

TECHNOLOGY MANAGEMENT SECTION

<http://tms.section.informs.org>

Published by TMS for its fall academic meeting

From the Chair's Desk
 — *Janice Carrillo*

Greetings Esteemed TMS Members!

Last year, my predecessor David Moore led an effort to analyze membership data to identify key trends relevant to our community. In the spirit of his efforts, we decided to send out another survey to TMS members last summer which asked them to respond to specific questions. We thank the 28 people who responded, as we now have a better understanding of some of your interests and concerns. In this article, I will summarize the key results of the survey and provide the details in the appendix.

TMS Constituency:

As for the demographics of the TMS survey respondents, the majority are affiliated with the Operations area, with many also from the Engineering, Strategy, and Information Systems domains. In addition to INFORMS, the other conferences that our members attend include: POMS, Strategy, PICMET and AoM. Similar to the survey results reported last year, most of our members hold academic (as opposed to industry related) positions.

TMS Activities:

Several questions on the survey inquired about the different activities that TMS provides and your perceived value of these activities. The response to this question was that members value the quality of the sessions, the networking and/or social events, the doctoral competition and the distinguished speaker awards. Thanks to the planning efforts of many of the TMS officers, this year we have planned two full tracks of sessions which address both TMS and NPD related topics. In the past years, NPD has been run as a separate invited track which was independent of TMS. However, since the INFORMS organizing committee for the Austin conference had not made plans for an invited NPD track, we decided to incorporate the track on this important topic as part of the sponsored sessions for TMS. Thanks to

Leonardo Santiago for volunteering to organize the NPD related sessions. We will continue to plan high quality sessions in the future, and welcome input concerning ideas for future sessions. In addition, there were several good suggestions concerning potential candidates for the "Distinguished Speaker" for next year.

We also asked the respondents to give suggestions for future TMS activities. One particular theme that emerged was to "strengthen the cohesion" of our small society by enhancing communications with members throughout the year. Other suggestions included offering more frequent newsletters,

(Continued on page 2)



**AUSTIN
 BUSINESS MEETING**

The Technology Management Section business meeting will be held on **Monday, November 8, at 6:00 pm**. Please join the TMS officers and other distinguished colleagues for a wine and cheese reception after the meeting.



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increasing TMS awareness, “Make more people on the planet aware of TMS,” and having a “TMS Best Paper” competition. These are future opportunities for us to enhance our TMS community and I hope to initiate a dialog about these at the business meeting this fall.

Opportunities for the TMS Community:

One of the most thought provoking questions asked was, “What is the greatest issue/problem/opportunity in the area of technology management that you see in your work or in general?” Several of these responses focused on opportunities for future research in particular areas within the domain of Technology Management. The opportunity receiving the greatest attention here was that of sustainability and the development of green technologies. Note that we have two sessions this year which are dedicated to sustainability and technology and/or NPD issues. There have also been several calls for papers broadcasted this year for special issues dedicated to this topic. Another important theme identified in the responses to this question concerns the importance of knowledge management, a topic which has a rich tradition within TMS. There were several other topics of opportunity identified including those relevant to: risk, complexity, convergence, product concepts, supply chain and services.

Many of the comments from this question identified several issues associated with the administrative and conceptual side of TMS. One respondent questioned whether or not the term “Technology Management” adequately describes our field and suggests that “Technology, Innovation, and Entrepreneurship” might be a better label. Two other respondents commented that the field is “very broad” and that it is “difficult to position given that few schools have TM departments.” One respondent seems angry with the review process for TM related papers in that, “Editors and reviewers are very closed minded.” Finally, one respondent is concerned about the lack of theory building in our area and states that, “The greatest problem is that TM is tempted to run to easy solutions instead of developing the theory of TM, the quantitative part of Management.”

In my opinion, while the broad nature of TM can be problematic, I think that it is also a unique opportunity to make a distinct contribution to a field that is interdisciplinary by nature. Indeed, “theory building” in TM can be difficult. But, if we persist as a community to recognize and support high quality research in this area, I believe that we can

overcome some of these issues by (1) providing a platform for TM researchers to present their new ideas, (2) including editors and reviewers willing to dedicate their time for a rigorous review process, and (3) publicizing these results to the broader research and business community.

On the Lighter Side:

To stimulate further discussion on more TMS related topics, I asked members to report on the TM related books that they are reading. Books which received more than one mention include a classic book on Innovation by James Utterback, and more recently published, “Innovation Tournaments,” by Christian Terwiesch and Karl Ulrich. Interestingly enough, somebody also identified a Hebrew book on decision making as their favorite book related to technology management. This TMS member reminds us that inspiration for TM related issues can often times come from outside our traditional domain.

And finally, an unknown but equally interesting fact about the TMS survey respondents is that the majority (58%) prefers the color blue. Who knew you liked blue?

I am looking forward to seeing you in Austin.

Best Regards,

Janice

See the survey data starting on page 6.

Announcement:

If you are interested in running for TMS Office, please contact Janice Carrillo at janice.carrillo@warrington.ufl.edu.



Michael L. Tushman
Harvard Business School

2010 Distinguished Speaker
INFORMS
Technology Management Section

— David Moore

It is my great pleasure to announce the INFORMS **TMS 2010 Distinguished Speaker, Michael L. Tushman**. Michael Tushman is the Paul R. Lawrence MBA Class of 1942 Professor of Business Administration, Chair of the Advanced Management Program, and Co-Chair of the management track of the DBA program at HBS. He served on the faculty at the Columbia University Graduate School of Business (1976-1998), and as the Phillip Hettleman Professor of Business from 1989-1998. He served as a visiting professor at MIT (1982, 1996) and at INSEAD (1995-1998). He holds numerous degrees, including B.S.E.E from Northeastern University, M.S. from Cornell University, Ph.D. from the Sloan School of Management (MIT), and an honorary doctorate from the University of Geneva (awarded during 2008).

Professor Tushman is internationally recognized for his probing research into relationships between technological change, executive leadership and organizational adaptation. His research on ambidextrous organizational design illuminates organizational and senior team characteristics enabling firms to both exploit current capabilities and explore into new

spaces. His distinguished speaker presentation will tie together many different facets from his body of research.

Michael Tushman has published widely, authoring and co-authoring over 67 articles appearing in more than 27 scholarly journals including *Organizational Science*, *Management Science*, *Strategic Management Journal*, *IEEE Transactions on Engineering Management*, *Journal of Operations Management*, and the *Academy of Management (Journal, Review, Executive, Learning and Education, and Annals)*. His publications have won numerous awards, including the 2010 Accenture Award (with C. O'Reilly and B. Harreld), the AoM 2004 Best Paper Award (with M. Benner) and 1998 Stefan Schrader Award (with P. Murmann), the 1997 Anderson Consulting Award (with C. O'Reilly), and the 1986 Pacific Telesis Award (with W. Newman and E. Romanelli).

Professor Tushman has authored or co-authored more than nine books, some with multiple editions, including *Managing Strategic Innovation and Change: A Collection of Readings* (with P. Anderson), Oxford University Press (1997, 2004), and *Winning Through Innovation: A Practical Guide to Leading Organizational Change and Renewal* (with C. O'Reilly), Harvard Business School Press (1997, 2002).

Tushman has authored more than 30 HBS case studies, not to mention numerous teaching notes and supplements. He won the first W. H. Newman Award for Excellence and Innovation in the Classroom at Columbia University, and received the 2005 Lecturer of the Year Award at CHAMPS, Chalmers University of Technology (Sweden).

Professor Tushman actively consults with industry leaders and engages in executive education around the world. His clients have included: Hewlett-Packard, Agilent, GKN, Roche, Novartis, Pfizer, The World Bank, General Electric, BOC, Merck, Ericsson, Bristol-Meyers Squibb, Xerox, GTE, ALCOA, Tele Finland, Anglo-American, IBM, Nestle, USPO, Corning, and AT&T. He has worked with executive education programs at Cal Tech, Berkeley, Nomura School of Business (Tokyo), Stanford, Chalmers University, INSEAD, IMI (Geneva), Wharton, the Australian Institute of Management, and the American Electronics Association.

In his current research, Professor Tushman continues investigating relationships between technological change, senior executive teams, and organiza-

tional evolution. He and his doctoral students are exploring how different organizational architectures affect a firm's ability to explore as well as exploit, and also how dominant designs, or industry standards, affect organizational fates and industry dynamics. Many existing resolutions to the exploitation/exploration paradox rely on isolating exploration and exploitation in separate organizational units. Tushman and his students have proposed a model of innovative activity as hierarchically nested cycles of exploration and exploitation. In this model, exploration and exploitation compliment and feed into each other continuously through control and perturbation. Highly disciplined organizations may sustain the exploration-exploitation cycle by deliberately perturbing their own processes, thereby shaking organizations out of established processes and creating opportunities for exploration.

Tushman also has a new research project underway to study the consequences of social networks, an important form of informal linkage across business units, within organizations. Most research on coordination between product divisions has focused on the role of formal structures: hierarchy and cross-divisional teams or task forces. Little or no research to date has examined the roles of these formal structures in the context of informal networks of interpersonal communication. This new study aims to fill that gap by studying the interaction patterns among tens of thousands of IBM employees and examining their effect on inter-divisional coordination. Email data, HR data and calendar data facilitate this study.

Professor Tushman, in collaboration with Charles O'Reilly (Stanford), is currently exploring the impact of different executive education program designs on managerial learning and actions, organizational outcomes, as well as faculty research.

Please join the crowd on **Monday, 08 November**, as we welcome Professor Tushman, enjoy and appreciate his presentation, and honor him as the 2010 TMS Distinguished Speaker. The presentation begins at 16:30 (please see the conference program for location). To compliment the presentation, Professor Tushman's book, *Winning Through Innovation: A Practical Guide to Leading Organizational Change and Renewal* (with C. O'Reilly), will be available in the Speaker's Bookstore at the conference.

Anant Mishra Wins 2010 TMS Doctoral Dissertation Award

Bradley R. Staats is the Runner-Up

- Congratulations! -

By Juliana Hsuan

This year we had a tough competition. We had an all time high of 19 submissions! The theses applied different research methodologies and covered a wide range of current topics on TMS including new product development, design, innovation, organization, supply chain management, knowledge management, marketing, technology policy, services, and entrepreneurship. It is exciting to see that TMS research is expanding into other disciplines. This is wonderful for our community.

I would like to extend my warmest thanks to the judges for their time and effort in evaluating the dissertations for determining the winner and runner-up: Chris Voss from London Business School, Erica Fuchs from Carnegie Mellon University, Brian Fifarek from Eaton Innovation Center, and Philipp Tuertscher from Vienna University of Economics and Business Administration.

The winner of TMS 2010 TMS Doctoral Dissertation Award is Anant Mishra for his dissertation entitled "Essays on Global Sourcing of Technology Projects." Anant completed his studies at the Carlson School of Management, University of Minnesota during August 2009, and his dissertation chair was Professor Kingshuk K. Sinha. Anant currently is an



Anant Mishra
George Mason
University School of
Management

Assistant Professor in the Information Systems and Operations Management Department at the School of Management, George Mason University. His current research interests derive from contemporary real world issues in the areas of new product development and globally distributed technology projects. In particular, his ongoing research efforts are directed toward addressing some the key challenges that have emerged from the increasing globalization of information technology and product development projects. One set of challenges relates to the choice of the type of project organization (e.g., Insourcing, Outsourcing, Offshoring, and Offshore-Outsourcing) that is appropriate for a particular type of project work and scope. The other set of challenges relates to the identification of actionable strategies for improving project performance, given the type of project organization. To address these challenges, Anant carries out empirical inquiries using a comprehensive, multi-country, multi-industry dataset of information technology and product development projects.

The Runner-Up of TMS 2010 TMS Doctoral Dissertation Award is Bradley R. Staats for his dissertation titled "Microfoundations of Organizational Capabilities: Empirical Evidence from Indian Software Services." Bradley completed his studies at Harvard Business School during June 2009, and his dissertation chairs were Professor Gary Pisano and Professor David Upton. Bradley is currently an Assistant Professor of Operations, Technology and Innovation Management (OTIM), at Kenan-Flagler Business School, University of North Carolina, where he teaches MBA electives in Operations Strategy and Project Management. His current research examines how globally distributed, project-based



Bradley Staats
University of
North Carolina,
Chapel Hill,
Kenan-Flagler
Business School

organizations build and improve effective operational capabilities. His work primarily focuses on how to address the coordination problems that arise when individuals work in teams within and across organizations. He is using fieldwork in settings such as Indian software services, consulting, healthcare services, and financial services as well as laboratory based experiments to examine these questions.

Come to listen to their presentations on Tuesday, 08:00 – 09:30.

Congratulations to Anant and Bradley for their accomplishments!

See previous winners at <http://tms.section.informs.org/> under Awards.



TMS OFFICERS 2010

Chair:	Janice Carrillo (janice.carrillo@warrington.ufl.edu)
Chair-Elect:	Juliana Hsuan (jh.om@cbs.dk)
Vice Chair Programs:	Nile Hatch (nile@byu.edu)
Vice Chair Membership & Communication:	Cheryl Druehl (cdruehl@gmu.edu)
Chief Information Officer:	Ken Hung (khung@suffolk.edu)
Past Chair:	David Moore (dmoore@klicnet.org)

If you are interested in being an officer or getting involved in some other way, please let us know.

TMS 2010 Survey Data

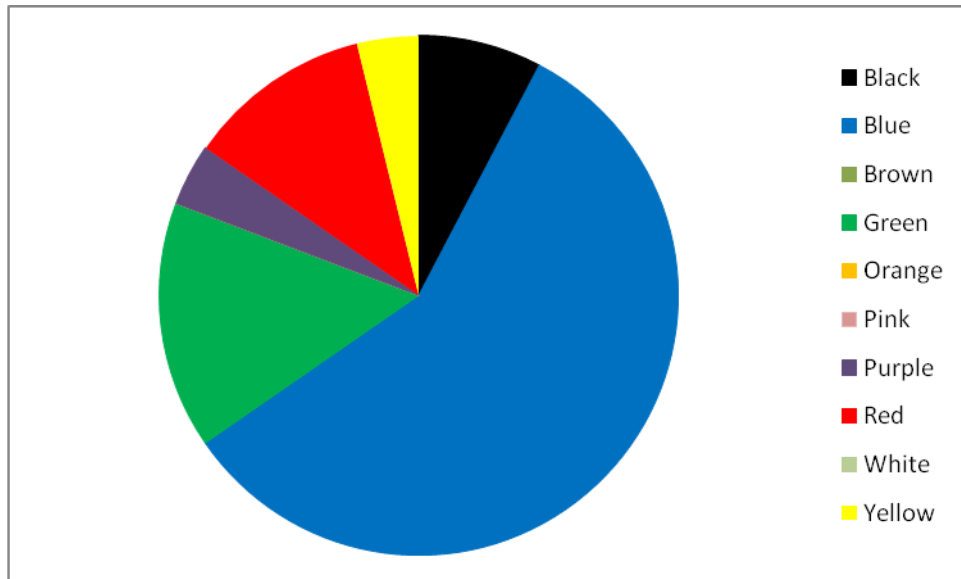
If you have further suggestions or comments, please let us know!
We appreciate your interest and response.

