

2017 IEEE Technology & Engineering Management Conference (TEMSCON 2017)

**Santa Clara, California, USA
8-10 June 2017**



**IEEE Catalog Number: CFP17G19-POD
ISBN: 978-1-5090-1115-5**

**Copyright © 2017 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP17G19-POD
ISBN (Print-On-Demand):	978-1-5090-1115-5
ISBN (Online):	978-1-5090-1114-8

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2017 IEEE Technology & Engineering Management Conference (TEMSCON)

Entrepreneurship and its Ecosystem I

<i>The Social Organization of Entrepreneurial Ecosystems</i> Xaver Neumeyer (University of North Dakota, USA), Susana Santos (University of Florida, USA), Shan He (University of North Dakota, USA)	1
<i>Double-Edged Sword of Government Role in Innovation Systems: A Case Study in the Development of Policy-led University Science Parks in China</i> Yanli Zhang (Montclair State University, USA), Yuhua Cao (Soochow University, P.R. China), Jieli Dong (Soochow University, P.R. China), John Cantwell (Rutgers University, USA)	7
<i>Venture capital as an ecosystem engineer for regional innovation in an emerging market</i> Sunny Li Sun (University of Massachusetts Lowell, USA), Victor Chen (University of North Carolina at Charlotte, USA), Sanwar Sunny (University of Missouri - Kansas City, USA), Jie Chen (Shanghai Jiao Tong University, P.R. China)	13
<i>Real Options Valuation of a Federally Funded Small Business Portfolio</i> Andrea Belz (University of Southern California, USA)	19

Management of Innovation I

<i>How a Research University Supports University-Industry Collaboration</i> Stephen Cross (Georgia Institute of Technology, USA), Donald McConnell (Georgia Institute of Technology, USA)	25
<i>Governing Knowledge Mobility in Service Innovation Network for Innovation Performance: the interplay of relational and contractual governance modes</i> Ou Bai (Zhejiang A&F University, P.R. China), Jiang Wei (Zhejiang University, P.R. China)	32
<i>Corporate Venture Capital as a Real Option in the Markets for Technology</i> Marco Ceccagnoli (Scheller College of Business at Georgia Tech, USA), Matthew Higgins (Scheller College of Business, Georgia Tech, USA), Hyunsung Kang (Berry College, USA)	40
<i>Technological competition and innovation: knowledge similarity and geographical location</i> Alicia Rodríguez Márquez (University Carlos III of Madrid, Spain), María Jesús Nieto (University Carlos III of Madrid, Spain), Luis Santamaria (University Carlos III of Madrid, Spain)	47

Technology Management I

<i>A topic model analysis of science and technology linkages: A case study in pharmaceutical industry</i> Samira Ranaei (Lappeenranta University of Technology, USA), Arho Suominen (VTT Technical Research Centre of Finland, Finland), Ozgur Dedehayir (Queensland University of Technology, Australia)	49
--	----

<i>Topic modelling approach to knowledge depth and breadth: Analyzing trajectories of technological knowledge</i>	
Arho Suominen (VTT Technical Research Centre of Finland, Finland)	55
<i>Aligning and Catalyzing Research Investments across the National Security Enterprise</i>	
David Isaacson (Office of the Director of National Intelligence, USA)	61

Entrepreneurship and its Ecosystem II

<i>Characteristics of University Startups in Japan</i>	
Katsuya Hasegawa (The University of Tokyo, Japan), Taketo Sugawara (The University of Tokyo, Japan)	67
<i>The Logic of Government-Led Innovation Resource Allocation in Construction of Innovation Clusters Based On The Evolutionary View ---On the Basis of Empirical Cognition</i>	
Huang Xichuan (Nanjing University of Science & Technology, P.R. China)	73
<i>A Business Ecosystem Driven Market Analysis: The Bright Green Building Market Potential</i>	
Zheng Ma (Center for Energy Informatics & University of Southern Denmark, Denmark), Joy Billanes (Center for Energy Informatics, Denmark), Bo N. Jorgensen (University of Southern Denmark, Denmark)	79
<i>Toward a Best Practice Framework in Business Model Innovation</i>	
Annika Wittig (Leibniz Universität Hannover, Germany), Christopher Kulins (Leibniz Universität Hannover, Germany), Christiana Weber (Leibniz Universität Hannover, Germany)	86

