction and pricing strategies when multiple technologies are introduced sequentially.

P2. *A Product Architecture-Based Solution to Rapid Sequential Innovation.* **Vish Krishnan**, University of Texas at Austin, Department of Management, Austin TX 78712, United States, Vish.Krishnan@mccombs.utexas.edu, **Karthik Ramachandran**, karthikr@mail.utexas.edu.
Abstract: Managing rapid sequential innovation presents challenges to profit-maximizing firms because the seller's choices make buyers reconsider their purchase timing, with some customers possibly regretting their purchase timing decisions at a later time. We find that by following an architectural approach called Modular Upgradability and by localizing performance improvements, a firm can maximize profits without causing customer regret.

Tuesday, October 26th

TA43 08h00 - 09h30 Supply Chains for Product Design
Chair: **Glen Schmidt**, Georgetown University, McDonough School of Business, Washington DC 20057, United States, schmidtg@georgetown.edu, Co-Chair: **Sezer Ulku**, Georgetown University, United States, SU8@georgetown.edu.

P1. *A Framework for Hierarchical Product Development Planning.* **Nitin Joglekar**, Boston University, 595 Commonwealth Avenue, Boston MA 02215, United States, joglekar@bu.edu, **Edward Anderson**, Associate Professor, University of Texas, 1 University Station B6300, Austin TX 78733, USA, Edward.Anderson@mccombs.utexas.edu.
Abstract: Product development has shifted towards distributed and decentralized levels of management across the supply chain. To coordinate these networks, we propose a hierarchical product development planning (HPDP) framework using integrated stochastic programming models for portfolio selection, development resource allocation, and project execution in order to maximize firm profit.

P2. *Diffusion of Innovations Under High-End and Low-End Encroachment.* **Glen Schmidt**, Georgetown University, McDonough School of Business, Washington DC 20057, United States, schmidtg@georgetown.edu, **Cheryl Druehl**, University of Maryland, Decision and Information Technology, Robert H. Smith School of Business, College Park MD 20742, United States, cdruehl@rhsmith.umd.edu.
Abstract: Diffusion theory has typically focused on communication effects. We show how progressive product improvements and/or cost reduction might also impact diffusion. In our model diffusion progress as either high-end encroachment (starting with high-end customers), or low-end encroachment of the fringe-market or detached-market type. We fit our model to data for microprocessors, disk drives, and digital cameras, and discuss how our encroachment types map to disruptive and sustaining technologies.

P3. *Matching Product Architecture with Supply Chain Configuration.* **Sezer Ulku**, Georgetown University, United States, SU8@georgetown.edu, **Glen Schmidt**, Georgetown University, McDonough School of Business, Washington DC 20057, United States, schmidtg@georgetown.edu.
Abstract: While a modular product may reduce the need for collaboration and lead to more product variety, it may sacrifice performance and cost as compared to an integral design. We investigate whether a product should be more or less modular as a function of the degree of outsourcing, the buyer/supplier contract structure, the firms' capabilities, and inter-firm coordination costs.

TB43 10h00 - 11h30 Technology-NPD interfaces
Technology-NPD interfaces
Chair: **Andrea Masini**, London Business School, Regent's Park, London NW1 4SA, United Kingdom, amasini@london.edu.

P1. *From EDI to B2B e-Procurement Systems: Motivations behind its Adoption.* Tomoaki Shimada, INSEAD, Boulevard de Constance, Fontainebleau 77305, France, tomoaki.shimada@insead.edu.
Abstract: In the electrical and electronics industry, a buyer (manufacturer) generally has power over its suppliers (raw material/component suppliers). Thus, the buyer normally initiates the adoption of inter-organizational systems, and some of its suppliers follow it. We empirically investigate motivations behind its adoption from the viewpoints of suppliers in Southeast Asia.