Question 1: What is your favorite color?

Answered: 26

Skipped: 2

	Responses	Percentage
Black	2	7.7%
Blue	15	57.7%
Brown	0	
Green	4	15.4%
Orange	0	
Pink	0	
Purple	1	3.8%
Red	3	11.5%
White	0	
Yellow	1	3.8%

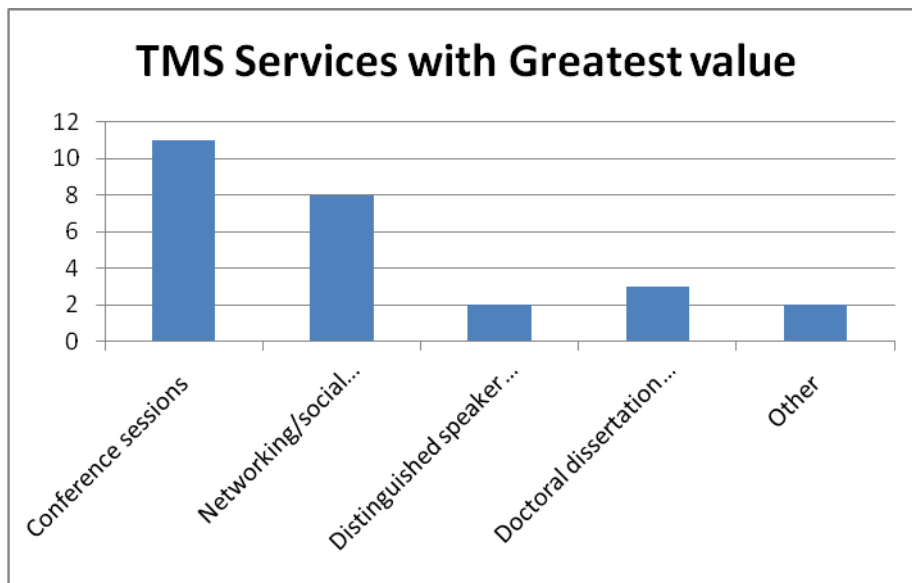


Question 2: Which services associated with the Technology Management Section (TMS) give you the most value? (Choose as many as you want)

	No value	Some value	Average value	High value	Greatest value	Rating Average	Response Count
Conference sessions	0.0% (0)	3.7% (1)	14.8% (4)	40.7% (11)	40.7% (11)	4.19	27
Networking/social events	3.7% (1)	7.4% (2)	37.0% (10)	22.2% (6)	29.6% (8)	3.67	27
Distinguished speaker awards	7.4% (2)	25.9% (7)	29.6% (8)	29.6% (8)	7.4% (2)	3.04	27
Doctoral dissertation awards	7.4% (2)	22.2% (6)	29.6% (8)	29.6% (8)	11.1% (3)	3.15	27
Other:							2

Quality of Papers

Distinguished speaker presentations



Question 3: Do you have any suggestions for ways to improve TMS?

1. Special journals, developing forum on TM education.
2. Strengthen its cohesion.
3. Maybe a monthly or bimonthly newsletter besides the newsletter that is sent out before the conference to keep members engaged all year.
4. Make more people on the planet aware of TMS. Please talk to me on how to do that.
5. Sponsor more international conferences related with tech mgmt.
6. Best paper award?
7. Keep up the good work and continue attracting talented and committed officers. Enrich your program offerings. Help INFORMS select better conference locations/cities.
8. Low profile of TMS. I don't receive sufficient content to feel connected with TMS.
9. Promote more awards for researchers, such as Best Published paper award or Best Student Paper competition. That will attract more attentions from our community.

10. Conduct a survey.
11. Sponsor more sessions so that more TMS members will get a chance to give talks.

Question 4: Do you have any suggestions for Distinguished Speakers?

1. Clayton Christensen, K. Eisenhardt
2. David Teece, Richard Nelson, David Mowery
3. Someone famous that lives in Austin
4. Jim Utterback, Carliss Baldwin
5. Use a more rigorous process to select one instead of relying on the contacts of organizers to pick their favorite one
6. Roger Bohn
7. Jim Utterback, Charles Fine, Kathleen Eisenhardt, Martin Starr, Sidney Winter
8. Karl Ulrich

Question 5: Have you or any of your colleagues rescinded your membership in TMS? If so, please explain the primary reasons.

1. *11 'no' responses*
2. *3 answers below*
 - could not attend too many conferences as the university budget is limited
 - I am considering - no local activities
 - INFORMS is not their primary conference, especially for those engaged in qualitative research

Question 6: What is your favorite book related to technology management that you have read recently?

1. Hebrew book on decision making
2. Clark & Wheelwright; Eppinger & Ulrich; Jolly; Utterback
3. Managing Innovation by James Utterback
4. I am now a tenured professor. I have no time to read books. Are you kidding?
5. "Strategic Management of Technological Innovation, 2 edition", by Melissa A Schilling - a classic, I re-read annually
6. Technology Integration, Pursuing the Competitive Edge
7. Ulrich and Terwiesch
8. Design Rules, The Power of Modularity
9. Innovation Tournaments (2 responses)

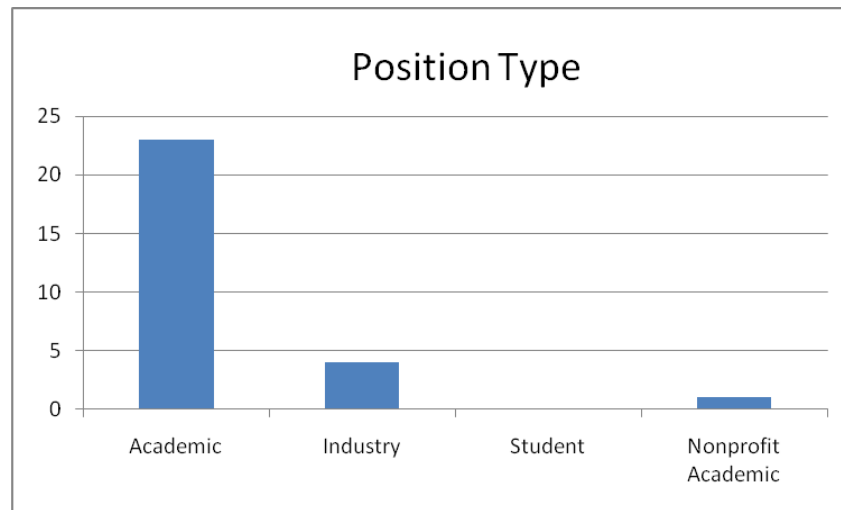
Question 7: What is the greatest issue/problem/opportunity in the area of technology management that you see in your work or in general?

1. The greatest problem is that TM is tempted to run to easy solutions instead of developing the theory of TM, the quantitative part of Management.
2. Sustainability (both environmental and social)
3. Developments in clean technology area
4. Managing risk and uncertainty in new technology adoption
5. The field is very broad. What are its boundaries?
6. Convergence tech mgmt
7. Does "technology management" still adequately describe what most of us are researching, or might "technology, innovation, entrepreneurship" be a better label?
8. Opportunity – clean tech
9. It is full of challenges and is central to the development of our knowledge based society.
10. Development of product concepts and valuing them

11. Complexity of technology is increasing and so is the distance between the understanding and domains of "technologist" and "manager"
12. very hard to position: few school has dedicated TM department, we need to learn how to talk with people in OM, OR even Marketing.
13. Understanding the role knowledge plays (in all forms) and the dynamics of individual and organizational learning, so as to effectively harness the power of knowledge at all levels of management.
14. Sustainability
15. The management of technology with respect to supply chain and services
16. Editors and reviewers are sometimes very closed minded. I would like to see editors and reviewers have an open mind with regards to new methodologies/ideas.

Question 8: What type of position do you currently hold?

	Response Count	Response %
Academic	23	82.10%
Industry	4	14.30%
Student	0	0%
Nonprofit Academic	1	3.60%



Question 9: Which discipline are you most closely affiliated with?

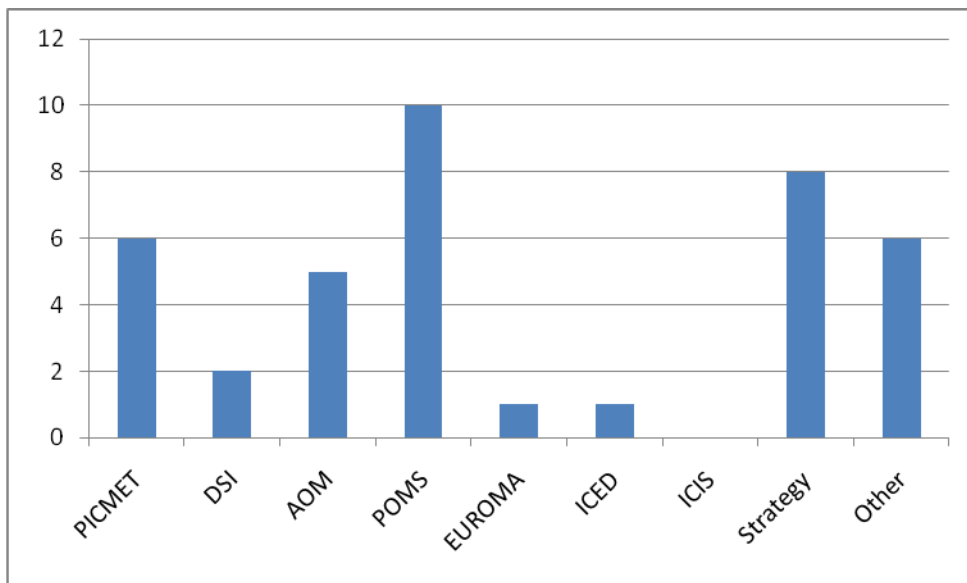
Question 10: What other conferences do you regularly attend?

	Response Count
Accounting	0
Engineering	8
Finance	1
Information Systems	7
Marketing	2
Organizational Behavior	2
Operations	20
Strategy	8
Other	2
Supply Chain Mgt, Tech entrepreneurship	

Response Count

PICMET	6
DSI	2
AOM	5
POMS	10
EUROMA	1
ICED	1
ICIS	0
Strategy	8
Other	6

IEEM, PMS, ASMC, IIE, ASQ, IFORS, HICSS, USASBE, ICSB, IASP, IAMOT



INFORMS -Technology Management Section Austin, Texas 2010 Sponsored Program (November 7 - 10, Sun - Wed)

— *Leonardo Santiago, Janice Carrillo, Juliana Hsuan, Nile Hatch*

Dear TMS Colleagues,

Welcome to the New Product Development and the Technology Management clusters at the 2010 INFORMS Annual Meeting! This year, in particular, we are privileged to have these two clusters, which are both very traditional and characterized by high attendance, sponsored by the Technology Management Section.

We would like to take this opportunity to thank the 30 session chairs, all the authors, and the TMS officers for putting together such a terrific program for this year! The 2010 program is remarkable not only because it offers different perspectives of the state of the art of technology management research, but also for the high caliber presentations.

Innovation and entrepreneurship have been receiving growing attention from stakeholders such as government, industry, scholars, and students. As a consequence, technology management has become the renewed focus of an enormous amount of research and has been reconsidered from several points of view. The ideas from outside of technology management have echoed back to our field and we are experiencing an explosion of research on key management problems such as sustainability; creativity and idea generation; knowledge management; decision theory; complexity, uncertainty and ambiguity; product, technology and architecture platforms; technology forecasting; technology strategy; organization, and many more. Needless to say, the outcome of this research effort is impacting how we manage the innovation process in a number of ways.

This year, the research menu is quite diverse and appealing. We would like to invite you to take a look in the next pages at the talks that will be given. You will have the opportunity to enjoy the state of the art of our field in eight sessions a day, from Sunday, November 7th 2010, to Wednesday, November 10th 2010.

Last, but not least, we would like to draw your attention to two special sessions that the Technology Management will be sponsoring. First, the **Technology Management Distinguished Speaker, Professor Michael Tushman**, will be talking about "Innovation Streams, Paradoxical Organization Architectures, and Organizational Evolution" on **Monday, November 8th 2010, from 4:30 pm to 6:00 pm**. Also, we would like to invite you to the session "**Meet the editors** and ask them questions" to be held on **Sunday, November 7th 2010, from 4:30 pm to 6:00 pm**.

We hope to see you in Austin!

Leonardo P. Santiago
Janice Carrillo
Juliana Hsuan
Nile Hatch

Sunday, November 07

SA: 08:00 - 09:30 Technology Assessment and Forecasting I

Chair: **Fred Phillips**, Professor, Alliant International University, Avenue of Nations, San Diego CA 92131, United States of America, fphillips@alliant.edu

1. *Helping Public Schools Help Students Succeed - Now!*
Presenting Author: **Rick Goldgar**, CTO / Deputy CIO, Texas Education Agency, 1701 N. Congress Ave., MS 4-115, Austin TX 78701, United States of America, rickelectic@yahoo.com

Abstract: The Texas PEIMS system annually collects detailed student, personnel and finance data for 4.6M students, 300,000 teachers and 1200 districts. A 2009 investigation criticized PEIMS as a costly and mostly retrospective, compliance oriented system. In response, Texas is creating a new system, TSDS, to provide districts with timely, actionable data to improve student performance and ease collection burdens. This presentation describes the goals, architecture, status and expected outcomes for TSDS.

2. *Technology Assessment Through Multiple Perspectives and Gap Analysis: Case of Pyrolysis Oil As an Alternative District Heating Fuel*
Presenting Author: **Inthrayuth Mahapol**, PSU, 1900 SW 4th, Portland, United States of America,

zign_in@hotmail.com Co-Author: **Josh Ailes**, PSU, 1900 SW 4th, Portland, United States of America, joshbiles@gmail.com Tugrul Daim, Portland State University, P.O. Box 751, Portland OR 97224, United States of America, tugrul@etm.pdx.edu **Marwan Lingga**, PSU, 1900 SW 4th, Portland, United States of America, marwan2010@yahoo.com

Abstract: This paper reviews the prospects of Pyrolysis Oil as a district heating fuel. The analysis is done through a case at Portland State University in Portland, Oregon. The case is first analyzed through Linstone's multiple perspectives of technical, organizational and personal. A multi criteria hierarchical model is built to evaluate the technologies. Constant-sum approach is used for quantifying expert judgements.