Management of Innovation II

<i>Generative Capability</i>	
Sunny Li Sun (University of Massachusetts Lowell, USA), Bo Zou (Harbin Institute of Technology, P.R. China)	94
<i>Metagility: Managing agility for competitive advantage in new product development</i>	
David Bishop (United States, USA)	100
<i>Quantitative Planning and Risk Management of Agile Software Development</i>	
Kamran Ghane (Anagira, Inc., USA)	109
<i>Qualified Determinism in Emergent-Technology Complex Adaptive Systems</i>	
Pravir Malik (Deep Order Technologies & University of Pretoria, USA), Leon Pretorius (University of Pretoria, South Africa), Dietmar Winzker (University of Pretoria, South Africa)	113

Social Issues and Sustainability I

<i>Beyond Technology Push vs. Demand Pull: The Evolution of Solar Policy in the U.S., Germany and China</i> Erik G. Hansen (Johannes Kepler University (JKU) Linz & Leuphana University of Lüneburg, Austria), Florian Lüdeke-Freund (University of Hamburg & Copenhagen Business School, Germany), Xiaohong Quan (San Jose State University, USA), Joel West (Keck Graduate Institute & UC Irvine, USA)	119
<i>Role of Entrepreneurship in Universal Health Coverage (UHC) using mHealth</i> Pradeep Kumar Ray (Shanghai Jiao Tong University, P.R. China), Congfei Zhang (Shanghai Jiao Tong University, P.R. China)	125
<i>Fostering Sustainable Energy Transitions for South Africa's Electricity Sector: A set of Criteria</i> Nicole T Du Plooy (Stellenbosch University & CSIR, South Africa), Alan C Brent (Stellenbosch University & Victoria University of Wellington, South Africa), Imke De Kock (Stellenbosch University, South Africa)	131

Entrepreneurship and its Ecosystem III

<i>Blockchain Technology Innovations</i> Ben Amaba, PE CPIM LEED (IBM Global Solutions, USA), Tareq Ahram (University of Central Florida & Institute for Advanced Systems Engineering, USA), Arman Sargolzaei (Florida Polytechnic University, Lakeland, Florida, USA), Jeff Daniels (Lockheed Martin, USA), Saman Sargolzaei (UCLA, USA)	137
<i>Startup Incubators and the Role of Social Capital</i> Ellen Thomas (New Jersey Institute of Technology, USA), Cesar Bandera (New Jersey Institute of Technology, USA)	142
<i>A Map of Technology Entrepreneurship: Aha to Exit</i> Steve T Cho (Arizona State University, USA), Aram Chomina-Chavez (Arizona State University, USA), Jason Bronowitz (Arizona State University, USA)	148
<i>The role of game theory in the development of business models in supply chains</i> Marko Budler (University of Ljubljana & Faculty of Economics, Slovenia), Peter Trkman (University of Ljubljana, Faculty of Economics, Slovenia)	155

Management of Innovation III

<i>Intellectual Asset Management - Key Areas to Consider Prior to Product Launch</i> Keith Weiss (Brinks Gilson Lione, USA), Michael Spink (Brinks Gilson Lione, USA)	160
<i>Exploring the Influence of Absorptive Capacity on Innovation in Bengaluru High-tech Manufacturing Cluster</i> Deepak Chandrashekar (Indian Institute of Science, India), Bala Subrahmanya Mungila Hillemane (Indian Institute of Science, Bangalore & Department of Management Studies, India)	166

<i>Open IP strategies for enabling sustainability transitions</i> Jan Sternkopf (Kiel University, Germany), Frank Tietze (University of Cambridge, United Kingdom (Great Britain)), Elisabeth Eppinger (FU Berlin, Germany), Pratheeba Vimalnath (Indian Institute of Science, India)	173
--	-----

