



Energy and  
Manufacturing  
Competitiveness  
Partnership

# Smart Manufacturing

## Leveraging the Democratization of Innovation

June 4, 2019  
Los Angeles, CA

Hosts: Council on Competitiveness  
and the University of California, Los Angeles

# Program

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# Overview

During the last ten years, Smart Manufacturing (SM)—powered by the Internet of Things (IoT) and digitalization—has become a key part of the competitiveness discussion in the United States. The conversation is multifaceted—comprising business, technology, workforce, and organizational practices—forcing the restructuring of highly-compartmentalized value and supply chain enterprises.

The proliferation of the IoT has meant the extension of internet connectivity into physical devices and everyday objects. “Smart” signifies the transformation of the U.S. manufacturing sector resulting from the upending of traditional business, organizational, operating and market structures by digitalization (the availability of data and the new economic opportunity presented by exploiting data in previously inconceivable ways).

The United States has invested and is continuing to invest in Manufacturing USA Institutes that address key aspects of digitalization, from robotics to 3D printing to biofabrication. Importantly, the effective use of secure data, modeling and time across supply chains creates significant new economic, market and social opportunities. This is particularly true when paired with the right technology to achieve full business potential for new consumer demands.

During these same ten years, dramatic global shifts and rising interests in manufacturing digitalization have threatened America's place as a global manufacturing superpower. Ascendant and increasingly advanced industrial activity across Europe and Asia have buffeted America's competitiveness when it comes to digital technology, investment and innovation. These shifts are accelerating change in consumer demand. New global manufacturing

and market growth opportunities—powered by next generation digital technologies; 3D printing; next generation IT hardware and firmware; 5G; advanced sensors, controls and modeling, including AI and machine learning—are all expected to exploit data and information in unprecedented breadth and at a previously inconceivable scale. The now steady march of digitalization is both accommodating and upending legacy manufacturing business structures and markets with shifts toward partnership structures. Combined with globalization and an increasing imperative to protect and wisely use energy and material resources, these factors should serve as a wake-up call for change to U.S. companies, universities, governments and workers.

The June 4th dialogue will bring together a diverse group of stakeholders to focus on the democratization of SM innovation as a practical necessity for the future of U.S. manufacturing. Participants will work together to put a collective vocabulary, voice and priority on U.S. manufacturing digitalization, smart democratization and innovation by answering:

- What do industry executives, federal and state governments, and university leaders need to know about SM and digitalization in order to make informed policy, business and educational decisions?
- What are the roadblocks standing in the way of the SM/manufacturing transformation?
- Are there examples of replicable SM best practices?
- How can policymakers and industry ensure that digitalization does not outpace security in the form of cyber threats from state and unaffiliated actors?

- Is there a need to rethink talent, workforce training and education, and entrepreneurship as elements of an overall cultural shift to a data-driven, innovation-driven economy that could be an outcome of digitalization?
- Is the United States and its manufacturing base adequately prioritizing SM investment and market priority to keep pace with consumer and global market demand and advanced digital technology, investment and innovation around the globe?
- Cybersecurity, material qualification and product validation must be aligned with the business, economic and market opportunities of restructured, digitalized manufacturing enterprise supply chains.
- There is a generational re-emergence of advanced and highly productive global manufacturing capacity and opportunity on U.S. soil resulting from new advanced manufacturing technologies and digitalization.

## The “Smart” in Smart Manufacturing

Addressing the scope and pace at which manufacturing digitalization and U.S. competitiveness are changing necessitates a close look at technology investment, global markets and economic and market drivers for physical location, workforce needs and sources of energy. Questions inevitably arise regarding U.S. and global strategies, policies, investment and security, which are compounded by regulatory, tax, IP and security trends. If not addressed, these forces of change can negatively affect economic viability, competitiveness and market growth. But, at the same time, America faces a promising frontier of digitalization which, by definition, is about changing how manufacturing is done today.

- SM is creating substantial new economic investment opportunities with radically increased supply chain productivity; far better product design with process and machine precision for more and higher value products manufactured better, faster, cheaper; and fundamentally improved and safer operating performance due to profoundly better use of human, control and automation capabilities.

- The increasing abundance of and ability to more productively use innovative, sustainable, affordable and domestically-sourced energy while continuing to recognize the need for reducing global consumption of both energy and materials offers huge opportunities for economic and competitiveness advantages.

In SM, **data**, anything digital that can be networked, orchestrated, and analyzed; **modeling**, which includes all forms of using, building from, and generating data to take automated or human action; and **time**, which defines the operational benefit of an action to the physical manufacturing enterprise, are symbiotic. Data has become the new currency; time is value; modeling extracts the value; and SM orchestrates the generation, application and distribution of intelligence. It opens the door to operational interrogation and prediction and creates new ways of involving smart workers for action at the right time. “Smart” intersects strongly with digital product design and the digital thread, process intensification and distributed modularization, robotics operations, and life-cycle energy consumption in materials production.