- Technological Forecasting by Citation Network Analysis*
Presenting Author: **Yuya Kajikawa**, Assistant Professor, The University of Tokyo, 2-11-16 Yayoi Bunkyo-ku, Tokyo, Japan, kaji@ipr-ctr.t.u-tokyo.ac.jp, Co-Author: **Hisashi Kashima**, The University of Tokyo, 7-3-1 Hongo Bunkyo-ku, Tokyo, Japan, kashima@mist.i.u-tokyo.ac.jp, **Junichiro Mori**, The University of Tokyo, 2-11-16 Yayoi Bunkyo-ku, Tokyo, Japan, jmori@ipr-ctr.t.u-tokyo.ac.jp, **Naoki Shibata**, The University of Tokyo, 2-11-16 Yayoi Bunkyo-ku, Tokyo, Japan, shibata@ipr-ctr.t.u-tokyo.ac.jp
Abstract: Citation mining is becoming important because of the information flood. In this contribution, methodology, examples, and limitations of citation mining are illustrated. Topics include illustration of academic landscape, detection of emerging domains, prediction of future core papers, and extraction of difference among corpus. It also includes the limitations of the analysis such as validity of corpus, selection of link creating method, time lag and granularity of analysis.
- Using Data-driven Social Network Analysis for Insights on Innovation and Change*
Presenting Author: **Martha Russell**, Senior Research Scholar, Stanford University, #230 Wallenberg Hall, Bldg. 160, 450 Serra Mall, Stanford CA 93405, United States of America, marthar@stanford.edu Co-Author: **Jukka Huhtamaki**, Hypermedia Laboratory, Tampere University of Technology, P.O. Box 527, FI-33101, Tampere, Finland, jukka.huhtamaki@tut.fi, **Neil Rubens**, Graduate School of Information Systems, University of Electro-Communications, 1-5-1, Chofugaoka, Chofu-shi Tokyo 182-8585, Japan, rubens@ai.is.uec.ac.jp, **Kaisa Still**, Beijing DT Electronic Technology Co., Ltd, 201 Building F, Wangjing New Industrial Zone Lizeyuan, Beijing 100102, China, kaisastill@yahoo.com
Abstract: We apply the concept of innovation ecosystems – systems of innovation networks – to an analysis of links between firms and their human and financial resources to observe indicators of the broad system of innovation networks for value co-creation. In the context of a case study, we present a theoretical framework for our work and use network analysis of a socially constructed data on firms and actors, evaluated as drivers of convergence in innovation ecosystems.

SA: 08:00 - 09:30 What Can We Learn from Patents?

Chair: **Manuel Sosa**, INSEAD, France, manuel.sosa@insead.edu

- Project Ambiguity and Solution Search in Fluid Design*

Teams

Presenting Author: **Enno Siemsen**, University of Minnesota, 3-150 Carlson School of Management, 321 - 19th Ave S, Minneapolis MN 55455, United States of America, siems017@umn.edu, Co-Author: **Dishan Kamdar**,

Dishan_Kamdar@isb.edu, **Min Li**, min@umn.edu, **Mani Subramani**, msubramani@umn.edu

Abstract: Most design projects require some degree of search for solutions. Communication within or around the project design team should help facilitate such search. We differentiate between internal direct, external direct and indirect search patterns. What type of communications patterns improve search? Do highly ambiguous projects require different search patterns? We analyze the interplay between project ambiguity, communication patterns and performance using data from outsourced design projects.

- R&D Investments and Operational Performance*
Presenting Author: **Karan Girotra**, INSEAD, Boulevard De Constance, Fontainebleau, France, Karan.GIROTRA@insead.edu, Co-Author: **Jürgen Mihm**, INSEAD, Constance de Blvd, Fontainebleau, France, jurgen.mihm@insead.edu
Abstract: We examine the effect of the variability in R&D investments on a firm's operational performance. We hypothesize that firms that increase or decrease R&D investments in a short period of time, reduce the effectiveness of these investments irrespective of the absolute level of the investment.
- The Impact of Fit on Inventor Performance*
Presenting Author: **Lee Fleming**, Harvard Business School, Morgan 485, Boston MA 02163, United States of America, lffleming@hbs.edu, Co-Author: **Eric Lin**, Harvard Business School, Morgan Hall 428A, Boston MA 02163, United States of America, elin@hbs.edu
Abstract: Surrounded by similar colleagues, inventors may be less likely to explore beyond the boundaries of their own expertise. In this paper, we explore how the degree of inventor fit influences inventor output. Using over 30 years of patent data, we find that high degrees of fit as measured by similarity in technical focus between an inventor and an organization may have a positive effect on the impact of an inventor's work, but a negative effect on his creativity.
- Understanding the Adoption of Good Ideas*
Presenting Author: **Manuel Sosa**, INSEAD, France, manuel.sosa@insead.edu, Co-Author: **Jürgen Mihm**, INSEAD, Constance de Blvd, Fontainebleau, France, jurgen.mihm@insead.edu
Abstract: Why are some good ideas more easily adopted than others? We address this question by examining the entire population of US design patents and identifying important determinants of successful patents. We measure patent success as the number of references made by other patents.

SB: 11:00 - 12:30 Industry Architecture, Technology Forecasting and NPD Performance

Chair: **Juliana Hsuan**, Associate Professor, Copenhagen Business School, Department of Operations Management, Solbjerg Plads 3, Frederiksberg DK-2000, Denmark, jh.om@cbs.dk

- On the Impact of Technological Changes. Multivariate Time Series Analysis with Interventions*

Presenting Author: **Eric Bentzen**, Associate Professor, Copenhagen Business School, Department of Operations Management, Solbjerg Plads 3, Frederiksberg DK-2000, Denmark, eb.om@cbs.dk

Abstract: Many economic time series are besides seasonality also affected by external events either as known or as unknown events. Inclusion of seasonality and external events in a multivariate analysis is investigated in this paper. Because of the presence of simultaneous relationships the identification is not straightforward, and modeling the structural relationships is similar complex. The impact of technological changes is modelled and a systematic process is being considered.

2. *Addressing R&D Target-Setting Through Technology Forecasting Using Data Envelopment Analysis*

Presenting Author: **Ann-Marie Lamb**, ajlamb@pdx.edu

Co-Author: **Timothy Anderson**, Associate Professor, Portland State University, P.O. Box 751, Portland OR 97207-0751, United States of America, tima@etm.pdx.edu, **Tugrul Daim**, Portland State University, P.O. Box 751, Portland OR 97224, United States of America, tugrul@etm.pdx.edu

Abstract: While the literature has indicated organizations face a wide variety of difficulties in setting R&D targets, few studies have been found which delve deeper into what those difficulties are as well as how to overcome them. The objective of this presentation will be to showcase the continued evolution of an emerging technology forecasting method, Technology Forecasting using Data Envelopment Analysis (TFDEA), and how it can be applied to improve decision-making in R&D target-setting.

3. *Hierarchy in Industry Architecture: Transaction Strategy under Technological Constraints*

Presenting Author: **Jianxi Luo**, PhD in Technology, Management, & Policy, MIT, 77 Mass Ave, E38-448, Cambridge MA 02139, United States of America, luo@mit.edu, Co-Author: **Carliss Baldwin**, Harvard Business School, 212 Soldiers Field Rd, Boston MA 02134, United States of America, cbaldwin@hbs.edu, **Christopher Magee**, MIT, 77 Mass Ave, E38-450, Cambridge MA 02139, United States of America, cmagee@mit.edu, **Daniel Whitney**, MIT, 77 Mass Ave, E40-243, Cambridge MA 02139, United States of America, dwhitney@mit.edu

Abstract: We conduct network analysis to analyze how firms are organized at the sector level in terms of hierarchy (one-way flow of transactions), in order to understand how industrial transaction choices of single firms may shape industry architectures, and meanwhile be constrained by technologies. Based on the results, we argue high power technologies constrain transaction strategies, while lower power technologies enable a larger option space of transaction choices, for firms to explore and exploit.

4. *Back-loading the Frontend*

Presenting Author: **Sebastian Fixson**, Babson College, Babson Park MA, United States of America, sfixson@babson.edu, Co-Author: **Tucker Marion**, Northeastern University, Boston MA, United States of America, t.marion@neu.edu

Abstract: Our study investigates the effect of CAD use on changes in process structure (i.e., frontloading) of PD projects, and ultimately on project performance. In addition to positive frontloading we also observe a form of unintended back-loading of work from initial concept development to detail design with detrimental effects for PD performance.

SB: 11:00 - 12:30 Knowledge, Learning, Intellectual Capital

Chair: **Charles Weber**, Associate Professor, Portland State University, P.O. Box 751, Engineering and Technology Management, Portland OR 97207, United States of America, charles.weber@etm.pdx.edu

1. *Building Theories During Scenario Planning*

Presenting Author: **Nitin Joglekar**, Boston University, 595 Commonwealth Ave., Boston, United States of America, joglekar@bu.edu,

Co-Author: **Leonardo Santiago**, Federal University of Minas Gerais, Department of Production Engineering, Av. Antonio Carlos, 6627 - Pampulha, Belo Horizonte MG 31270-901, Brazil, lsantiago@ufmg.br

Abstract: We review the literature on scenario planning processes to argue that these processes offer a nexus for building theory. The epistemological aspects of such efforts are examined in terms of trend based, contrast based and normative outcomes. We close by comparing the nature of scenario planning based theories, and their validity, against conventional theory building processes.

2. *Impact of Demand Distribution on Capacity Management in Knowledge – Based Organizations*

Presenting Author: **Senay Solak**, University of Massachusetts Amherst, Isenberg School of Management, Amherst MA, United States of America, solak@som.umass.edu, Co-Author: **Zhuoxin Li**, University of Massachusetts Amherst, Isenberg School of Management, Amherst MA 01003, United States of America, zhuoxin@som.umass.edu

Abstract: Many knowledge-based firms build a portfolio of capacities to meet uncertain demand from multiple classes of customers and projects. A high capacity level increases the firm's probability of winning project orders, but this happens at the expense of high investment and holding costs. We study this trade-off and analyze the impact of the properties of the demand distribution on optimal capacity management policies using a dynamic programming approach. Several analytical results are presented.

3. *Motivating Organizational Search: The Power of Low-Powered Incentives*

Presenting Author: **Oliver Baumann**, Ludwig-Maximilians-University, Munich, Germany, baumann@bwl.lmu.de
Co-Author: **Nils Stiglitz**, University of Southern Denmark, Campusvej 55, 5230 Odense M, Denmark, nst@sam.sdu.dk

Abstract: We simulate the effects of incentives on organizational search, and we identify reasons for why low-powered incentives denote the most effective stimulus for innovation. First, the marginal gains from higher-powered incentives decrease with an increasing rate, while the costs of the incentive system increase linearly. Second, in the presence of resource constraints, good projects that fail to get selected further amplify competition and, in turn, lower the agents' motivation for search.

4. *Designing Knowledge Networks for For-Profit Open Innovation*

Presenting Author: **Charles Weber**, Associate Professor, Portland State University, P.O. Box 751, Engineering and Technology Management, Portland OR 97207, United States of America, charles.weber@etm.pdx.edu, Co-Author: **Nitin Mayande**, Doctoral Student, Portland State University, P.O. Box 751, ETM, Portland OR 97207, United

States of America, nitin.mayande@gmail.com

Abstract: Recent advances in Web2.0 technologies are enabling for profit peer production and open innovation. This paper discusses an approach that allows firms to design knowledge networks for this purpose.

SC: 13:30 - 15:00 Innovation Processes

Chair: **Laura Kornish**, Associate Professor, Leeds School of Business, University of Colorado, UCB 419, Boulder CO 80309, United States of America, kornish@colorado.edu

- The Impact of Device Choice on Outcomes in Hip Replacement Surgery*
Presenting Author: **Kamalani Ramdas**, London Business School, Regent's Park, London NW14SA, United Kingdom, kramdas@london.edu, Co-Author: **Haiyan Liu**, University of Virginia, Department of Economics, Charlottesville, United States of America, hl4y@virginia.edu, **Khaled Saleh**, Southern Illinois School of Medicine, 701 North 1st Street, Springfield, United States of America, ksaleh@siumed.edu, **Steven Stern**, University of Virginia, Department of Economics, Charlottesville, United States of America, Sns5r@eservices.virginia.edu
Abstract: It is well known in healthcare that a surgeon's experience in terms of number of surgeries performed is an important predictor of surgical outcomes. Unlike previous research in this area, we examine how experience with specific devices used in surgery affects surgical outcomes, using a data set consisting of all hip replacement surgeries conducted at the University of Virginia hospital in 2006-2008.
- Empirical Evidence for the Role of the Domain Name Itself in Website Performance*
Presenting Author: **Karan Girotra**, INSEAD, Boulevard De Constance, Fontainebleau, France, Karan.GIROTRA@insead.edu, Co-Author: **Karl Ulrich**, The Wharton School, University of Pennsylvania, 547 Jon M. Huntsman Hall, 3730 Walnut Street, Philadelphia PA 19104, United States of America, ulrich@wharton.upenn.edu
Abstract: This paper provides the first large-scale empirical evidence linking specific properties of internet domain names to the realized demand for their associated websites. We find that the websites with the highest demand have names that are short, include dictionary words, avoid punctuation symbols, and use numerals. The use of phonemes associated with disgust is negatively associated with performance for most websites, but positively associated with performance for adult sites.
- Idea Generation and Concept Selection*
Presenting Author: **Svenja Sommer**, Assistant Professor, HEC Paris, 1 Rue de la Liberation, Jouy-en-Josas, France, sommers@hec.fr, Co-Author: **Stylianos Kavadias**, Associate Professor, Georgia Tech, 800 W Peachtree St NW, Atlanta, United States of America, Stylianos.Kavadias@mgt.gatech.edu
Abstract: Idea or concept generation and selection is an essential, but relatively poorly understood part of the new product design process. In this work, we consider how group interactions affect the information dissemination during the idea generation process, and how the idea generation process and organizational choices affect the concepts ultimately selected for further development.
- Opportunity Spaces in Innovation: Empirical Analysis of*

Large Samples of Ideas

Presenting Author: **Laura Kornish**, Associate Professor, Leeds School of Business, University of Colorado, UCB 419, Boulder CO 80309, United States of America, kornish@colorado.edu, Co-Author: **Karl Ulrich**, The Wharton School, University of Pennsylvania, 547 Jon M. Huntsman Hall, 3730 Walnut Street, Philadelphia PA 19104, United States of America, ulrich@wharton.upenn.edu

Abstract: Identifying a large number of ideas with parallel search is a common approach to innovation. One potential weakness of parallel search is repetition. We analyze repetition in five data sets comprising 1,368 opportunities and address three questions: (1) When a large number of efforts to generate ideas are conducted in parallel, how likely are the resulting ideas to be redundant? (2) How large are the opportunity spaces? (3) Are unique ideas more valuable than those that are similar to others?

