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PREFACE

It is difficult to think of an activity in any part of our lives that is not affected or driven by technology. This is particularly true when entrepreneurs develop new technologies at an increasing pace. Technological Entrepreneurship is at the heart of economic growth throughout the world now. Entrepreneurs are taking risks, learning from their mistakes, starting new ventures one after another. This flurry of activities is resulting in the development of new technologies that were not conceivable even a decade ago. Along with technological entrepreneurship come the social, political, ethical and legal issues that need to be tackled. The world needs the ability to manage all aspects of technological entrepreneurship to benefit from it and enjoy economic growth.

PICMET defines the primary role of Technology Management as the management of technologies to assure that they work for the betterment of humankind. Using this definition, technology management has a critical role to play in the proper utilization of technology to meet the world's needs.

This is a big challenge for the leaders and future leaders in the Technology Management field. Recognizing this challenge, the PICMET '18 Conference explores the role of technology management in a world driven by technological entrepreneurship.

It is our expectation that, PICMET will encourage researchers to engage in significant scholarly work in responding to the world's needs for managing effective technological entrepreneurship in the years to come.

PICMET '18 received 651 submissions from authors representing 229 academic institutions, industrial corporations and government agencies in 36 countries. After a double-blind refereeing process, 260 papers were included in the conference. The referees were from around the world.

The PICMET '18 Conference has two outputs:

This ***Conference Bulletin*** includes an up to 200-word abstract of each paper to enable the participants to select the sessions to attend and the presentations to follow. The *Bulletin* is intended as a reference book for an overview of the field, in general, and the conference, in particular.

The ***Proceedings*** is a flash drive containing full-length presentations included in the conference. Its purpose is to give full access to the entire conference for many years after the conference is over. The *Proceedings* is divided into 45 sections, listed below, each containing several papers on the topic.

Technology Management Framework
Strategic Management of Technology
Science and Technology Policy
Science and Technology Communication
Collaborations for Technology Management
Competitiveness in Technology Management
Global Issues
Environmental Issues
Sustainability
Educational Issues
Convergence of Technologies
Decision Making

Leadership
Disruptive Technologies
Emerging Technologies
Artificial Intelligence for Technology Management
Internet of Things (IoT)
Social Media
Cyber Security
E-Business
Entrepreneurship/Intrapreneurship
Intellectual Property
Social Innovation
Project/Program Management
Innovation Management
R&D Management
New Venture Development
New Product Development
Manufacturing Management
Productivity Management
Quality Management
Enterprise Management
Knowledge Management
Information Management
Information Technology
Technological Changes
Technology Forecasting
Technology Roadmapping
Technology Assessment and Evaluation
Technology Acquisition
Technology Adoption
Technology Diffusion
Technology Management in the Energy Sector
Technology Management in the Health Sector
Technology Management in the Service Sector

A large number of colleagues around the world contributed to the success of the PICMET ’18 Conference.

The PICMET Board of Directors set the strategic direction; the Advisory Council provided guidance for the implementation of the strategies for the conference.

Ann White, as the Executive Director Emeritus, edited the *Bulletin* and prepared the front-end materials; Liono Setiowijoso, as the Director of Operations, designed, maintained and managed the information systems and PICMET web site, with Hakan Kutgun’s assistance, under the guidance of PICMET CIO Bob Martin, and formatted the papers for the *Proceedings*; Byung Sung Yoon, as the Executive Director and Conference Coordinator, coordinated the overall planning of the conference. Caroline Mudavadi, as the Associate Executive Director, provided support throughout the planning and registration process; Sule Balkan managed finances as PICMET’s Chief Financial Officer; Scott Schaffer, as the Legal Counsel, provided continuous legal advice . Timothy Anderson was the Chief Technical Officer, Kiyoshi Niwa and Dilek Cetindamar Kozanoglu were Co-Directors of International Activities, Charles Weber was the Director of Awards, and Antonie Jetter was the Director of Student Activities. Byung-Sung Yoon and Songphon Munkongsujarit coordinated the on-site activities; Pei Zhang managed the documentation together with Hakan Kutgun; Ahmed Alibage prepared the signage; and Jeff Birndorf developed graphic arts for the conference. Antonie Jetter chaired the Student Paper Award Committee, whose members Kishore Erukulapati, Nathasit Gerdsri, Jonathan Ho, Songphon Munkongsujarit and Charles Weber evaluated more than 30 papers nominated for the award. Hakan Kutgun managed the PICMET page on LinkedIn.

Timothy Anderson, Kiyoshi Niwa, Dilek Cetindamar Kozanoglu, Harm-Jan Steenhuis and Gary Perman conducted the review process for the papers as Associate Editors; 119 colleagues from around the world reviewed up to 10 papers each. Papers submitted to PICMET’18 were reviewed by two or more reviewers to assure high quality. Timothy Anderson did the scheduling of the

accepted papers for presentation at the conference. Amir Shaygan, Saeed Alzahrani, Husam Barham, Edwin Garces, Abdulhakim Giadedi, Rafaa Khalifa, Momtaj Khanam and Pei Zhang were the Editorial Assistants to check and verify that the finalized papers had been revised as recommended by the reviewers.

Elizabeth Aubrey and Sherri Young of IEEE worked with PICMET from the beginning to the end of the conference planning effort. Their professionalism and expertise assured the high-quality production of the *PICMET Proceedings* on schedule.

The Country Representatives, under the leadership of Kiyoshi Niwa and Dilek Cetindamar Kozanoglu, provided linkages between PICMET and the regions they represent.

The International Advisory Council provided advice and counsel for PICMET to provide leadership on addressing the strategic issues and critical directions of Technology Management.

The sponsors and supporters of PICMET ’18 made this conference possible. We extend special thanks to all of them: Portland State University Department of Engineering and Technology Management, IEEE TEMS (Technology and Engineering Management Society), Portland State University Foundation, InFocus Corporation, Search Technology/Vantage Point, IEEE Hawai’i Section, Maseeh College of Engineering and Computer Science, Portland State University Office of Information Technology, and WHOVA Event Management.

We believe the PICMET ’18 *Bulletin* and *Proceedings* contain some of the best knowledge available on Technology Management for addressing the challenges and opportunities of technological entrepreneurship. We hope they will contribute to the success of technology managers and emerging technology managers, worldwide.

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Kiyoshi Niwa, Associate Editor, Tokyo
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