Engineering Management I

<i>Identification of Delay Factors that Affect High Dwell Times of Freight Trains</i> Khuthadzo Magadagela (University of Johannesburg, South Africa), Hannelie Nel (University of Johannesburg, South Africa), Annlizé Marnewick (University of Johannesburg, South Africa)	179
<i>Factors contributing to delays regarding aircraft during A-check maintenance</i> Tseko Mofokeng (University of Johannesburg, South Africa), Annlizé Marnewick (University of Johannesburg, South Africa)	185
<i>Deterministic Contract Award and Probabilistic Bidding Strategies</i> Roger L. Goodwin (US Government Printing Office, USA)	191

Technology Management II

<i>Forecasting Battery Electric Vehicles</i> Chih Jen Yu (Portland State University, USA), Monticha Khammuang (Portland State University, USA), Jisun Kim (, USA), Tugrul Daim (Portland State University, USA)	199
<i>Guideline for Unstructured Technology Decision Making - A Case Study</i> Annlizé Marnewick (University of Johannesburg, South Africa), Nyiko Shiburi (University of Johannesburg, South Africa)	209
<i>Intertemporal Choices in Cloud Computing: Effects of Delay and Delay Horizon - An Experimental Study</i> Venkataraghavan Krishnaswamy (Indian Institute of Management Kashipur, India), Rangaraja Sundarraj (Indian Institute of Technology Madras, India)	215

Engineering Management II

<i>Qualitative exploration into the application of Systems Engineering within a South African science council</i> Humna Malik (Integrative Systems Group, DPSS, Council of Scientific and Industrial Research & Postgraduate School of Engineering Management, University of Johannesburg, South Africa), Louwrence Erasmus (University of Johannesburg, South Africa), Jan Harm Pretorius (University of Johannesburg, South Africa)	221
<i>Evaluating approaches for the next generation of difficulty and complexity assessment tools</i> Dean Beale (University of Bristol, United Kingdom (Great Britain)), Mike Young (Ministry of Defense, United Kingdom (Great Britain))	227

Project Management - A More Balanced Approach

Pieter Frijns (Dutch Ministry of Interior & Gateway Review Office, The Netherlands), Fons van Leeuwen, MSc. (Dutch Ministry of Interior & Gateway Review Office, The Netherlands), Robert E. Bierwolf, MScEng. SMIEEE (IEEE Technology & Engineering Management Society, The Netherlands) 234

Strategy and Global Market I

Research, Innovation and Competitiveness in a Changing World

Tariq Durrani (Strathclyde University, United Kingdom (Great Britain)), Sheila Forbes (University of Strathclyde, United Kingdom (Great Britain)) 239

Research on the Harmonization of Intellectual Property Systems from the Point of View of Japanese Inventors

Megumi Sako (Kanazawa Institute of Technology, Japan), Koichiro Kato (Kanazawa Institute of Technology, Japan) 245

Equity versus non-equity partnership strategies for leaders, challengers, and niche players

Wan-Chen Chen (National Cheng Kung University, Taiwan), Bou-Wen Lin (National Tsing Hua University, Taiwan) 252

People and Organization I

Knowledge Sharing among Engineers: An Empirical Examination

Orlando Contreras-Pacheco (Universidad Industrial de Santander & Rennes School of Business, Colombia), Cyrlene Claasen (Rennes School of Business, France), Rohit Nishant (Rennes School of Business, France) 260

The human capital: motivation in innovation

Anna Trunina (University of Chinese Academy of Sciences, P.R. China) 267

Holistic Change Management: Importance and Methodological Challenges

Armin Shams (Sharif University of Technology, Iran), Hossein Sharif (Sharif University of Technology, Iran), Ali Kermanshah (VP of Central Bank, Faculty Member of GSME at Sharif Univ of Tech, Iran) 272

Engineering Management III

Optimization of Precast Production Scheduling for Rail Track Slab

Qingxue Liang (Shanghai Jiao Tong University, P.R. China) 277

Business Benchmarking of Global Operations: The Case of Water and Energy Consumption in the Brewery Industry

Johannes Kirstein (University of Pretoria, South Africa), Alan C Brent (Stellenbosch University & Victoria University of Wellington, South Africa) 283