SC: 13:30 - 15:00 Technology Choice in Semiconductor Manufacturing

Chair: **Richard Roth**, Director of MIT Materials Systems Laboratory, MIT, 292 Main Street, Cambridge, United States of America, roth@MIT.EDU

- Supply Chain and Timing Issues in the Transition to a 450mm Wafer Standard*
Presenting Author: **Charles Fine**, Professor, Massachusetts Institute of Technology, Cambridge MA, United States of America, charley@mit.edu, Co-Author: **Richard Roth**, Director of MIT Materials Systems Laboratory, MIT, 292 Main Street, Cambridge, United States of America, roth@MIT.EDU
Abstract: The transition to a 450mm wafer standard for the semiconductor industry offers an opportunity for long term improvements in throughput and costs. However, there are strategic questions about both the timing of the transition and the roles of various players within the supply chain. This work addresses the impact of timing decisions including introduction rate and rate of technology on the chipmakers, equipment suppliers and raw wafer producers.
- Economics of the Transition to 450mm Wafers in the Semiconductor Industry*
Presenting Author: **Richard Roth**, Director of MIT Materials Systems Laboratory, MIT, 292 Main Street, Cambridge, United States of America, roth@MIT.EDU, Co-Author: **Charles Fine**, Professor, Massachusetts Institute of Technology, Cambridge MA, United States of America, charley@mit.edu
Abstract: The semiconductor industry is considering using 450mm wafers to improve area throughput and reduce processing costs. However, several drawbacks exist including the large upfront investments and long learning horizon which may mean that it will take several years before the wafer size transition can pay for itself. This work explores the conditions under which there are sufficient long term cost savings to offset the early investments and cost penalties.
- Learning as a Driver Technology Choice Decisions in Semiconductor Manufacturing*
Presenting Author: **Thomas Rand-Nash**, Doctoral Candidate, MIT Materials Systems Laboratory, 77 Massachusetts Avenue, Cambridge MA 02139, United States of America, trand@mit.edu
Abstract: This work explores process technology decision making in the presence of learning effects in semiconductor manufacturing, and hopes to characterize the conditions

under which learning-related production cost effects impact technology choice decision making. Relevant factors considered include learning rates, production volume as a function of demand, market structure, and budget constraints.

4. *The Impact of Offshoring on the Innovation Trajectories of Firms versus Individuals*

Presenting Author: **Erica Fuchs**, PhD, Carnegie Mellon University, 5000 Forbes Avenue, Baker Hall 129, Pittsburgh PA 15217, United States of America, erhf@andrew.cmu.edu,
Co-Author: **Chia-Hsuan Yang**, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, United States of America, Chia-Hsuan Yang

Abstract: After the burst of the telecom bubble in March 2000, the majority of U.S. optoelectronic component firms moved manufacturing offshore. This research explores (1) whether due to the different offshore production economics, the firms who move manufacturing offshore stop or slow U.S.-based R&D activities in particular technologies and (2) whether inventors originally within these offshoring firms, leave, and continue to innovate in the pre-offshoring technologies at different institutions.

SD: 16:30 - 18:00 Panel Discussion: Meet the Editors and Ask Them Questions

Chair: **Leonardo Santiago**, Federal University of Minas Gerais, Department of Production Engineering, Av. Antonio Carlos, 6627 - Pampulha, Belo Horizonte MG 31270-901, Brazil, lsantiago@ufmg.br

1. *Panel Discussion: Meet the Editors and Ask Them Questions*

Presenting Author: **Leonardo Santiago**, Federal University of Minas Gerais, Department of Production Engineering, Av. Antonio Carlos, 6627 - Pampulha, Belo Horizonte MG 31270-901, Brazil, lsantiago@ufmg.br,
Panel Members:

Cheryl Gaimon, Regents' Professor, Georgia Institute of Technology, College of Management, Atlanta 30308, United States of America, cheryl.gaimon@mgt.gatech.edu,
Department of Management of Technology of *Production and Operations Management*

Stylianos Kavadias, Associate Professor, Georgia Tech, 800 W Peachtree St NW, Atlanta, United States of America, Stylianos.Kavadias@mgt.gatech.edu, Department of NPD, R&D, and Project Management of *Production and Operations Management*

Daniel Levinthal, Reginald H. Jones Professor of Corporate Management, Wharton School, University of Pennsylvania, dlev@wharton.upenn.edu, Editor, *Organizational Science*

Kamalini Ramdas, London Business School, Regent's Park, London NW14SA, United Kingdom, kramdas@london.edu, Department of Entrepreneurship and Innovation of *Management Science*

Rajiv Sabherwal, University of Missouri Curators Professor, University of Missouri at St. Louis, sabherwal@umsu.edu, Editor, *IEEE Transactions on Engineering Management*;

Morgan Swink, Professor and Eli Broad Legacy Fellow, Michigan State University, swink@bus.msu.edu, Editor, *Journal of Operations Management*

Monday, November 8

MA: 08:00 - 09:30 Models in Entrepreneurship

Chair: **Moren Levesque**, Associate Professor, York University, 4700 Keele Street, Toronto ON M3J 1P3, Canada, mlevesque@schulich.yorku.ca

1. *Exploring Gender Differences in the Innovation Activity of Entrepreneurs*

Presenting Author: **In Hyeock Lee**, Western Kentucky University, 1906 College Heights Blvd., Bowling Green KY 42101, United States of America, ian.lee@wku.edu, Co-Author: **Matthew Marvel**, Western Kentucky University, 1906 College Heights Blvd., Bowling Green KY 42101, United States of America, matt.marvel@wku.edu

Abstract: Although most scholars agree that entrepreneurship is a gender-based process, little research has explored the gender—innovation relationship in new firms, representing a gap in the literature. We address this gap, and explore three potential mediating factors - educational background, inter-firm partnerships, and the regional location of the new firm - between entrepreneur gender and innovation activity.

2. *Intentionality of Growth: How Strategic Intent Affects Growth Tactics*

Presenting Author: **John N Angelis**, Rochester Institute of Technology, 105 Lomb Memorial Drive, Rochester, United States of America, jangelis@saunders.rit.edu, Co-Author: **Richard DeMartino**, Rochester Institute of Technology, 105 Lomb Memorial Drive, Rochester NY, United States of America, rdemartino@saunders.rit.edu, **Joseph C Miller**, Rochester Institute of Technology, 105 Lomb Memorial Drive, Rochester NY, United States of America, jmiller@saunders.rit.edu, **Rajendran Sriramachandramurthy**, Rochester Institute of Technology, 105 Lomb Memorial Drive, Rochester NY, United States of America, rajsmurthy@saunders.rit.edu

Abstract: After demonstrating an intent to grow, small and medium-size firms must operationalize their growth strategy. In a survey of 27 firms, we investigate the relationship between the firms' approach to strategic growth planning and the degree to which a firm innovates in markets served and product/service offerings. We also examine how perception of internal and external growth obstacles influences growth tactics.

3. *Venture Capital Investment: Initiating and Revising the Deal*

Presenting Author: **Meyyappan Narayanan**, PhD Candidate, University of Waterloo, 200 University Ave West, Waterloo ON N2L 3G1, Canada, mnarayanan@uwaterloo.ca, Co-Author: **Brian Cozzarin**, Associate Professor, University of Waterloo, 200 University Ave West, Waterloo ON N2L 3G1, Canada, bpcozzarin@uwaterloo.ca

Abstract: We model the venture capital investment deal process under information asymmetry about the entrepreneur's disutility of effort (that affects his/her effort level). We let the VC take on a belief on the entrepreneur's minimum effort level and conjecture that there is a "critical point" in that belief and a corresponding ownership share for the VC that maximizes the deal welfare. We also present a decision rule for the VC to adopt if the offer is rejected.

4. *Are entrepreneurs influenced by risk attitude, regulatory focus or both-a time allocation experiment*
 Presenting Author: **Moren Levesque**, Associate Professor, York University, 4700 Keele Street, Toronto ON M3J 1P3, Canada, mlevesque@schulich.yorku.ca, Co-Author: **Katrin Burmeister**, Erasmus University, Netherlands, kburmeister@rsm.nl, **Christian Schade**, Humboldt University, Germany, [cgs@wiwi.hu-berlin.de](mailto:cds@wiwi.hu-berlin.de)
Abstract: We endeavor to understand the determinants of behaviors where the tradeoff between financial risk and financial return comes from how individuals choose to divide their working time between wage and self-employment. We derive normative propositions drawn from utility theory and challenge them with behavioral hypotheses based on regulatory focus theory. A sample of 28 entrepreneurs and 38 non-entrepreneurs enables us to test these propositions and hypotheses in a controlled experiment.

MA: 08:00 - 09:30 Sources for Knowledge and Incentives for Sharing (KLIC)

Chair: **Jane Davies**, University of Cambridge, Judge Business School, Trumpington Street, Cambridge CB2 1AG, United Kingdom, j.davies@jbs.cam.ac.uk

1. *Birth of Stars: Does Heritage Matters in Science?*
 Presenting Author: **Francisco Veloso**, Catolica Lisbon and Carnegie Mellon, Palma de Cima, Lisbon, Portugal, fveloso@cmu.edu, Co-Author: **Leonardo Reyes-Gonzalez**, Carnegie Mellon University, EPP, Pittsburgh PA 15213, United States of America, lreyesgo@andrew.cmu.edu
Abstract: Prior work has quantified the impact that leading researchers have on an established system, their peers and the institutions they work for. This paper looks at the role eminent scientists play in developing a research system. In particular, we look at the impact that leading scholars have in faculty at the beginning of their careers, contrasting the relevance of these stars alongside the role of a research group, as well as how the two dimensions jointly influence the new faculty.
2. *Information Sharing and Relative Performance Evaluation*
 Presenting Author: **Liad Wagman**, Assistant Professor, Illinois Institute of Technology, Stuart School of Business, 565 W Adams St., Suite 451, Chicago IL 60661, United States of America, lwagman@stuart.iit.edu, Co-Author: **Eliezer Geisler**, Distinguished Professor, Illinois Institute of Technology, Stuart School of Business, 565 W Adams St, Chicago IL 60661, United States of America, geisler@stuart.iit.edu
Abstract: Firms compensate based on relative performance to drive competition and incentivize effort. Intuition suggests such practices would discourage sharing new information with colleagues, even when its diffusion can enhance productivity and profit. We study how tradeoffs in information diffusion impact the profit-maximizing design of employment contracts. We find that relative-performance based compensation can actually reduce the firm's cost of institutionalizing new information.
3. *Inventor Dispersion and Market Value*
 Presenting Author: **Kun Liu**, Assistant Professor, Wayne State University, 5201 Cass Ave, Detroit, United States of America, ek9525@wayne.edu, Co-Author: **Jifeng Yu**, University of Nevada-Las Vegas, 4505 Maryland Parkway, Las Vegas, United States of America, Jifeng.Yu@unlv.edu
Abstract: Little research has examined how the dispersion

of inventions among many or a few inventors would affect the firm's value creation and appropriation. We suggest that the dispersion among inventors has an inverted-U relationship with the firm's market value measured as Tobin's Q.

4. *Knowledge Creation and Knowledge Transfer in New Product Development Projects*
 Presenting Author: **Wenli Xiao**, Georgia Institute of Technology, College of Management, 800 West Peachtree Street, Atlanta GA 30308, United States of America, xiao.wenli@mgt.gatech.edu, Co-Author: **Janice Carrillo**, Associate Professor, Warrington College of Business, University of Florida, PO Box 117169, Gainesville FL 32611-7169, United States of America, carrilje@ufl.edu, **Cheryl Gaimon**, Regents' Professor, Georgia Institute of Technology, College of Management, Atlanta 30308, United States of America, cheryl.gaimon@mgt.gatech.edu
Abstract: Two models are introduced (continuous and discrete) that characterize linkages among three stages of knowledge creation for engineering activities in an NPD project. We recognize that by transferring knowledge from one stage to another, the manager enhances the creation of knowledge at the latter stage. For both models, we provide a deep understanding of the nature of knowledge creation and knowledge transfer by analyzing how various parameters drive different solutions.

MB: 11:00 - 12:30 Innovation and Growth Through Varied Organization Structures

Chair: **Raul Chao**, Darden School of Business, 100 Darden Blvd., Charlottesville VA 22903, United States of America, ChaoR@darden.virginia.edu

1. *Compensation Challenges for Cross-functional Product Development Teams*
 Presenting Author: **Jeremy Hutchison-Krupat**, Georgia Institute of Technology, 800 W. Peachtree St, Atlanta GA 30308, United States of America, jhk@gatech.edu, Co-Author: **Stylianios Kavadias**, Associate Professor, Georgia Tech, 800 W Peachtree St NW, Atlanta, United States of America, Stylianios.Kavadias@mgt.gatech.edu
Abstract: New product development requires specialized competencies, and cross-functional collaboration. This implies inter-dependencies regarding the problem structure and organizational factors; and takes place in an uncertain setting, where the functional specialists' effort is non-verifiable. This study compares the operational implications to the firm when senior management offers either: incentives based on the specialists' functional contribution, or their overall team output (project profit).
2. *A Comparison of Revenue Growth at Recent-IPO and Established Firms: Influence of SG&A, R&D and COGS*
 Presenting Author: **Nitin Joglekar**, Boston University, 595 Commonwealth Ave., Boston, United States of America, joglekar@bu.edu, Co-Author: **Jane Davies**, University of Cambridge, Judge Business School, Trumpington Street, Cambridge CB2 1AG, United Kingdom, j.davies@jbs.cam.ac.uk, **Moren Levesque**, Associate Professor, York University, 4700 Keele Street, Toronto ON M3J 1P3, Canada, mlevesque@schulich.yorku.ca
Abstract: We specify a production function to link aggregate allocation amongst SG&A, R&D and COGS expenses with the revenue. This function yields hypotheses on productivity of COGS, while controlling for the rate of growth. These hypotheses are tested on a comparable set

of recent-IPO and established firms. Results show that stocks of resources can be substitutes rather than complements for COGS, and the manner in which recent-IPO firms allocate resources differs from their established counterparts.