P2. *The Impact of Outsourcing on Timing of Entry into Uncertain Markets.* **Sezer Ulku**, Georgetown University, United States, SU8@georgetown.edu, **Beril Toktay**, INSEAD, Boulevard de Constance, Fontainebleau 77305, France, beril.toktay@insead.edu, **Enver Yucesan**, INSEAD, 33 Bvd de Constance, Fontainebleau 77305, France, enver.yucesan@insead.edu.
Abstract: A new process technology becomes available, enabling the introduction of new products. The market potential that can be captured by the firms is decreasing with delays in product

launch. However, the risks associated with early entry are high due to the low precision of demand forecasts. In this setting, we examine the impact of vertical organization on firm performance. Furthermore, we examine whether entry can be accelerated through risk sharing contracts.

P3. *Technical Communication in Complex Product Development: A Longitudinal Study.* **Manuel Sosa**, INSEAD, Boulevard de Constance, Fontainebleau 77305, France, manuel.sosa@insead.edu.
Abstract: We present our approach to empirically study the dynamics of project and organizational structures in complex systems. We analyze how planned interfaces between design teams map onto email communications during the concept development of a new airplane. We discuss implications for organization design and project management.

P4. *The Relationship Between IT Agility and NPD Effectiveness: An Empirical Investigation.* **Andrea Masini**, London Business School, Regent's Park, London NW1 4SA, United Kingdom, amasini@london.edu.
Abstract: IT agility is increasingly regarded as a key enabler of operational effectiveness. This paper has three main objectives: to provide a better characterization of the construct, to develop process-specific measures to assess agility for manufacturing and service firms and to examine the extent to which it affects NPD activities.

TC43 13h30 - 15h00 NPD Education-Preparing Students for Leadership in a cross-functional environment

Chair: **Debasish Mallick**, University of Minnesota, Carlson School of Management, 321-19th Avenue South, Minneapolis MN 55455, United States, Dmallick@csom.umn.edu.

P1. *Cross-Functional Collaboration and Leadership: Is That What we are Really Teaching?* **Sara L. Beckman**, University of California - Berkeley, Haas School of Business, S545 Student Services Building, Berkeley CA 94720, United States, beckman@haas.berkeley.edu.
Abstract: Many of us have taught courses on new product development with cross-functional development teams as the experiential learning base. This approach has worked well, and we have learned a lot about executing the course, but it seems appropriate to ask whether or not we are achieving all of the objectives the course set out to achieve, and whether or not there are more efficient or effective means of teaching NPD, or other application areas in which to teach innovation through collaboration.

P2. Product Design and Development: A Pilot Program at MIT and Helsinki University of Technology (HUT). **Katja Holtta**, MIT/HUT, E60-426, Cambridge MA 02139, United States, holtta@mit.edu, **Thomas Roemer**, MIT Sloan, E53-387, Cambridge MA 02142, United States, troemer@mit.edu.
Abstract: Dispersed product development is becoming ever more prevalent across industries. To better prepare students for this challenge, MIT and HUT have started a pilot program to jointly teach product development. During the course of the class, students from both universities jointly develop a new product, across borders, cultures, and disciplines. We report on the structure of and lessons learned from this pilot program.

P3. *Managing Innovation and Product Development*. **Alan MacCormack**, Harvard University, Morgan Hall Terrace, Soldiers Field Road, Boston MA 02163, United States, amaccormack@hbs.edu.
Abstract: I will describe the teaching objectives, pedagogical methods and course materials used in a second year elective on managing innovation and product development. The course adopts a specific point of view: that the main challenge in mastering innovation lies in addressing the various uncertainties that impact the innovation process. I will describe the frameworks I use to address these issues in the course.

P4. *Preparing Students for Leadership in Technology Management at University of Minnesota*. **Debasish Mallick**, University of Minnesota, Carlson School of Management, 321-19th Avenue South, Minneapolis MN 55455, United States, Dmallick@csom.umn.edu.
Abstract: We describe an experiential approach to teaching new product design and business development to business and engineering students. The course, taught by an interdisciplinary faculty from the management, engineering, and medical school, is an innovative university-industry partnership for preparing students for leadership in managing technology in a cross functional environment.