Biotech and Healthcare Innovation

<i>Sponsorship and Characteristics of Medical Device Clinical Trials Registered in Indian Trial Registry</i>	
Naga Rekha Gorantla (Indian Institute of Science, India)	289
<i>Biomedical Value Chain Traceability for Innovation</i>	
Gregory Theyel (California State University, USA)	295
<i>Insurance Policy Reformation for Autism Treatment Coverage</i>	
Sharon Qi (San Jose State University, USA), Seung Jun Lee (San Jose State University, USA), Tianqin Shi (San Jose State University, USA)	301

People and Organization II

<i>The Craft of R&D Leadership</i>	
Thomas Curtin (Applied Physics Laboratory, University of Washington, USA), Steve Ramberg (Applied Research Laboratory, Pennsylvania State University, USA)	306
<i>Tackling hurdles to digital transformation - The role of competencies for successful IIoT implementation</i>	
Benjamin Weber (University of Saarland, Germany), Jens Butschan (University of Saarland, Germany), Sven Heidenreich (, Germany)	312
<i>Individual Foresight Capability in Organizations: Role of Information Acquisition</i>	
Krishna Kumar Balaraman (Indian Institute of Technology, Madras, India), Rangaraja Sundarraj (Indian Institute of Technology Madras, India)	318

Social issues and sustainability II

<i>Product Deletion and the Supply Chain: A Greening Perspective</i>	
Qingyun Zhu (Worcester Polytechnic Institute, USA), Purvi Shah (Worcester Polytechnic Institute, USA), Joseph Sarkis (Worcester Polytechnic Institute, USA)	324
<i>New insights into socio-technical transitions: A technology management perspective</i>	
Imke De Kock (Stellenbosch University, South Africa), Alan C Brent (Stellenbosch University & Victoria University of Wellington, South Africa)	329
<i>Applying the Internet of Things (IoT) to Biomedical Development for Surgical Research and Healthcare Professional Training</i>	
Ian Rubin de la Borbolla (Mibio Medical, LLC, USA), Mark Chicoskie (Mibio Medical, LLC, USA), Trey Tinnell (IBM Corporation, USA)	335

Strategy and Global Market II

<i>How Do Emerging Economy Enterprises Achieve Technological Catch-up ? A Dual-drive Model of Technological Discontinuity And Institution-driven Markets</i> Jiang Wei (Zhejiang University, P.R. China), Cong Sun (Zhejiang University, P.R. China), Qiuyue Pan (Zhejiang University, P.R. China)	342
<i>Corporate Social Responsibility, Environmental Product Innovation and Firm Performance: Evidence from Chinese Listed Firms</i> Lutao Ning (University of London, United Kingdom (Great Britain)), Xin Pan (Queen Mary University of London, United Kingdom (Great Britain)), Xuhong Xu (Queen Mary University of London, United Kingdom (Great Britain))	350
<i>Chinese Firms' R&D "Going Out": Determinants for Location Choice</i> Liu Xielin (Chinese Academy of Science, P.R. China), Sheng Wu (University of Chinese Academy of Sciences, P.R. China), Li Zhu (University of Chinese Academy of Sciences, P.R. China), Xuechen Ding (University of Chinese Academy of Sciences, P.R. China)	360

Engineering Management IV

<i>Barriers in Information Technology Project Management</i> Fagno Fonseca (Instituto Federal do Tocantins, Brazil), Patrick Letouzé Moreira (Universidade Federal do Tocantins, Brazil), Rubens Pompeu (Embrapa, Brazil), Leandro Garcia (Universidade Federal do Tocantins, Brazil), Selma Regina Oliveira (Universidade Federal do Tocantins, Brazil), George dos Santos (Universidade Federal do Tocantins, Brazil)	370
<i>A Capital Allocation Decision Rule for Knowledge-Intensive Organizations</i> Januj Juneja (San Diego State University, USA), Amar Amar (Seton Hall University, USA)	376
<i>Battery Management System Using Arduino</i> Nathan E Scharich (Saginaw Valley State University, USA), Anthony Hebert (Saginaw Valley State University, USA), Brandon Schneider (Saginaw Valley State University, USA), Md. Shafiul Islam (Saginaw Valley State University, USA)	384
<i>SMEs: The Effects of Strategic Management</i> Anthony Dugan (Robert Morris University, USA), Emily Frantz (Robert Morris University & Siemens Industry, USA), Kyle Hinchberger (Robert Morris University, USA), Brandon Maseth (Robert Morris University, USA), Othman Abdullah Al Sharfa (Robert Morris University, USA), Jameela Al-Jaroodi (Robert Morris University, USA)	388