3. *Incentives for Complex R&D Projects*

Presenting Author: **Raul Chao**, Darden School of Business, 100 Darden Blvd., Charlottesville VA 22903, United States of America, ChaoR@darden.virginia.edu

Abstract: R&D projects often involve interactions between technology/market variables that define a project and the resources needed to create project value. The organization hierarchy further complicates matters because know-how and effort are decentralized from managerial authority. While standard economic theory says that management should always provide incentives for effort in risky projects, our results show that R&D projects need not always be rewarded with incentive pay

MB: 11:00 - 12:30 Perspectives on Outsourcing and Offshoring of Knowledge Work

Chair: **Anant Mishra**, Assistant Professor, George Mason University, 4400 University Drive, Fairfax VA 22030, United States of America, amishra6@gmu.edu

1. *How Provider Selection and Management Contribute to Successful Innovation Outsourcing*

Presenting Author: **Zhijian Cui**, PhD Candidate, INSEAD, Constance de Blvd, Fontainebleau, France, Zhijian.CUI@insead.edu, Co-Author: **Bernd Grossmann**, Siemens A.G., Otto-Hahn-Ring 6, Munich, Germany, bernd.grossmann@siemens.com, **Ru He**, Siemens A.G., Otto-Hahn-Ring 6, Munich, Germany, ru.he@siemens.com, **Christoph Loch**, INSEAD, Constance de Blvd, Fontainebleau, France, Christoph.LOCH@insead.edu

Abstract: We use studies of 31 innovation outsourcing projects at Siemens to develop grounded theory on (1) selection criteria for external technology providers, and (2) operational project management success factors in the collaboration with providers. A selection criterion is the needs to be a match between the firm's outsourcing motivation and the provider's strengths. We identify operational project success drivers for the management of technology outsourcing.

2. *Outsourcing Innovation: Structuring and Managing Global R&D Projects*

Presenting Author: **Saikat Chaudhuri**, Assistant Professor of Management, The Wharton School, University of Pennsylvania, 2029 Steinberg Hall-Dietrich Hall, 3620 Locust Walk, Philadelphia PA 19104-6370, United States of America, saikatc@wharton.upenn.edu

Abstract: Outsourcing providers are increasingly performing core tasks for their clients, calling into question traditional notions of firm boundaries. We explore this phenomenon and its implications, by examining the structures, challenges, management, and performance of global R&D projects conducted by a leading Indian outsourcing vendor with its customers. The findings enhance our understanding of the evolving modern firm, outsourcing implementation, and innovation management.

3. *The Linkage Between Motivation, Practices and Performance in Outsourcing Engagements*

Presenting Author: **Sriram Narayanan**, Assistant Professor, Michigan State University, N357 College of

Business, Department of Supply Chain Management, East Lansing MI 48824, United States of America, sriram@msu.edu, Co-Author: **Ram Narasimhan**, University Distinguished Professor, Michigan State University, N344 College of Business, Department of Supply Chain Management, East Lansing MI 48824, United States of America, narasimh@bus.msu.edu, **Tobias Schoenherr**, Assistant Professor, Michigan State University, N356 College of Business, Department of Supply Chain Management, East Lansing MI 48824, United States of America, schoenherr@bus.msu.edu

Abstract: We examine the role of outsourcing motivation on the governance practices implemented in outsourcing engagements using survey data collected from more than 150 outsourcing engagements. We find that practices implemented are contingent on the outsourcing motivation, and that performance outcomes are contingent on the implemented governance practices.

4. *Managing Conflict between Project Client and Project Team in Distributed Project Organizations*

Presenting Author: **Anant Mishra**, Assistant Professor, George Mason University, 4400 University Drive, Fairfax VA 22030, United States of America, amishra6@gmu.edu, Co-Author: **Kingshuk K. Sinha**, University of Minnesota, 3-150 Carlson School of Management, 321 19th Avenue South, Minneapolis MN 55455, United States of America, ksinha@umn.edu

Abstract: Conflicts are a stark reality of project execution in distributed project organizations. However, we know little about the dynamics of "sub-group" conflict between a project client and the project team in distributed project organizations. Using primary data from 830 technology projects, we examine the key drivers and performance consequences of sub-group conflict across four types of project organizations: Insourcing, Outsourcing, Offshoring, and Offshore-Outsourcing.

MC: 13:30 - 15:00 Games and Exercises in Management of Technology and New Product Development Courses

Chair: **Cheryl Druehl**, Assistant Professor, George Mason University, 4400 University Dr, MS 5F4, Fairfax VA 22030, United States of America, cdruehl@gmu.edu

1. *Panel Discussion: Games and Exercises in Teaching MOT and NPD*

Presenting Author: **Cheryl Druehl**, Assistant Professor, George Mason University, 4400 University Dr, MS 5F4, Fairfax VA 22030, United States of America, cdruehl@gmu.edu, Co-Author: **Raul Chao**, Darden School of Business, 100 Darden Blvd., Charlottesville VA 22903, United States of America, ChaoR@darden.virginia.edu, **Jürgen Mihm**, INSEAD, Constance de Blvd, Fontainebleau, France, jurgen.mihm@insead.edu

Abstract: Please join us to discuss and share games in teaching MOT and NPD. Panelists will include Raul Chao (Darden) discussing the vending machine exercise, Jürgen Mihm (INSEAD) explaining the portfolio game and others.

MC: 13:30 - 15:00 Managing Innovation in Complex Product Development and Service Systems

Chair: **Bilal Gokpinar**, Assistant Professor, University College London, Management Science and Innovation, London, United Kingdom, b.gokpinar@ucl.ac.uk

1. *Value Chain Dynamics: From Scope to Profit Evolution given Modular Innovation*
Presenting Author: **Francisco Veloso**, Catolica Lisbon and Carnegie Mellon, Palma de Cima, Lisbon, Portugal, fveloso@cmu.edu, Co-Author: **Michael Jacobides**, London Business School, Regent's Field, London, United Kingdom, mjacobides@london.edu, **Claudio Wolter**, Carnegie Mellon University, EPP, Pittsburgh, United States of America, cwolter@andrew.cmu.edu
Abstract: Existing research has not adequately studied the interplay between sector evolution and firm vertical scope, or how these factors shape profitability. We study the profitability implications of scope changes and how these relate to changes in firms' underlying capabilities. It sheds light on the dynamics of sector evolution by looking at how modular innovations affect both specialists and integrated firms, and ultimately shape both the sector's scope and the profit distribution within it.
2. *The Cost of Software Complexity and the Impact of Architectural Redesign*
Presenting Author: **Alan MacCormack**, Visiting Associate Professor, MIT Sloan School of Management, 50 Memorial Drive, Cambridge MA 02142, United States of America, alanmac@mit.edu
Abstract: Software systems rarely die. Instead, new versions are built on top of older ones, with a consequent increase in the costs related to complexity. When should you throw out the old version and start anew? We report data from an empirical study of the costs of software complexity, and the potential benefits of redesign. We show that greater complexity is associated with higher maintenance costs, and provide data from one firm that highlights the impact of a redesign in reducing these costs.
3. *Software Architecture and Bug Fixing in Open Source Software Development*
Presenting Author: **Manuel Sosa**, INSEAD, France, manuel.sosa@insead.edu, Co-Author: **Tyson Browning**, Associate Professor of Operations Management, Neeley School of Business, Texas Christian University, Fort Worth TX, United States of America, t.browning@tcu.edu, **Jürgen Mihm**, INSEAD, Constance de Blvd, Fontainebleau, France, jurgen.mihm@insead.edu
Abstract: We examine a large longitudinal sample of bugs associated with several open source applications developed by Apache. We estimate a hazard model to study the link between software architectural properties and time to fix bugs. Our results establish a link between product architecture and the organizational capability to repair defects.
4. *Bottlenecks and Productivity in White-Collar Work: A Networks Approach*
Presenting Author: **Bilal Gokpinar**, Assistant Professor, University College London, Management Science and Innovation, London, United Kingdom, b.gokpinar@ucl.ac.uk, Co-Author: **Wallace Hopp**, Herrick Professor of Manufacturing, University of Michigan, Operations and Management Science, Ann Arbor, United States of America, whopp@umich.edu, **Seyed Iravani**, Associate Professor, Northwestern University, 2145 Sheridan Road, C210 Tech., Evanston IL 60208-3119, United States of America, siravani@northwestern.edu
Abstract: Bottleneck analysis in blue collar work has been

central in determining and improving key performance metrics such as the throughput of the line and cycle time of the process. However, an analogous bottleneck analysis is missing in white-collar work. In this study, we first develop an analytical model of bottleneck in white-collar work, and then examine performance implications of bottlenecks using archival data in new vehicle development.

MD: 16:30 - 18:00 Technology Management Section 2010 Distinguished Speaker

Chair: David Moore, klicnet.org, 16312 SE 4th Street, Bellevue WA 98008, United States of America, dmoore@klicnet.org

1. *Innovation Streams, Paradoxical Organization Architectures, and Organizational Evolution*
Presenting Author: **Michael Tushman**, Professor, HBS, mtushman@hbs.edu
Abstract: Focusing on dynamic capabilities at the business unit and corporate levels of analysis, I link dynamic capabilities to the firm's ability to simultaneously explore and exploit. The firm's architecture, senior team, and ability to manage incremental as well as punctuated change are linked. I discuss characteristics of firms and their senior teams that can host paradoxical strategies, and the nature of collaborative relations with firms that enable research that is both rigorous and relevant.

Tuesday, November 9

TA: 08:00 - 09:30 Strategy, Organization and New Product Development

Chair: **Jürgen Mihm**, INSEAD, Constance de Blvd, Fontainebleau, France, jurgen.mihm@insead.edu

1. *Resource Allocation for New Product Development: Top-Down or Bottom-Up?*
Presenting Author: **Jeremy Hutchison-Krupat**, Georgia Institute of Technology, 800 W. Peachtree St, Atlanta GA 30308, United States of America, jhk@gatech.edu
Abstract: Firms wishing to pursue strategic new product development (NPD) initiatives, face several key challenges. NPD initiatives require cross-functional collaboration where functional managers and senior management rarely know the difficulty the initiative poses for each function. Given this information asymmetry, along with the firm's organizational characteristics, senior management must decide whether to dictate budget allocations, or delegate this responsibility to the functional managers.
2. *A Structured Approach to Form Creative Teams*
Presenting Author: **Manuel Sosa**, INSEAD, France, manuel.sosa@insead.edu, Co-Author: **Franck Marle**, Ecole Centrale Paris, Laboratoire Genie Industriel, Chatenay-Malabry, France, franck.marle@ecp.fr
Abstract: We introduce a novel approach to form temporary creative teams. We exploit the notion of creative interactions, which recognizes that people trigger the generation of creative ideas when interacting with each other for task-related matters. The approach is validated in an experimental setting and illustrated in a software development organization.
3. *Portfolio Management under Risk and Ambiguity*
Presenting Author: **Leonardo Santiago**, Federal University

of Minas Gerais, Department of Production Engineering, Av. Antonio Carlos, 6627 - Pampulha, Belo Horizonte MG 31270-901, Brazil, lsantiago@ufmg.br, Co-Author: **Pirooz Vakili**, Associate Professor, Boston University, Division of Systems Engineering, Boston MA 02215, United States of America, yakili@bu.edu

Abstract: We consider the impact of decision makers' aversion to risk and ambiguity on selection of R&D portfolios. We investigate this issue in a two-stage and interdependent model that links the development stage with that of commercialization. We highlight the distinction between these two stages and discuss the implications of incorporating ambiguity in the decision process.

4. *Collaborative Search*

Presenting Author: **Jürgen Mihm**, INSEAD, Constance de Blvd, Fontainebleau, France, jurgen.mihm@insead.edu

Abstract: Search has become a widely accepted paradigm to describe innovation activities. Formal models of search have incorporated a broad spectrum of different aspects relevant to search, such as cognition or organizational embedding. We contribute to the understanding of search by studying under which circumstances it is beneficial to have several organizational players search collaboratively.

TA: 08:00 - 09:30 Technology Sourcing, Capabilities and Services

Chair: **Juliana Hsuan**, Associate Professor, Copenhagen Business School, Department of Operations Management, Solbjerg Plads 3, Frederiksberg DK-2000, Denmark, jh.om@cbs.dk

1. *Conceptualization and Measurement of Service Process Modularity*

Presenting Author: **Thomas Frandsen**, Ph.D. candidate, Copenhagen Business School, Dept. of Operations Management, Solbjerg Plads 3, Frederiksberg DK-2000, Denmark, tfr.om@cbs.dk, Co-Author: **Juliana Hsuan**, Associate Professor, Copenhagen Business School, Department of Operations Management, Solbjerg Plads 3, Frederiksberg DK-2000, Denmark, jh.om@cbs.dk

Abstract: This paper explores how service process modularity can be conceptualized and measured. We take the service process as a system where its various elements can be decomposed into simpler elements. We apply the Service Modularity Function to measure the degree of service process modularity of a Danish financial service provider.

2. *Execution Capabilities of Distributed Technology Projects: A Comparative Evaluation of Efficiency*

Presenting Author: **Anant Mishra**, Assistant Professor, George Mason University, 4400 University Drive, Fairfax VA 22030, United States of America, amishra6@gmu.edu, Co-Author: **Kingshuk K. Sinha**, University of Minnesota, 3-150 Carlson School of Management, 321 19th Avenue South, Minneapolis MN 55455, United States of America, ksinha@umn.edu, **Sriram Thirumalai**, Assistant Professor, University of Utah, Operations and Information Systems, Salt Lake City UT, United States of America, sriram.thirumalai@business.utah.edu

Abstract: With technology projects becoming increasingly distributed across firm and country boundaries, project execution has become a central concern for managers. This study examines how efficiency of projects varies across different types of distributed project organization. Further, it identifies the impact of project execution

capabilities on the efficiency of projects. Using the econometric approach of stochastic frontier analysis, we examine data from 830 technology projects.

3. *Fluid Teams and Fluid Tasks: The Impact of Diversity in Experience and Team Familiarity*

Presenting Author: **Bradley Staats**, Assistant Professor, UNC - Chapel Hill, Campus Box 3490, McColl Building 4702, Chapel Hill NC 27599-3490, United States of America, bstaats@unc.edu

Abstract: We consider how fluid teams and fluid tasks interact to affect team performance. We study the effect of diversity in experience on a team's ability to respond to changing tasks. Using detailed data from a software services firm, we find that though diverse experience across team members decreases flexibility to change, diverse experience within team members increases flexibility. Our results highlight the need for nuanced approaches to leveraging experience in managing teams.

