

BIOGRAPHICAL SKETCH

Jay Lee

Dr. Jay Lee is Ohio Eminent Scholar and L.W. Scott Alter Chair Professor in Advanced Manufacturing at the Univ. of Cincinnati and is founding director of National Science Foundation (NSF) Industry/University Cooperative Research Center (I/UCRC) on Intelligent Maintenance Systems (IMS www.imscenter.net) which is a multi-campus NSF Center of Excellence between the Univ. of Cincinnati (lead institution), the Univ. of Michigan, and the Univ. of Missouri-Rolla in partnerships with over 45 global companies including P&G, Toyota, GE Aviation, Boeing, AMD, Caterpillar, Siemens, DaimlerChrysler, ETAS, Festo, Harley-Davidson, Honeywell, ITRI (Taiwan), Komatsu (Japan), Omron (Japan), Samsung (Korea), Toshiba (Japan), Bosch, Parker Hannifin, BorgWarner, Spirit AeroSystems, Nissan (Japan), Syncrude (Canada), and McKinsey & Company, CISCO, TARDEC, etc. His current research focuses on autonomic computing, embedded IT and smart prognostics technologies, design of smart self-maintenance machines & systems, and dominant design tools for product and service innovation.



He also serves as honorary professor and visiting professor for a number of institutions including, Cranfield Univ. in UK, Lulea Univ. of Technology in Sweden, Shanghai Jiao Tong Univ. in China, Univ. of Manchester, City Univ. of Hong Kong, and Hong Kong PolyU., and Harbin Institute of Technology (HIT) in China, etc.

Previously, he held a position as Wisconsin Distinguished Professor and Rockwell Automation Professor at the Univ. of Wisconsin-Milwaukee. Prior to joining UWM, he served as Director for Product Development and Manufacturing Department at United Technologies Research Center (UTRC), E. Hartford, CT as well as served as Program Directors for a number of programs at NSF during 1991-1998, including the Engineering Research Centers (ERCs) Program, the Industry/University Cooperative Research Centers (I/UCRCs) Program, and the Div. of Design, Manufacture, and Industrial Innovation. In addition, he had served on Board on Manufacturing and Engineering Design (BMAED) of National Research Council during 2000-2005 and had participated in a number of NRC review and assessment panels. He also served as Board of Directors for the National Center for Manufacturing Science (NCMS) during 1999-2001, Chairman of the Manufacturing Engineering Div. (1998) and Materials Handling Engineering Div. (1992-1994) of ASME, as well as advisory member for a number of academic institutions including Johns Hopkins Univ., Cambridge Univ. of UK, Worcester Polytechnic Univ., Yuan-Ze Univ. of Taiwan, etc.

He conducted research work at the Mechanical Engineering Lab. of the Ministry of International Trades and Industry (MITI) as a Japan Science and Technology Agency (STA) Fellow in 1995, a Japan Society for Promotion of Science (JSPS) Fellow at the Univ. of Tokyo as in 1997, and a visiting professor at Swiss Institute of Technology (EPFL), Lausanne, Switzerland in July 2004 and also served as an adjunct professor for a number of academic institutions, including Johns Hopkins University, where he was an adjunct faculty member for the School of Engineering and Applied Science as well as for the Hopkins Technical Management Program during 1992-1998.

Currently, he serves as advisor to a number of global organizations, including Industrial Technology Research Institute (ITRI) in Taiwan, Japan Productivity Center (JPC), Academy of Machinery Science & Technology in China, InnoLab of Shanghai, etc. In addition, he serves as editors and associate editor for a number of journals including IEEE Transaction on Industrial Informatics, Int. Journal on Asset Engineering an Mgt, Int. Journal on Service Operations and Informatics, Tsinghua Science & Technology Journal, etc. He has authored/co-authored over 150 technical publications, edited two books, contributed numerous book chapters, three U.S. patents, 2 trademarks, and had delivered numerous invited lectures and speeches, including over 100 invited keynote and plenary speeches at major international conferences.

Dr. Lee received his B.S degree from Taiwan, a M.S. in Mechanical Engineering from the Univ. of Wisconsin-Madison, a M.S. in Industrial Management from the State Univ. of New York at Stony Brook, and D.Sc. in Mechanical Engineering from the George Washington University. He received Milwaukee Mayor Technology Award in 2003 and was a recipient of SME Outstanding Young Manufacturing Engineering Award in 1992. He is also a Fellow of ASME, SME, as well as International Society of Engineering Asset Management (ISEAM).

Dominant Design for Innovative Product and Service Innovation

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Innovation is not an option for today's industry. For the past decade, globalization and transformation of the flat-world economy has produced vast new challenges for industry. Innovation is not just about new product development; it also refers to the creation of new value-added services to transform better productivity and business performance. As the practice of product design have expanded both in economic and social impact and in technological complexity, so the demands upon innovative service systems. For example, GE Medical changed its name to GE Healthcare Technologies to expand its business opportunities. Companies such as IBM and Xerox are also transforming to be smart service business leaders. Industry needs to learn how to develop niche expertise with value-added innovation to compete globally.

This presentation introduces the strategies for product and business innovation based on Dominant Design approach. Examples (including iPod, GE Healthcare, John Deere, Otis Elevator, GM OnStar, and etc) will be given to illustrate how to formulate "gaps" between product and customer needs using innovation matrix and the right thinking mechanisms. In addition, a NSF Industry/University Cooperative Research Center on Intelligent Maintenance Systems (IMS) with a focus on autonomic computing and embedded prognostics technologies will be addressed. Finally, issues for today's academics for future transformation will be discussed.

The Intelligent Maintenance Systems (IMS) is a multi-campus National Science Foundation (NSF) Industry/University Cooperative Research Center (I/UCRC) between the Univ. of Cincinnati, the Univ. of Michigan, and the Univ. of Missouri-Rolla. The focus of the IMS Center is on frontier technologies on autonomic computing and embedded prognostics predictive to enable products and machines to achieve near-zero-downtime performance. The Center serves as a catalyst as well as an enabler to assist company members to transform their operation strategies from today's "Fail-to-Fix/Fly-to-Fix (FAF)" to "Predict-and-Prevent (PAP)" performance. Currently, the Center is supported by over 40 company members and sponsors, including Rockwell Automation, Toyota, GM, DaimlerChrysler, Ford, Harley Davidson, Boeing, Honeywell, Caterpillar, Festo, GE Aviation, Samsung, P&G, Komatsu, Omron, ITRI Taiwan, Adventech, Chevron, AMD, BorgWarner, Bosch, McKinsey & Company, CISCO, Nissan (Japan), Siemens, etc.. For more information please visit the IMS web site at www.imscenter.net