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Cyber and Digital Manufacturing: Transforming the Future of Engineering Design and Manufacturing

1:00 PM to 2:30 PM April 27, 2016

Sponsored by Penn State & DMDII

Light Lunch Will Be Provided

Room B-318 Rayburn House Office Building

Space is limited; [Please register here](#)

- 1:00 PM Welcome and Opening Remarks
Karen Thole, Penn State University

- 1:10 PM Remarks by Members of the Manufacturing Caucus and Maker Caucus (invited)
Congressman Tim Ryan, Congressman Tom Reed, Congressman Mark Takano,
Congressman Steve Stivers, Congressman Mick Mulvaney, Congressman Glenn Thompson

- 1:30 PM Cyber Manufacturing
Bruce Kramer, National Science Foundation (NSF)

- 1:40 PM Digitizing American Manufacturing
Dean Bartles, Digital Manufacturing and Design Innovation Institute (DMDII)

- 1:50 PM Digital Design & Manufacturing – The Future of Making Things
Stephen Hooper, Autodesk

- 2:00 PM Q&A

- 2:30 PM Adjourn



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House Manufacturing Caucus and House Maker Caucus

Cybermanufacturing, Bruce Kramer, NSF, Arlington, VA

Future manufacturing will be characterized by complex, networked, cyber-physical systems that may be instantiated in one physical location or distributed across many. Cybermanufacturing anticipates a future in which manufacturing services will be seamlessly provided, accessed and coordinated in an application-based framework, analogous to today's app-based delivery of retail, financial, entertainment and other services. The creation of useful manufacturing apps requires manufacturing knowledge to be partitioned into intelligent modules that guarantee the reliable translation of part designs to fabricated parts. In addition, the fundamental considerations in creating a service infrastructure to organize and deliver these rich and deep semantic elements of manufacturing knowledge present challenging research issues in manufacturing engineering and computer and information science. These research challenges are ideally investigated in the university environment, which has a long and successful history of transferring advances from university classrooms and laboratories into successful web-based enterprises.

Bruce Kramer is a Senior Advisor at the National Science Foundation and the lead staffer at the NSF for the National Advanced Manufacturing Program. He is a graduate of the Massachusetts Institute of Technology, has served on the faculties of Mechanical Engineering at MIT and George Washington University, and was a founder and the Director of Engineering of Zoom Telephonics (ZMTP), a Boston-based producer of communications products under the Motorola, Zoom, Hayes and Global Village brands. Dr. Kramer is an International Fellow of the School of Engineering at the University of Tokyo and a Fellow of the Society of Manufacturing Engineers. He has been awarded the F.W. Taylor Medal of the International Institution for Production Engineering Research (CIRP) and the Distinguished Service Award, the highest honorary award granted by the NSF.

Digitizing American Manufacturing, Dean Bartles, DMDI, Chicago, IL

A "Public-Private Partnership" between the USG and a brand new startup company called UI LABS is leading a collaborative team made up of over 100 companies, over 40 universities, and several state and local governments to change the way manufacturing is done in the US. The USG is putting up \$70 million over five years and the UI LABS' Industry/University/State & local government team is putting up over \$100 million over five years to do manufacturing innovation research in the area of digital manufacturing and design. A state of the art facility has been constructed on Goose Island in downtown Chicago and over \$40 million of research projects are underway. Examples of some of the research projects will be provided along with predictions on the impact of Digital Manufacturing and Design to manufacturers in the future.

Dean Bartles, is the Executive Director of the Digital Manufacturing and Design Innovation (DMDI) Institute that addresses the life cycle of digital data interchanged among myriad design, engineering, manufacturing and maintenance systems, and flowing across a networked supply chain. Chief Manufacturing Officer – UI LABS and President of the International Board of Directors for SME. Prior to DMDI, he was Vice President of Advanced Programs and Strategic Growth General Dynamics serving in both a domestic and international program capacity. Dr. Bartles graduated from Shepherd College with a Bachelor of Science in Business Administration. He holds a master's degree in International Business from Tampa College, an MBA from Shippensburg University, an MIB from Tampa College, and a Doctorate in Business Administration from Nova Southeastern University.

Digital Design & Manufacturing – The Future of Making Things Stephen Hooper, Autodesk, San Francisco, CA

The Future of Making Things represents a radical shift in the way products are designed, made and used. It is enabled by the further integration of digital design and fabrication tools into the manufacturing process. Steve will discuss the disruptive trends that are affecting the manufacturing sector, how these trends represent the largest impact the industry has seen since the advent of computing and what manufacturers need to do to ensure they are equipped to compete effectively in the markets of the future.

Stephen Hooper is Senior Director of Manufacturing Strategy for Autodesk. Stephen is an experienced senior leader with 20 years of manufacturing history. He has worked for companies ranging from suppliers of industrial machinery to a software vendor of market leading technology and is experienced at every stage of the product development, marketing and sales process, from end user, through to software vendor. He relishes the challenge of performing in a fast moving, growth orientated environment, targeted at servicing the needs of high profile customers and partners.