4. *Dynamic Learning Strategies for High-Tech Start-Up Ventures*

Presenting Author: **Jennifer Bailey**, Georgia Institute of Technology, 800 West Peachtree St. NW, Atlanta GA 30308-, United States of America, jennifer.bailey@mgt.gatech.edu, Co-Author: **Cheryl Gaimon**, Regents' Professor, Georgia Institute of Technology, College of Management, Atlanta 30308, United States of America, cheryl.gaimon@mgt.gatech.edu

Abstract: We model a dynamic capabilities-based view of the high-tech start-up venture. We explore the different costs, risk penalties and innovation return potential for exploration versus exploitation learning. Funding partners set dynamic goals to motivate the venture to maximize innovation value and minimize risk. The optimal rates of learning are driven by the rates of change in the goals. This is interesting for venture managers who drive innovation and keep pace with industry clockspeed.

TB: 11:00 - 12:30 Incentives and Organizational Issues in R&D and Product/Service Design Chair: **Yi Xu**, University of Maryland, 4312 Van Munching Hall, College Park MD 20742, United States of America, yxu@rsmith.umd.edu

1. *Stakeholders' Influence on Product Design Decision with Exogenous Uncertainty*

Presenting Author: **Zhijian Cui**, PhD Candidate, INSEAD, Constance de Blvd, Fontainebleau, France, Zhijian.CUI@insead.edu, Co-Author: **Christoph Loch**, INSEAD, Constance de Blvd, Fontainebleau, France, Christoph.LOCH@insead.edu

Abstract: With inaccurate information of uncertainty (e.g. market shock), stakeholders lack consistent and "objective" interpretation of a commonly shared target. It is not clear from the literature how stakeholders' strategic interactions influence product design in such environment. This research tries to open the "black box" of R&D organizations by comparing design outputs in various situations of decision power distribution and task priorities. Simple test supports some of the insights.

2. *Integrating Social Network Effects in Product Design*

Presenting Author: **Dilek Gunnec**, Ph.D. Candidate, University of Maryland, R.H. Smith School of Business, College Park MD, United States of America, dgunnec@rsmith.umd.edu, Co-Author: **S. Raghavan**,

University of Maryland, R.H.Smith School of Business, and Institute for Systems Research, College Park MD, United States of America, raghavan@umd.edu

Abstract: We propose to incorporate social network effects in customers' purchasing decisions by including it in the share-of-choice problem. We describe a genetic algorithm approach for this NP-hard problem. We also introduce a secondary problem of determining the least expensive way of influencing individuals in a social network. This problem addresses contagion models and the issue of determining influential nodes, which are of significant interest in marketing and epidemiological settings.

3. *Designing Experiential Services: The Customer Journey Perspective*

Presenting Author: **Stylianos Kavadias**, Associate Professor, Georgia Tech, 800 W Peachtree St NW, Atlanta, United States of America,

Stylianos.Kavadias@mgt.gatech.edu, Co-Author: **Ioannis Bellos**, Ph.D. Candidate, Georgia Institute of Technology, 800 West Peachtree St. NW, Atlanta GA 30308, United States of America, ioannis.Bellos@mgt.gatech.edu

Abstract: We explore the design challenges of an organization that develops an experiential service, i.e. consumers value both the functional utility and their holistic experience. Past literature (e.g. IDEO) advocates the value of the "customer journey": services are (coproduction) touchpoints between the consumer and the service provider. We identify the non-monotonic effects of the coproduction losses and the service complexity on the design decisions, i.e. price, and touchpoints she controls.

4. *The Impact of Royalty Contract Revision in a Multi-stage Strategic R&D Alliance*

Presenting Author: **Yi Xu**, University of Maryland, 4312 Van Munching Hall, College Park MD 20742, United States of America, yxu@rhsmith.umd.edu, Co-Author: **Wenqiang Xiao**, New York University, KMC 8-72, 44 W 4 Street, New York NY 10012, United States of America, wxiao@stern.nyu.edu

Abstract: In a R&D alliance, firms often revise pre-agreed royalty contract. We study how the potential for royalty contract revision impacts incentives, contract design, and profits in a two-stage (R&D stage and marketing stage) alliance. We find that royalty contract revision is beneficial in a R&D alliance with low technical uncertainty and high market uncertainty, and low degree of information asymmetry.

TB: 11:00 - 12:30 KLIC: Management and Evolution of Knowledge

Chair: **David Moore**, klicnet.org, 16312 SE 4th Street, Bellevue WA 98008, United States of America, dmoore@klicnet.org

1. *How Flying Got Smarter: 5 Stages of Control Knowledge*

Presenting Author: **Roger Bohn**, Professor, UC San Diego, IR/PS 0519, 9500 Gilman Drive, La Jolla CA 92093-0519, United States of America, Rbohn@ucsd.edu

Abstract: Flying, like many other technologies, started as a craft activity based on personal skill. It is now "scientific," including highly standardized, procedural, and predictable. Control in flying evolved through five stages of knowledge: Craft, Rules + Instruments, Standard Procedures, Automation, and Computer Integrated Flight. Each was a different paradigm and required unlearning previous control

behavior. However, older stages are still used for some activities.

2. *A Dynamic Model of Individual and Group Learning Amid Disruption*

Presenting Author: **Kyle Lewis**, Professor, University of Texas at Austin, Austin TX, United States of America, Kyle.Lewis@mcombs.utexas.edu, Co-Author: **Edward Anderson**, Associate Professor, University of Texas, 1 University Station B6500, Austin TX 78733, United States of America,

Edward.Anderson@mcombs.utexas.edu

Abstract: Using the system dynamics methodology, we model the relationship between disruptive events and learning and productivity in organizations by leveraging the theories of learning-by-doing and transactive memory systems to model the interplay between learning at the group and individual levels. We then simulate the impact of various disruptive events, such as employee turnover, innovation, reorganization, and extreme events on productivity. Implications of this research are then discussed.

3. *Organizational Knowledge and the Effects of Turnover*

Presenting Author: **Anne Woolstenhulme**, PhD Candidate, DESB, University of Utah, 1645 E. Campus Center Drive, Salt Lake City UT 84105, United States of America,

anne.woolstenhulme@business.utah.edu

Abstract: The inertness of collective organizational knowledge is frequently invoked in the knowledge-based view to explain persisting differences in capabilities and performance among firms. This paper reflects on organizational knowledge in the context of research frameworks that unpack structural mechanisms of collective cognition in order to consider the effects of turnover on firm knowledge.

4. *Operating on the Learning Curve: Leveraging Modularity and Influence to Improve Surgery Performance*

Presenting Author: **David Moore**, klicnet.org, 16312 SE 4th Street, Bellevue WA 98008, United States of America, dmoore@klicnet.org

Abstract: Surgery has a scientific basis, yet surgeons also employ discretion and skill in non-standard, artful arrangements. Experienced surgeons develop and refine custom routines. Eventually, performance improvements can stem more from changes in case mix, surgical team composition and upstream/downstream care units than from a surgeon's individual improvement. A surgeon must then learn how to leverage personal influence to further improve performance. Hospital field study findings will be shared.

TC: 13:30 - 15:00 Contemporary Issues in Technology and Knowledge Management - I

Chair: **Adrian Choo**, Robinson College of Business, Georgia State University, 35 Broad St., Suite 1044, Atlanta GA 30303, United States of America, achoo@gsu.edu

1. *Effects of Organizational Context in Knowledge Creation in R&D Projects*

Presenting Author: **Aravind Chandrasekaran**, The Ohio State University, 2100 Neil Avenue, Columbus OH 43210, United States of America, chandrasekaran.24@osu.edu, Co-Author: **Kevin Linderman**, University of Minnesota, 321

-19 Ave.S, Minneapolis, United States of America,
linde037@umn.edu

Abstract: This research investigates the extent of tacit and explicit knowledge created in R&D projects. We find Psychological Safety and Team Heterogeneity as two competing mechanisms that promote tacit and explicit knowledge in R&D projects. Using Nonaka's knowledge creation theory, we investigate the organizational mechanisms that maximize explicit knowledge. We test our model using project level data from 110 R&D Projects collected from 34 high technology organizations.

2. *Diversity Effects on Project Evaluation*

Presenting Author: **Stylianos Kavadias**, Associate Professor, Georgia Tech, 800 W Peachtree St NW, Atlanta, United States of America,

Stylianos.Kavadias@mgt.gatech.edu, Co-Author: **Nektarios Oraopoulos**, Assistant Professor, Judge School of Business, Cambridge University, Cambridge, United Kingdom, n.oraopoulos@jbs.cam.ac.uk

Abstract: New product development teams are often prone to two types of errors: terminating too early a project that would have been successful, or continuing a project that eventually fails. Our work studies how the corresponding probability for each type of error changes as the team members become more diverse with respect to their preferences. Unlike previous studies, we allow for strategic considerations that might lead a team member to vote against their individual preferences.

3. *Technology-Enabled Intervention in a Health Care Supply Chain for a Heterogeneous Population*

Presenting Author: **David Zepeda**, University of Minnesota, 3-150 Carlson School of Management, 321 19th Avenue South, Minneapolis MN 55455, United States of America, zepe0003@umn.edu, Co-Author: **Kingshuk K. Sinha**, University of Minnesota, 3-150 Carlson School of Management, 321 19th Avenue South, Minneapolis MN 55455, United States of America, ksinha@umn.edu

Abstract: Although many have benefited from health care innovations, striking disparities in care for underserved populations remain. In this study we investigate the supply chain coordinating mechanisms of awareness, affordability and access in the delivery of asthma care while serving as participant-observant researchers for the roll-out of a newly developed and customized clinical decision support system in a safety net that provides access to care for low-income, uninsured and underserved populations.

TC: 13:30 - 15:00 New Product Development in the Health Care Industry

Chair: **Stefan Haefliger**, ETH Zurich, Kreuzplatz 5, Zurich 8032, Switzerland, shaefliger@ethz.ch

1. *The Impact of Knowledge Structures on Firm Performance in the Biopharmaceutical Industry*

Presenting Author: **Zeynep Erden**, ETH Zurich, KPL G13, Kreuzplatz 5, Zurich 8032, Switzerland, zerden@ethz.ch, Co-Author: **David Klang**, ETH Zurich, KPL J11, Kreuzplatz 5, Zurich, Switzerland, klangd@ethz.ch, **Renato Sydlar**, ETH Zurich, KPL G13, Kreuzplatz 5, Zurich, Switzerland, rsydlar@ethz.ch, **Georg von Krogh**, Prof., ETH Zurich, KPL H14, Kreuzplatz 5, Zurich 8032, Switzerland, gvkrogh@ethz.ch

Abstract: In the knowledge-based view, the firm creates, transfers, and utilizes knowledge that impacts on its performance. Incorporating recent research on the

knowledge-based view of the firm, we review and test the impact of knowledge stock structures on firm performance on a global sample of public companies in the biopharmaceutical industry.

2. *Division of Labor across Organizational Forms during a Technological Discontinuity*

Presenting Author: **Lourdes Sosa**, London Business School, London, United Kingdom, lsosa@london.edu

Abstract: Research has shown incumbents underperform entrants in the R&D of radical innovation. Using data on biotechnology's impact on the anticancer drug market, I show that whereas diversifying entrants perform best, de novo entrants perform worst but execute the riskiest projects (gene therapy). I discuss implications of this division of labor.

2. *Team Characteristics In Licensing and Commercialization of Inventions From Academic Medical Center*

Presenting Author: **Ayfer Ali**, Harvard Business School, 44 HBS Mail Ctr, Boston MA, United States of America, aali@hbs.edu

Abstract: NIH's emphasizes the need for interdisciplinary and multidisciplinary team collaboration and training in bringing basic research to the clinic. In this paper I use patent data from two large Academic Medical Centers to understand whether cross-domain (clinical and research) expertise on the inventing team, measured by inventor educational background, influences the hazard of licensing and commercialization of the inventions.

3. *Designing a New Program for Elective Surgery: Impact on Patient Experience, Quality and Efficiency*

Presenting Author: **Paulo Gomes**, Assistant Professor, Universidade Nova de Lisboa, Universidade Nova Lisboa, Lisbon, Portugal, pgomes@fe.unl.pt, Co-Author: **Pedro Barros**, Faculdade Economia, Universidade Nova Lisboa, Lisbon, Portugal, ppbarros@fe.unl.pt

Abstract: We study the challenges associated with the design and implementation of a program designed to deal with waiting lists for elective surgery - SIGIC. The program has three key features: offer of a maximum waiting guarantee, allows option for private sector after a waiting threshold, and use of a centralized database for managing the waiting list. We analyze the impact of the SIGIC on different dimensions of performance: waiting list, resource efficiency, and technical quality of the service.

TD:16:30 - 18:00 Contemporary Issues in Technology and Knowledge Management - II

Chair: **Aravind Chandrasekaran**, The Ohio State University, 2100 Neil Avenue, Columbus OH 43210, United States of America, chandrasekaran.24@osu.edu

1. *Inside the Learning Curve: Opening the Black Box of the Learning Curve*

Presenting Author: **Michael Lapre**, Vanderbilt University, Owen Graduate School of Management, 401 21st Avenue South, Nashville TN 37203, United States of America, Michael.Lapre@owen.vanderbilt.edu

Abstract: The learning-curve phenomenon is well known. However, the process that leads to actual learning is often treated as a black box. There is a process inside the learning curve. Experience can foster learning. Learning can yield better organizational knowledge. Better organizational knowledge can persuade organizational members to modify behavior. Changed behavior, in turn,

can improve organizational performance. I review empirical studies of these steps, and identify questions for future research.

2. *An Analysis of Environmental Sustainability Measures in the US Hospitality Industry*

Presenting Author: **Nitin Joglekar**, Boston University, 595 Commonwealth Ave., Boston, United States of America, joglekar@bu.edu, Co-Author: **Rohit Verma**, Cornell University, 338 Statler Hall, Ithaca NY, United States of America, rv54@cornell.edu, **Jie Zhang**, Boston University, 2 Sir Charles Road, Lincoln, United States of America, jz@bu.edu

Abstract: Using an 8-year panel of 984 US hotel sites, we develop factors that measure environmental sustainability (ES). We test a stochastic frontier model that deploys these ES factors within a service supply chain consisting of operators, owners, and guests using a performance frontier framework (Schmenner & Swink 1998). Technical efficiency and operating performance are influenced by these factor measures, along with the market segmentation and infrastructural constructs.