People and Organization III

<i>A Model for Postgraduate Supervision of Large Student Numbers in Engineering Management at the University of Johannesburg</i> Annлизé Marnewick (University of Johannesburg, South Africa), Hannelie Nel (University of Johannesburg, South Africa)	394
---	-----

<i>The benefits of a quality tool in a Student Branch Implementing the 5S methodology to create a new culture</i>	
Waldir Ventura Filho (Universidade Federal do ABC, Brazil), Bruno Z Crestana (Universidade Federal do ABC, Brazil), Maxwel Prado (Universidade Federal do ABC, Brazil), Andressa Brito (Universidade Federal do ABC, Brazil)	400
<i>Is Technology Management Education a Requirement for a Virtual Learning Environment?</i>	
Patrick Letouzé Moreira (Universidade Federal do Tocantins, Brazil), David Prata (Universidade Federal do Tocantins, Brazil), Andre Barcelos (Universidade Federal do Tocantins, Brazil), Gentil Veloso Barbosa (Universidade Federal do Tocantins, Brazil), George dos Santos (Universidade Federal do Tocantins, Brazil), Marcelo Rocha (Universidade Federal do Tocantins, Brazil)	404

Collaborative systems for knowledge intensive environments I

<i>Yammer: Investigating its Impact on Employee Knowledge Sharing during Product Development</i>	
Richard D Evans (University of Westminster, United Kingdom (Great Britain)), Eduardo Ahumada-Tello (Autonomous University of Baja California, USA), Joseph P Zammit (University of Greenwich, United Kingdom (Great Britain))	409
<i>An Investigation into Value Co-creation in Service Supply Chains</i>	
Trinh N.P. Nguyen (University of Westminster, United Kingdom (Great Britain)), Ray Y Wu (University of Westminster, United Kingdom (Great Britain)), Richard D Evans (University of Westminster, United Kingdom (Great Britain))	415
<i>Knowledge Value Stream Framework For Architecting Complex Products</i>	
Ramakrishnan Raman (Honeywell Technology Solutions Lab, India), Meenakshi DSouza (IIIT-B, India)	421

Management of Innovation IV

<i>Innovation Program Deployment for Industries with Irreversible Processes</i>	
Randall Schwartz (Bechtel, USA), Ben Amaba, PE CPIM LEED (IBM Global Solutions, USA)	427
<i>Bringing Large Technology Systems to Economic Maturity</i>	
Robert Chapman Wood (San Jose State University, USA)	432

IT and the Internet

<i>Detecting Rumors on Online Social Networks Using Multi-layer Autoencoder</i>	
Yan Zhang (Nanyang Technological University, Singapore), Weiling Chen (Nanyang Technological University, Singapore), Chai Kiat Yeo (Nanyang Technological University, Singapore), Bu Sung Lee (Nanyang Technological University, Singapore), Chiew Tong Lau (Nanyang Technological University, Singapore)	437

Collaborative systems for knowledge intensive environments II

Knowledge Management and Collaboration Strategies for Technology-Based Firms in Baja California

Eduardo Ahumada-Tello (Autonomous University of Baja California, USA), Richard D Evans (University of Westminster, United Kingdom (Great Britain)), Manuel Castañón-Puga (Universidad Autónoma de Baja California, Mexico) 442

Improving Design for Manufacturing Implementation in Knowledge Intensive Collaborative Environments, An analysis of organisational factors in aerospace manufacturing

Mohammed El Souri (University of Greenwich & BAE Systems, United Kingdom (Great Britain)), James Gao (University of Greenwich, United Kingdom (Great Britain)), Oladele Owodunni (University of Greenwich, United Kingdom (Great Britain)), Clive Simmonds (BAE Systems, United Kingdom (Great Britain)), Nick Martin (BAE Systems, United Kingdom (Great Britain)) 448

A General-Purpose Collaborative System: Theory and Design of the Dialogic Web

Ray Luechtefeld (University of Central Missouri, USA) 455