P5. *Using Real-World Venture Ideas to Drive a Class: Lessons Learned.* **Larry Meile**, Boston College, O,I&S Mgmt., CSOM - Fulton Hall, 140 Commonwealth Ave, Chestnut Hill MA 02467, United States, meile@bc.edu, **Gregory Stoller**, Boston College, O,I&S Mgmt. CSOM - Fulton Hall, 140 Commonwealth Ave, Chestnut Hill MA 02467, United States, GSTOLLE96I@aol.com.
Abstract: Three years ago, a firm offered to provide product ideas that graduate student teams could take and develop into products. Although the resulting New Product Development course did not achieve its goal of bringing a successful product to market, the concept of using outside business ideas as the mechanism to deliver course content was proven. This paper will describe the way these products have been incorporated into the curriculum and some of the lessons learned when doing so.

TD43 16h30 - 18h00 Managing New Product Portfolios

Chair: **Stylianos Kavadias**, Georgia Institute of Technology, 800 West Peachtree, Atlanta GA 30332, United States, stylianos.kavadias@dupree.gatech.edu.

P1. *Product Portfolio Strategy and the Industry Lifecycle*. **Karthik Balasubramaniam**, University of Pennsylvania, Suite 500 JMHH, 3730 Walnut St, Philadelphia PA 19104, United States, karthikb@seas.upenn.edu, **Taylor Randall**, University of Utah , David Eccles School of Business, 1654 E. Central Campus Drive, Rm 108, Salt Lake City UT 84112, United States, acttr@business.utah.edu, **Karl Ulrich**, The Wharton School, Suite 500 JMHH, 3730 Walnut St., Philadelphia PA 19104, United States, ulrich@wharton.upenn.edu.
Abstract: Not available.

P2. *Strategic NPD Portfolio Management in Complex Environments.* **Raul Chao**, Georgia Institute of Technology, 800 West Peachtree Street, Atlanta GA 30332, United States, raul.chao@mgt.gatech.edu, **Stylianos Kavadias**, College of Management, Georgia Institute of Technology, 800 West Peachtree Street NW, Atlanta GA 30332, United States, stylianos.kavadias@mgt.gatech.edu.
Abstract: We analyze how various NPD portfolio strategies succeed in complex environments. At the strategic level, managers exhibit bounded rationality and must search for the best outcome in a complex and unknown landscape. In our setting, search takes place through a mix of incremental and revolutionary projects in a portfolio. Our results indicate that optimal balance in the NPD portfolio is dependent on the

"environmental complexity" and on the "industry lifecycle".

P3. *Optimal Project Selection and Budget Allocation for R&D Portfolios.* **Leonardo Santiago**, Boston University, Manufacturing Eng. Dept., 15 Saint Mary's Street, Brookline MA 02446, United States, leonardo@bu.edu, **Pirooz Vakili**, Boston University, Manufacturing Eng. Dept, 15 Saint Mary's Street, Brookline MA 02446, United States, vakili@bu.edu. Abstract: We introduce a novel formulation of the problem of project selection and budget allocation for R&D portfolios. A two-stage and interdependent optimization problem that links the R&D development stage with that of commercialization is considered and the solution methodology will be presented.

P4. *Product Portfolio and Capacity Management.* **Kristin Fridgeirsdottir**, London Business School, Regent Park, London NW1 4SA, United States, kristin@london.edu, **Ram Akella**, Jack Baskin School of Engineering, University of California Santa Cruz, 131 Baskin Engineering Building, Santa Cruz CA 95064, United States, akella@soe.ucsc.edu. Abstract: We present a methodology for product portfolio management at a strategic level. We first determine the optimal portfolio of products characterized by potential profit, delay sensitivity and resource requirement. In addition, we determine the optimal capacity level. Our findings are based on several structural results, which should also be interesting in other settings.