3. *Interplay between Operational Emphasis and Innovation Orientation on Process Formalization*

Presenting Author: **Adrian Choo**, Robinson College of Business, Georgia State University, 35 Broad St., Suite 1044, Atlanta GA 30303, United States of America, achoo@gsu.edu, Co-Author: **Chinawut Chinaprayoon**, Rensselaer Polytechnic Institute, 110 8th Street, Troy NY 12180, United States of America, chinawut@gmail.com

Abstract: We investigate how operational emphasis and innovation orientation affect the likelihood of ISO 9000 adoption among Thai manufacturers. Our initial findings suggest that both operations and innovation work can benefit from formalizing and codifying tasks under certain conditions. We will present implications on managing process formalization in organizations.

TD: 16:30 - 18:00 Developing and Appropriating Value from Innovation

Chair: **Sanjiv Erat**, UC San Diego, serat@ucsd.edu

1. *The Equity vs. Royalty Dilemma in University Technology Transfer*

Presenting Author: **Niyazi Taneri**, Judge Business School, University of Cambridge, Cambridge, United Kingdom, n.taneri@jbs.cam.ac.uk, Co-Author: **Nicos Savva**, Assistant Professor, London Business School, Sussex Place, London NW1 4SA, United Kingdom, nsavva@london.edu

Abstract: Universities use a combination of equity and royalties when they license out technology to venture capital backed spin-outs. The use of royalties is a puzzle as it is generally accepted that royalties, as opposed to equity, cause distortions. We develop a model, based on asymmetric information, which provides a rational explanation for the persistent use of royalties alongside equity. The model also generates other findings that are consistent with empirical observations.

2. *Managing Product Transitions under Technology Uncertainty*

Presenting Author: **Sreekumar Bhaskaran**, Assistant Professor, Southern Methodist University, 6212 Bishop Blvd, Dallas TX 75205, United States of America, sbhaskar@mail.cox.smu.edu, Co-Author: **Ankur Goel**,

Case Western Reserve University, 10900 Euclid Avenue, 324 Peter B Lewis Bldg., Cleveland OH 44113, United States of America, axq312@case.edu, **Karthik**

Ramachandran, Southern Methodist University, Dallas, United States of America, karthik@mail.cox.smu.edu

Abstract: End-of-life inventory decisions of existing products are often made before technological uncertainties about a new product are resolved. We model the inventory planning and introduction timing decisions surrounding product rollovers of innovating firms. Optimal inventory & launch policies are characterized for competitive markets with single and dual rollovers.

3. *The Effect of Team Diversity and Structure on Project Management*

Presenting Author: **Stylianos Kavadias**, Associate Professor, Georgia Institute of Technology, 800 W Peachtree St NW, Atlanta, United States of America, Stylianos.Kavadias@mgt.gatech.edu, Co-Author: **Nektarios Oraopoulos**, Assistant Professor, Judge School of Business, Cambridge University, Cambridge, United Kingdom, n.oraopoulos@jbs.cam.ac.uk

Abstract: We analyze the impact of new information interpretation (interpretive diversity) on project termination decisions. We view NPD teams as small groups of decisions makers with varying interpretive capabilities, who may result in different proposals regarding project continuation. Our results reveal that depending on the information regime (average interpretive capability) diverse teams may decide differently. We offer an alternative explanation to escalation phenomena.

Wednesday, November 10

WA: 08:00 - 09:30 New Product Innovation Strategy

Chair: **Sreekumar Bhaskaran**, Assistant Professor, Southern Methodist University, 6212 Bishop Blvd, Dallas TX 75205, United States of America, sbhaskar@mail.cox.smu.edu

1. *Managing Delegated Search Over Design Spaces*

Presenting Author: **Sanjiv Erat**, UC San Diego, serat@ucsd.edu, Co-Author: **Vish Krishnan**, UCSD, 9500 Gilman Drive, La Jolla, United States of America, ykrishnan@ucsd.edu

Abstract: Organizations increasingly seek solutions to open-ended design problems by employing an approach where the search over a solution space is delegated to outside agents. We study this new class of problems, and through an analytical model, we examine the relationship between problem specification, award structure, and breadth of solution space searched by outside agents towards characterizing how a firm should effectively manage such open-ended design contests.

2. *Drivers of Value and Growth: An Examination of Innovation in the Solar Energy Supply Chain*

Presenting Author: **Jane Davies**, University of Cambridge, Judge Business School, Trumpington Street, Cambridge CB2 1AG, United Kingdom, j.davies@jbs.cam.ac.uk, Co-Author: **David Kirkwood**, University of Cambridge, Institute for Manufacturing, 17 Charles Babbage Road, Cambridge CB3 0FS, United Kingdom, dak39@cam.ac.uk

Abstract: The introduction of government incentives has seen a plethora of firms enter the solar sector. These

include both start-ups and firms diversifying from other industries. Along with incumbents, these firms face the dual pressures of reducing production costs while increasing the technology efficiency of solar power. We combine secondary data and case study analysis of 70 solar firms to show that process and technological innovation have differential effects on revenue growth and market value.

3. *Design and Introduction of Conspicuous Durable Products*
Presenting Author: **Vishal Agrawal**, Georgia Tech, 800 W Peachtree St NW, Atlanta GA, United States of America, Vishal.Agrawal@mgt.gatech.edu, Co-Author: **Stylianos Kavadias**, Associate Professor, Georgia Institute of Technology, 800 W Peachtree St NW, Atlanta, United States of America, Stylianos.Kavadias@mgt.gatech.edu, **Beril Toktay**, Associate Professor, Georgia Tech, 800 W Peachtree St NW, Atlanta, United States of America, Beril.Toktay@mgt.gatech.edu
Abstract: We study the implications of exclusivity-seeking consumer behavior on the design and introduction decisions for a durable product, namely the durability and pricing choices of the firm. We draw upon the traditional market models of vertically differentiated durable products to incorporate exclusivity-seeking behavior, and show that firms should instead consider designing products that undergo slow value erosion in conjunction with a high-price, low-volume product introduction strategy.
4. *Product Introduction Timing for Start-ups*
Presenting Author: **Sinan Erzurumlu**, Assistant Professor, Babson College, Tomasso 123, Babson Park MA 02457, United States of America, serzurumlu@babson.edu, Co-Author: **Sreekumar Bhaskaran**, Assistant Professor, Southern Methodist University, 6212 Bishop Blvd, Dallas TX 75205, United States of America, sbhaskar@mail.cox.smu.edu, **Karthik Ramachandran**, Southern Methodist University, Dallas, United States of America, karthik@mail.cox.smu.edu
Abstract: We study how a start-up organization should structure its development process. While cash constraints pressure the firm to launch a product as soon as possible (to avoid or delay bankruptcy), it could affect the future products. We develop optimal policies for the start-up firm to determine whether and when to launch an existing product under technological uncertainty about future development of products.

WA: 08:00 - 09:30 Technology Assessment and Forecasting II

Chair: **Fred Phillips**, Professor, Alliant International University, Avenue of Nations, San Diego CA 92131, United States of America, fphillips@alliant.edu

1. *How Do Small Biotechnology Firms Innovate? The Cases from Taiwan*
Presenting Author: **Yu-Shan Su**, Associate Professor, National Taiwan Normal University, 162, HePing East Road, Section 1, Taipei 106, Taiwan - ROC, bellesu222@yahoo.com.tw
Abstract: How do small firms innovate? How do a small firm's internal capabilities and external alliances contribute to its innovativeness? The main purpose of this study is to adopt theoretical angle of open innovation to discuss small biotechnology firms in Taiwan. This study offers an integrated perspective of open innovation in the literature.
2. *Forecasting Timely Revolutions in Organizational*

Performance

Presenting Author: **Charles Weber**, Associate Professor, Portland State University, P.O. Box 751, Engineering and Technology Management, Portland OR 97207, United States of America, charles.weber@etm.pdx.edu, Co-Author: **Nitin Mayande**, Doctoral Student, Portland State University, P.O. Box 751, ETM, Portland OR 97207, United States of America, nitin.mayande@gmail.com

Abstract: It has been shown that subsystem-level learning activities and firm-exogenous learning activities can induce delayed, timely revolutions in organizational performance. This paper develops a method for forecasting revolutions in organizational performance in an open innovation system. Firm-internal and firm-external factors are taken into consideration.

3. *Forecasting the Development of Clean Coal and Natural Gas Technologies*
Presenting Author: **Christopher Ordowich**, SRI International, 1100 Wilson Blvd, Arlington VA, United States of America, christopher.ordowich@sri.com, Co-Author: **John Chase**, SRI International, 1100 Wilson Blvd, Arlington, United States of America, john.chase@sri.com
Abstract: This study estimates the costs and efficiencies of several types of coal and natural gas power plants with and without carbon capture technologies through 2050. Improvements in plant efficiency and reductions in capital and O&M costs are modeled using technology learning curves established by a detailed analysis of historic performance data. Combined with demand and input cost forecasts, the learning curves were used to project the cost and adoption of each plant type over time.
4. *Exploring the Societal Dimensions of IT: A Look at the Future of Sustainable IT Services*
Presenting Author: **Robert Harmon**, Professor of Marketing & Technology Management, Portland State University, P.O. Box 751, Portland OR 97207, United States of America, harmonr@pdx.edu, Co-Author: **Haluk Demirkan**, Associate Professor of Information Systems, Arizona State University, Main Campus, Tempe AZ 85287, United States of America, haluk.demirkan@asu.edu
Abstract: Green IT, the first wave of sustainable IT, developed strategies for reducing energy costs and carbon footprints, primarily in data centers. Green IT has been product-oriented and internally focused within the IT function. The second wave of sustainable IT will be service-oriented and focused beyond the IT function to serve the organization's business ecosystem and society at large. This work explores the key dimensions driving the development and applications of sustainable IT services.
5. *Inter-institutional Relationships and Emergency Management*
Presenting Author: **Fred Phillips**, Professor, Alliant International University, and General Informatics LLC, 10622 Sunset Ridge Drive, San Diego CA 92131, United States of America, fp@generalinformatics.com
Abstract: Public disasters from the Exxon Valdez spill to the US mortgage meltdown involve many agencies. In improved networks of institutions, the fox will not guard the henhouse, accountability is enhanced rather than clouded, and remediation is quick, with blame assigned later. This paper advocates a new field of High-Performance Inter-Organizational Interaction (HPII). It maps dimensions of HPII against an extended Multiple Perspectives schema. Recent disasters and research directions are discussed.

WB: 11:00 - 12:30 Characterizing Uncertainty and Learning for Technology Choice Decisions

Chair: **Thomas Rand-Nash**, Doctoral Candidate, MIT Materials Systems Laboratory, 77 Massachusetts Avenue, Cambridge MA 02139, United States of America, trand@mit.edu

- Learning-Derived Cost Evolution in Materials Selection*
Presenting Author: **Trisha Montalbo**, MIT, 77 Massachusetts Ave, E38-420, Cambridge, United States of America, trisha@mit.edu, Co-Author: **Richard Roth**, Director of MIT Materials Systems Laboratory, MIT, 292 Main Street, Cambridge, United States of America, roth@MIT.EDU
Abstract: We investigate the impact of considering cost evolution due to learning by doing in the selection of materials for a manufacturing firm. A multi-product, multi-period selection framework is developed to analyze the problem because single-product selection methods are unable account for benefits realized through shared learning among products. The use of test beds as a strategy for introducing new materials to a firm is also evaluated.
- Cost-Optimal Reinspection Plans*
Presenting Author: **Hadi Zaklouta**, Graduate Student Researcher, MIT Materials Systems Laboratory, 292 Main Street, E38-435, Cambridge MA 02139, United States of America, zaklouta@mit.edu, Co-Author: **Randolph Kirchain**, Assistant Professor of Mat'l Sci & Eng, MIT, 292 Main Street, Cambridge, United States of America, kirchain@mit.edu, **Richard Roth**, Director of MIT Materials Systems Laboratory, MIT, 292 Main Street, Cambridge, United States of America, rroth@MIT.EDU
Abstract: This paper compares single and double inspection plans effect on cost and quality. A cost model is proposed that accounts for appraisal and internal/external failure costs. All units are tested with one or two tests. In plan RR, rejects are retested and replaced after rejection. In plan AR, accepts are retested and rejects replaced. Non-conformance rate and test error rates are known. The AR plan is best for high warranty/scrap cost ratio; the RR plan for low; a single test plan otherwise.
- Learning as a Driver Technology Choice Decisions in Manufacturing*
Presenting Author: **Thomas Rand-Nash**, Doctoral Candidate, MIT Materials Systems Laboratory, 77 Massachusetts Avenue, Cambridge MA 02139, United States of America, trand@mit.edu
Abstract: This work explores process technology decision making in the presence of learning effects in manufacturing, and hopes to characterize the conditions under which learning-related production cost effects impact technology choice decision making. Relevant factors considered include learning rates, production volume as a function of demand, market structure, and budget constraints.
- Shifting Grounds: How Industry Emergence Changes the Effectiveness of Knowledge Creation Strategies*
Presenting Author: **Sebastian Fixson**, Babson College, Babson Park MA, United States of America, sfixson@babson.edu, Co-Author: **Won Hee Lee**, Samsung Research, Seoul, Korea, Republic of, lee.woni@gmail.com
Abstract: The knowledge management literature has identified various aspects, advantageous and

disadvantageous, of both inward-looking and outward-looking knowledge creation strategies. With a longitudinal empirical study we explore the dynamics of firms' knowledge creation strategies during the period of industry emergence. We find that the emergence of an industry changes the effectiveness of the different knowledge creation strategies.

WB: 11:00 - 12:30 Sustainability and NPD

Chair: **Cheryl Druehl**, Assistant Professor, George Mason University, 4400 University Dr, MS 5F4, Fairfax VA 22030, United States of America, cdruehl@gmu.edu

- New Business Models to Enable Clean and Renewable Generation in the Electric Power Industry*
Presenting Author: **Edward Anderson**, Associate Professor, University of Texas, 1 University Station B6500, Austin TX 78733, United States of America, Edward.Anderson@mcombs.utexas.edu, Co-Author: **Geoffrey Parker**, Associate Professor, Tulane University, Energy Institute, New Orleans LA 70118, United States of America, gparker@tulane.edu
Abstract: Over the coming decades, electric power companies must transform their business models to accommodate the smart grid and growing demand for clean renewable energy. Many researchers are examining aspects of this problem, such as power companies' infrastructure portfolios, consumer behavior, pricing structures, etc. To complement this analysis, we build and analyze a top-down systems model of a typical power company and its market "ecosystem" using the system dynamics methodology.
- Does "To Go Green" Translate into Profitability?*
Presenting Author: **Asoo Vakharia**, Professor, University of Florida, Department of ISOM, Gainesville FL 32611-7169, United States of America, asoo.vakharia@warrington.ufl.edu, Co-Author: **Arda Yenipazarli**, University of Florida, Department of ISOM, Gainesville FL 32611-7169, United States of America, arda.yenipazarli@warrington.ufl.edu
Abstract: Consumers are frequently integrating "green" product attributes when making purchasing decisions. We propose a firm level analytical model to enable decisions on whether to upgrade the "green" content of an existing product, replace the existing product with a "green" product, or provide a portfolio of an existing and "green" product.
- Reviving the Electric Car Movement: Developing Green Infrastructure for Sustainable Transportation*
Presenting Author: **Cheryl Druehl**, Assistant Professor, George Mason University, 4400 University Dr, MS 5F4, Fairfax VA 22030, United States of America, cdruehl@gmu.edu, Co-Author: **Michael Naor**, George Mason University, 4400 University Dr, Fairfax VA 22030, United States of America, mnaor@gmu.edu
Abstract: An innovative new business model for sustainable transportation is described. A case study approach is used to study the unique product and service development process required to electrify the automobile industry, focusing on a clean tech company building innovative green infrastructure for sustainable transportation in Israel.