Calls for Papers

Special Issue of **IEEE Transactions on Engineering Management** on Mass Customization Manufacturing Systems, edited by Thorsten Blecker and Gerhard Friedrich, Deadline for submission: **October 31, 2004**

Customization is fundamentally not a new feature in industrial markets. However, mass customization, as an emerging business strategy, aims at associating both the advantages resulting from the satisfac-tion of individual customers' needs and the benefits of mass production efficiency. Mass customization has been made possible owing to the advancements achieved in the fields of manufacturing systems and modular product architectures. However, the main challenge that mass customization has to face, concerns the design of manufacturing systems that are capable of producing customized goods for high volume markets with respect to cost efficiencies, as well as quality and time considerations.

This special issue of IEEE-TEM is intended to discuss the state of the art, as well as actual research results in mass customization manufacturing systems. Practitioners and academic researchers are invited to submit papers presenting their findings and results. Due to the complex and interdisciplinary disposition of the topics, we expect contributions from management, economics, industrial engineering and information technology.

Topics of interests include, but are not limited to:
- Mass Customization Product Design and Configuration
- Product Family Management
- Optimization and Management of Modular Product Architectures
- Flexible Manufacturing Systems
- Plant Layout
- Process Planning and Scheduling
- Manufacturing Systems Engineering for Variant Rich Processes
- Custom Order Control in Mass Customization Manufacturing Systems
- Mass Customization and Supply Chain Management
- Definition of the Degree of Coupling/Decoupling
- Information System Infrastructure and Integration
- Key Performance Indicators for Variety Management
- Impacts on Intrafirm and Interfirm processes

Dr. Thorsten Blecker, University of Klagenfurt, College of Business Administration, Department of Production/Operations Management, Business Logistics and Environmental Management, Universitaetsstr. 65 - 67 A-9020 Klagenfurt, Austria, blecker@ieee.org
Dr. Gerhard Friedrich, University of Klagenfurt, College of Informatics, Department for Computer Science and Manufacturing, Universitaetsstr. 65 - 67, A-9020 Klagenfurt, Austria, gerhard.friedrich@uni-klu.ac.at

POM Special Issue on the Management of Technology, Submission Deadline **November 19, 2004**

New technologies have dramatically impacted product and service attributes (product technology), production and service creation processes (process technology), delivery channels for consumer goods and services, and the structure of extended supply chains (information technology). Managing both the creation and application of rapidly changing technologies is therefore a critical challenge. The management of technology domain focuses on the development, planning, implementation, and assessment of technological capabilities to shape and accomplish the strategic and operational objectives of an organization or a network of organizations.

We are interested in manuscripts that employ rigorous research methods including optimization, simulation, and empirical approaches. Reflecting the multidisciplinary nature of the management of technology, beyond a basic relevance to operations management, papers may also relate to other domains including economics, information systems, organizational theory, and strategy.

The topics of particular interest in this special issue are:

- Knowledge management
- Technology innovation, diffusion and transfer
- Technology strategy
- Justification of new technology
- Performance measurement of new technology
- Managing technology development and technology change
- Implementation of new technology
- Managing technology at the firm boundary
- Integration of engineering and management
- Integration of product and process technology

Guidelines for submission to POM are available at http://www.poms.org/POMWebsite/Journal.html. Electronic submission is required. The manuscripts should be e-mailed to Professor Cheryl Gaimon, Georgia Institute of Technology, at Cheryl.gaimon@mgt.gatech.edu.

Special Issue - **Journal of Engineering and Technology Management (JET-M)** Research on Management of Technology and Innovation in a Global Context

Guest Editors: Larry Gales, Ann Welsh, and BJ Zirger, University of Cincinnati

The Journal of Engineering and Technology Management is pleased to announce a call for papers for a Special Issue focusing on research directed at furthering understanding of the development, implementation, management and use of technology in a global environment. Although globalization has become a fact of life in business and has been a recurrent theme in many areas of business research, the field of engineering and technology management has not systematically addressed globalization issues as they relate to the development, implementation, management and use of technology. Nearly every business, no matter the size or scope, is in some way affected by globalization. In areas of technology management, the impact can come from off-shore sourcing of supplies and components, cross-national partnerships or joint ventures for research, development and production of new technology, multi-national development teams, new markets with new technology needs, constraints and expectations, and myriad other areas.

The focus of this Special Issue is on both conceptual and empirical scholarly research that explicitly addresses the problems presented by globalization to technology development, implementation, management and use. We especially encourage qualitative or quantitative empirical research. Submissions should strive to elucidate

fundamental economic, cultural, and political issues that have impact on technology development, implementation, management and use. It is not sufficient to merely use a multi-nation sample. The following questions are meant to be illustrative of the types of questions this Special Issue is intended to address:

-How do national / cultural differences affect the use of technology to solve problems?
-Are there cultural differences in preferred innovation processes? If there are differences, what is the impact?
-How do macro-economic differences affect country-specific innovation policies and practices and / or use of technology?
-Are there specific organizational features that facilitate or inhibit the cross-national transfer of knowledge and technology?
-How do cultural and language differences affect the functioning of cross-national innovation teams? Are there best practices for cross-national innovation teams?
-Is there a useful contingency model for the development of common technology versus country or region – specific technology (either products or processes)?
-What is the role of organizational learning in the management and diffusion of technology in a global context?

Research should be grounded in theory and principles from economics, organizational theory and behavior, strategic management, social psychology, technology / innovation management, or other relevant disciplines.

Submissions: In order to be considered for publication in this Special Issue, manuscripts must be received by **January 15, 2005**. Please refer to the JET-M Guide for Authors printed in the March Issue of each volume for style and form guidelines in preparation of the manuscript (or check: www.elsevier.com/locate/jengtecman). All papers will be evaluated according to the JET-M standard double blind review process. Please submit two electronic (PDF and Microsoft Word) versions to any one of the guest-editors as well as mail one hard copy of the manuscript. All inquiries and questions concerning the Special Issue should also be directed to Dr. Larry Gales (lawrence.gales@uc.edu), Dr. Ann Welsh (ann.welsh@uc.edu), or Dr. BJ Zirger (bj.zirger@uc.edu).

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deserved recognition (see page 3 for the award citation)

The Technology Management Section is renewing itself at the international level. Thanks to the efforts of Elicia Maine, our Cluster Chair for the joint INFORMS/CORS spring conference in Banff, Canada, we put together 5 excellent sessions. The topics covered included: Design Innovation, Technology Evolution, Alliance Formation, Knowledge Spillovers, Technology Clusters, Bioentrepreneurship Education and Technology Entrepreneurship. Special thanks to Professor James Utterback of MIT for chairing and organizing the BioEntrepreneurship Education session, which consisted of best practice information and panel discussion from the chairs of the biotech & biomedical MBA programs at MIT, the University of Cambridge, Stanford University, Simon Fraser University, the University of Western Ontario, and the University of Saskatchewan.

After Ken Hung came on board as TMS Information Officer last year, we focused our efforts to improve our web site (see http://tms.section.informs.org) that we believe offers a rich selection of user-friendly menus. Please take a moment to check out your web site to see whether you find it useful or not – we welcome any suggestions. This year, we covered another milestone in completing our transition to a fully electronic publication of our newsletter, saving several hundred dollars in printing and mailing costs — please give your thanks to Ken for his hard work and prompt actions.

Finally, I would like to thank our members for the continued support that I enjoyed over the years, and ask for your more active participation in the Section's future activities. Please offer us your advice as to how we can serve you better. I look forward to seeing you in Denver, an exciting downtown and home of the *Nuggets*!