WC:13:30 - 15:00 Innovation and the Economy

Chair: Erica Fuchs, PhD, Carnegie Mellon University, 5000 Forbes Avenue, Baker Hall 129, Pittsburgh PA 15217, United States of America, erhf@andrew.cmu.edu

1. *Patents, Materials Transfer Agreements (MTAs), and the Flow of Scientific Knowledge*
Presenting Author: **David Mowery**, Professor, University of California Berkeley, HAAS, mowery@haas.berkeley.edu,
Co-Author: **Neil Thompson**, University of California, Berkeley, HAAS, neil_thompson@haas.berkeley.edu,
Arvids Ziedonis, University of Michigan, azied@umich.edu
Abstract: How does university involvement in academic patenting affect academic science? This paper extends the work of Murray and Stern (2007) to cover a broader sample of published scientific papers in the biomedical and other disciplines, and examines the effects of both patenting and material transfer agreements (MTAs) on citations to scientific papers.
2. *Economic Downturns, Inventor Careers, and Technology Trajectories in the U.S*
Presenting Author: **Wunmi Akinsanmi**, PhD Student, Carnegie Mellon University, 5000 Forbes Avenue, Baker Hall 129, Pittsburgh PA 15217, United States of America, eyidearie@gmail.com, Co-Author: **Erica Fuchs**, PhD, Carnegie Mellon University, 5000 Forbes Avenue, Baker Hall 129, Pittsburgh PA 15217, United States of America, erhf@andrew.cmu.edu
Abstract: This research explores the relationship between the telecommunications bubble burst and the quantity, direction and locus of U.S. innovation. We focus on optoelectronics, a general purpose technology with applications in energy, biomedical, telecommunications, computing and military. Leveraging USPTO patents and inventor CVs, we analyze how inventors' pre-bubble productivity, mobility, social capital and degree of specialization influence these same post-bubble and thereby the national trend.
3. *Intellectual Property, Prior Knowledge & New Firm Survival*
Presenting Author: **Sonali Shah**, Buerk Fellow and Assistant Professor, University of Washington, Box 353200, Seattle WA 98195, United States of America, skshah@u.washington.edu, Co-Author: **Sheryl Winston Smith**, Assistant professor, Temple University, Philadelphia PA, United States of America, sheryl.winston.smith@temple.edu
Abstract: We examine the joint effects of founders' prior knowledge and intellectual property protection on the survival of young firms. We examine three different sources of a founder's prior knowledge: prior industry experience, prior entrepreneurial experience, and prior entrepreneurial experience in the same industry. Taken together, our findings show the importance of patents as strategic, as well as appropriability, tools and are in-line with evolutionary economic theory.

WC: 13:30 - 15:00 Innovation Management for Sustainability

Chair: **Hsueh-Ming Wang**, Associate Professor, University of Alaska Anchorage, ESM Dept. 3211 Providence Dr., Anchorage AK 99508, United States of America, afhsw1@uaa.alaska.edu

1. *Curriculum Development for the Innovation Management*

Program for Sustainability

Presenting Author: **Seong Dae Kim**, Assistant Professor, University of Alaska Anchorage, PM Dept. at University Center, Room 155, 3901 Old Seward Highway, Anchorage AK 99503, United States of America,

afsdk1@uaa.alaska.edu, Co-Author: **Hsueh-Ming Wang**, Associate Professor, University of Alaska Anchorage, ESM Dept. 3211 Providence Dr., Anchorage AK 99508, United States of America, afhsw1@uaa.alaska.edu

Abstract: The curriculum is focusing on the sustainability through the innovation of quality of life. This program will help students for building industry careers as system designers, architects, project managers, developers, and entrepreneurs and providing students with broad understanding of green engineering, energy saving lighting, and innovation of quality of life as well as to stimulating the development and application of energy efficient lighting, green technologies with quality innovation.

2. *The Critical Factors for Decision-making of the Technology Policies of the Industrialized Countries for Municipal Solid Waste Management*
Presenting Author: **Leslie Simmons**, PhD student, University of Alaska, 3211 Providence Dr, Anchorage AK 99508, United States of America, afifs@uaa.alaska.edu, Co-Author: **Hsueh-Ming Wang**, Associate Professor, University of Alaska Anchorage, ESM Dept. 3211 Providence Dr., Anchorage AK 99508, United States of America, afhsw1@uaa.alaska.edu
Abstract: In the United States of America, landfill disposal is a major method to handle municipal solid waste. It may generate pollutants and carbon emissions in the environment. Some industrialized countries, such as Germany, Denmark, and Japan, are using technologies to reduce, reuse, recycle, or combust to limit amounts of land disposed municipal solid waste. Technology policies from governments generate different outcomes of solid waste management. Many factors may affect policy-making process. This research evaluates critical factors that impact technology policies by surveying and comparing results in industrialized countries. Critical impact factors for decision-making priorities differ between the USA and other industrialized countries. These different technology policies may affect environmental protection and carbon emissions in the future.
3. *Cognitive Oriented Integration for Innovation Management*
Presenting Author: **Hsueh-Ming Wang**, Associate Professor, University of Alaska Anchorage, ESM Dept. 3211 Providence Dr., Anchorage AK 99508, United States of America, afhsw1@uaa.alaska.edu, Co-Author: **Muchiu Chang**, PhD. Cantab, Freelance Consultant, 1202-3400 Riverspray Crescent, Mississauga ON, Canada, henry.chang212@gmail.com
Abstract: The acceptance of a new product depends on the market needs of the innovation and service compliance through the product life. We develop an innovation management process by cognitive based consumer behaviors integration. It includes: new ideas to lead the customer needs, adopting new technology in design, patent mapping market analysis, and life cycle management. Modeling simulation is a robust solution to virtually validate and verify the life cycle behaviors of various design concepts.
4. *Agility Management for the Project Sustainability*
Presenting Author: **Peter Lang**, Graduate Student,

University of Alaska Anchorage, ESM Department, 3211 Providence Dr., Anchorage AK 99508, United States of America, peter@alaskadatatech.com, Co-Author: **Hsueh-Ming Wang**, Associate Professor, University of Alaska Anchorage, ESM Dept. 3211 Providence Dr., Anchorage AK 99508, United States of America, afhsw1@uaa.alaska.edu

Abstract: The projectized organization surrounding cultural values addresses concerns of balancing versus optimizing various value propositioning factors. Information Technology for project portfolios selection processes may profit by looking across a variety of fields ranging from project management to the cognitive sciences to increase project agility. The solutions may obtain by meta-modeling balancing, aligning, and integrating a proposed adaptive risk management approach.

WD: 15:30 - 17:00 Inventions, Innovation and Technology Management

Chair: **Kun Liu**, Assistant Professor, Wayne State University, 5201 Cass Ave, Detroit, United States of America, ek9525@wayne.edu

1. *Abandonment of Patented Inventions in Innovation-Intensive Industries*

Presenting Author: **Kun Liu**, Assistant Professor, Wayne State University, 5201 Cass Ave, Detroit, United States of America, ek9525@wayne.edu

Abstract: Little research has examined how firms abandoned some inventions in innovation-intensive industries. Distant innovation search is associated with a greater technological distance between newly acquired inventions and abandoned inventions, as well as a younger average age of abandoned inventions. Abandoning younger inventions and more focused abandonment of inventions are associated with greater market value as measured by Tobin's Q.

2. *Continuous Quality/Time/Cost Tradeoffs*

Presenting Author: **Bruce Pollack-Johnson**, Associate Professor of Mathematical Sciences, Villanova University, 800 Lancaster Avenue, Villanova PA 19085, United States of America, bruce.pollack-johnson@villanova.edu, Co-Author: **Matthew Liberatore**, Professor, Villanova University, 800 Lancaster Avenue, Villanova PA 19085, United States of America, matthew.liberatore@villanova.edu

Abstract: We use an example of a translation project to illustrate how quality can be modeled as a continuous function of time and cost. Given a project deadline and budget, overall quality can then be maximized using a nonlinear programming model. Alternatively, iso-quality curves can be drawn, to visualize the continuous tradeoffs between time, cost, and quality, and then used to pick a combination that seems best for a particular situation.

3. *Launching Technologically Advanced Products in Segmented Markets*

Presenting Author: **John N Angelis**, Rochester Institute of Technology, 105 Lomb Memorial Drive, Rochester, United States of America, jangelis@saunders.rit.edu

Abstract: We focus on how competing profit-maximizing firms should set price and quality for a new technologically-advanced product sold to a segmented market. We analyze a closed-loop Stackelberg game with perfect information. If the late entrant possesses a large enough cost disadvantage, it should only target the least innovative

segment. We also find that a firm with a large cost advantage may not necessarily earn higher profits by being the first mover.

4. *Realizing the Value of RFID in a Global Enterprise*

Presenting Author: **Ann Marucheck**, Professor, Kenan-Flagler Business School, McColl Bldg CB 3490, UNC-Chapel Hill, Chapel Hill NC 27599, United States of America, ann_marucheck@unc.edu, Co-Author: **Anders Duus**, Kenan-Flagler Business School, McColl Building CB 3490, UNC Chapel Hill, Chapel Hill NC 27599, United States of America, duus710@email.unc.edu, **Noel Greis**, Professor and Director -CLED, Kenan-Flagler Business School, Kenan Center CB 3440, UNC-Chapel Hill, Chapel Hill NC 27599, United States of America, noel_greis@unc.edu, **Hong Tham Nguyen**, Kenan-Flagler Business School, McColl Building CB 3490, UNC-Chapel Hill, Chapel Hill NC 27599, United States of America, HongTham_Nguyen@email.unc.edu, **Monica Nogueira**, Kenan-Flagler Business School, Kenan Center CB 3440, UNC-Chapel Hill, Chapel Hill NC 27599, United States of America, monica_nogueira@unc.edu

Abstract: For many organizations, understanding the potential benefits of RFID and justifying its investment continue to be challenges. In this research, we comprehensively study over 4000 cases of RFID projects as reported in the IDTechEX database. Specifically, we contrast the benefits realized by early adopters of RFID with more recent adopters. We further suggest measures that can determine how RFID provides economic value to an enterprise and identify the drivers of determining that value.

WD: 15:30 - 17:00 Technology Management

Chair: **Gulru Ozkan**, Assistant Professor, Clemson University, Department of Management, 101 Sistine Hall, Clemson SC 29634, United States of America, gulruo@clemson.edu

1. *Better selection or efficient contracting?: A Model of Knowledge Vendor Selection and Contracting*

Presenting Author: **Zhijian Cui**, PhD Candidate, INSEAD, Constance de Blvd, Fontainebleau, France, Zhijian.CUI@insead.edu, Co-Author: **Sameer Hasija**, INSEAD, 1 Ayer Rajah Ave, Singapore, Singapore, sameer.hasija@insead.edu

Abstract: We are studying the vendor selection and contracting issue for knowledge driven processes. In particular, we study three vendor selection process: (1) Selection is based on initial talks with the vendor and subsequently the contract is negotiated with the selected vendor. (2) The vendors are informed about the SLA and asked to bid for the contract. (3) The vendors are asked to propose a contract to the client.

2. *Innovation in Top-Down and Bottom-Up Strategy Processes*

Presenting Author: **Fabian Sting**, INSEAD, Boulevard de Constance, Fontainebleau, France, fabian.sting@insead.edu, Co-Author: **Christoph Loch**, INSEAD, Constance de Blvd, Fontainebleau, France, Christoph.LOCH@insead.edu

Abstract: We study strategy processes at six German manufacturing organizations using an organizational search perspective. While the final decision on strategic initiatives remains at the top, strategic initiatives are distributed across hierarchical levels, depending on where expertise is

concentrated. The organizations also use multiple mechanisms to coordinate decentralized actors. Coordination and top-down decision making is weighed against the creativity that stems from delegated search.

3. *Managing New Product Development Knowledge for Competing Firms: Case of Joint Development*
Presenting Author: **Gulru Ozkan**, Assistant Professor, Clemson University, Department of Management, 101 Serrine Hall, Clemson SC 29634, United States of America, gulruo@clemson.edu, Co-Author: **Cheryl Gaimon**, Regents' Professor, Georgia Institute of Technology, College of Management, Atlanta 30308, United States of America, cheryl.gaimon@mgt.gatech.edu
Abstract: We introduce a stochastic game on knowledge sharing (KS) and knowledge development (KD) strategies for two NPD firms. First, leader sets allocations of profit, then firms decide on KS for joint development of a new product. Next, firms jointly pursue KD and launch the product. Insights include impact of uncertainty.

4. *A Decision Model to Manage Network Security Technologies for Information Assurance*
Presenting Author: **Soumyo Moitra**, Senior Member of Technical Staff, Software Engineering Institute, Carnegie Mellon University, 4500 Forbes Ave, Pittsburgh PA 15213, United States of America, smoitra@sei.cmu.edu
Abstract: This paper describes a model to manage technologies to protect informational assets. The focus is on the valuation of information and a methodology to arrive at the value at risk is presented. This assessment is used by the model to evaluate the benefits of different levels of security technologies. Sensitivity analysis with respect to the value of information is presented.



TMS Past Chairs

2009 - David Moore
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2008 - Sebastian Fixson
Babson College

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2007 - Moren Levesque
University of Waterloo

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2006 - Diane Bailey
Stanford University

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2005 - Sarfraz A. Mian
State University of New York, Oswego

(mian@oswego.edu)

2004 - Glenn Dietrich
University of Texas, San Antonio

(dietrich@lonestar.utsa.edu)

2003 - Jeffrey K. Liker
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