The potential economic, competitive and environmental opportunity created by SM is enormous. For example, CESMII, the Smart Manufacturing Institute, has consistently seen gains across industrial segments of 15-20 percent. Even with a conservative market adoption rate of less than 10 percent, SM can add more than \$175 billion in revenue in the United States over a 10-year horizon just in energy savings; money that can be reinvested to produce more than one million jobs. Additionally, the SM technology and service provider sector would grow, adding more than 5,000 jobs. With more rapid and expanded adoption of “smart,” and the integrated digitalization of new process and product technologies, the economic impact could be substantially multiplied and accelerated. The reality, though, is that SM in the United States is highly constrained and slowed. Innovation and entrepreneurship are curtailed. IoT and the increasing numbers of automation, sensor, robot, machine and process platforms add local value, but are significantly increasing factory and supply chain complexity, making data difficult to access and use. Predictive analytics, operational interrogation and advanced diagnostics—critical pathways to spurring economic benefits—are severely constrained by a lack of access to good data. The tools and expertise to produce good data are often too expensive and complex for most U.S. companies to even consider. Cybersecurity and IP protection are increasingly large and looming barriers as the complexities with data grow. Data access in supply chain operations is far too fragmented, making supply chain optimization a highly complex, risky and expensive challenge. And academia, which includes extensive technological capabilities as well as stewardship of workforce pipelines, struggles with involvement, relevancy, access to data, tech transfer, and connecting solutions and problems.

Stated more provocatively, SM depends on factory and supply chain data; there are more and more devices; larger amounts of data are being collected; little data is good and useful; access to data is increasing in complexity; new cloud and platform technologies trap data and exacerbate complexity; markets still value complexity and infrastructure, not simplicity and operational value; data complexities are increasing security, product and physical operational risks; workforce and training are expanding the need for everyone to have skills in consuming and using data; and complexity, cost and workforce put digitalization out of reach for most manufacturers.

### **Democratization of “Smart”**

Democratization of “smart” business, technology, operational and workforce data, and modeling practices underpins the success of SM and the realization of the full economic and social benefits of digitalization. SM solutions are vital for all manufacturers and all sizes of plants. There is the need to enable the frictionless movement of information—data and context—among real-time operations and the people and systems that can create value for every organization.

However, democratization is a grand challenge and a transformational opportunity. If achieved, legacy business and operational structures that are siloed, vertical and compartmentalized will give way to horizontal, flexible and agile B2B supply chain business opportunities. U.S. manufacturing and global markets will realign. Business and economic opportunities will shift from data isolation strategies to selective data interoperability associated with business partnerships. Manufacturing operations will rebalance for data-centric automation and smart worker productivity.

Longstanding separations between OT and IT will break down as convergence and vendor platform infrastructure siloes shift toward open interoperability. Software application markets will drive operational value of an application, not infrastructure value. Innovation and implementation for manufacturing product and operational value will be substantially freed up and accelerated.

Every stakeholder is affected by the democratization of information. Executives from small, medium and large manufacturers; operations, supply chain and IT leadership; the workforce and the workforce pipeline; IT and OT system integrators; OT application, platform and infrastructure vendors; IT application, platform and infrastructure vendors; machine and process equipment builders; research, education and training institutions and non-government organizations; commercial and government-sponsored research and development; national laboratories; Manufacturing USA Institutes; and other public-private partnerships all stand to gain.

# Logistics

## Smart Manufacturing: Leveraging the Democratization of Innovation

June 4, 2019

Location: Carnesale Commons  
Palisades Room  
UCLA  
Los Angeles, CA

Time: 9:00 a.m.–5:15 p.m.

Attire: Business

WIFI: UCLA\_WEB

Contacts: Katie Sarro 516 521 0760  
Bill Bates 202 603 3739

### Directions to UCLA Carnesale Commons Palisades Room

#### 1. Drive

From the 405 Freeway: Exit on Sunset Blvd. Proceed EAST on Sunset Blvd. and enter the campus by turning RIGHT onto Bellagio Drive. Proceed to the stop sign at the top of the hill. Turn LEFT at the stop sign onto De Neve Drive. Proceed 3/10 of a mile down the hill to the SV (Sunset Village) parking structure. The structure will be on your right. Turn RIGHT into the parking structure.

#### 2. Park

Purchase a parking permit at the “Self-Service Parking Pay Station” located at P1 level. Pay by Plate users may park in designated visitor pay station parking areas. Permits are not valid in stalls posted for Blue or X permits, or otherwise reserved. Please make sure you have your license plate or Vehicle ID Number (VIN) when purchasing a parking permit at the pay station. If purchasing with VIN, place the permit on your car dashboard so it is visible through the driver’s side of the windshield.

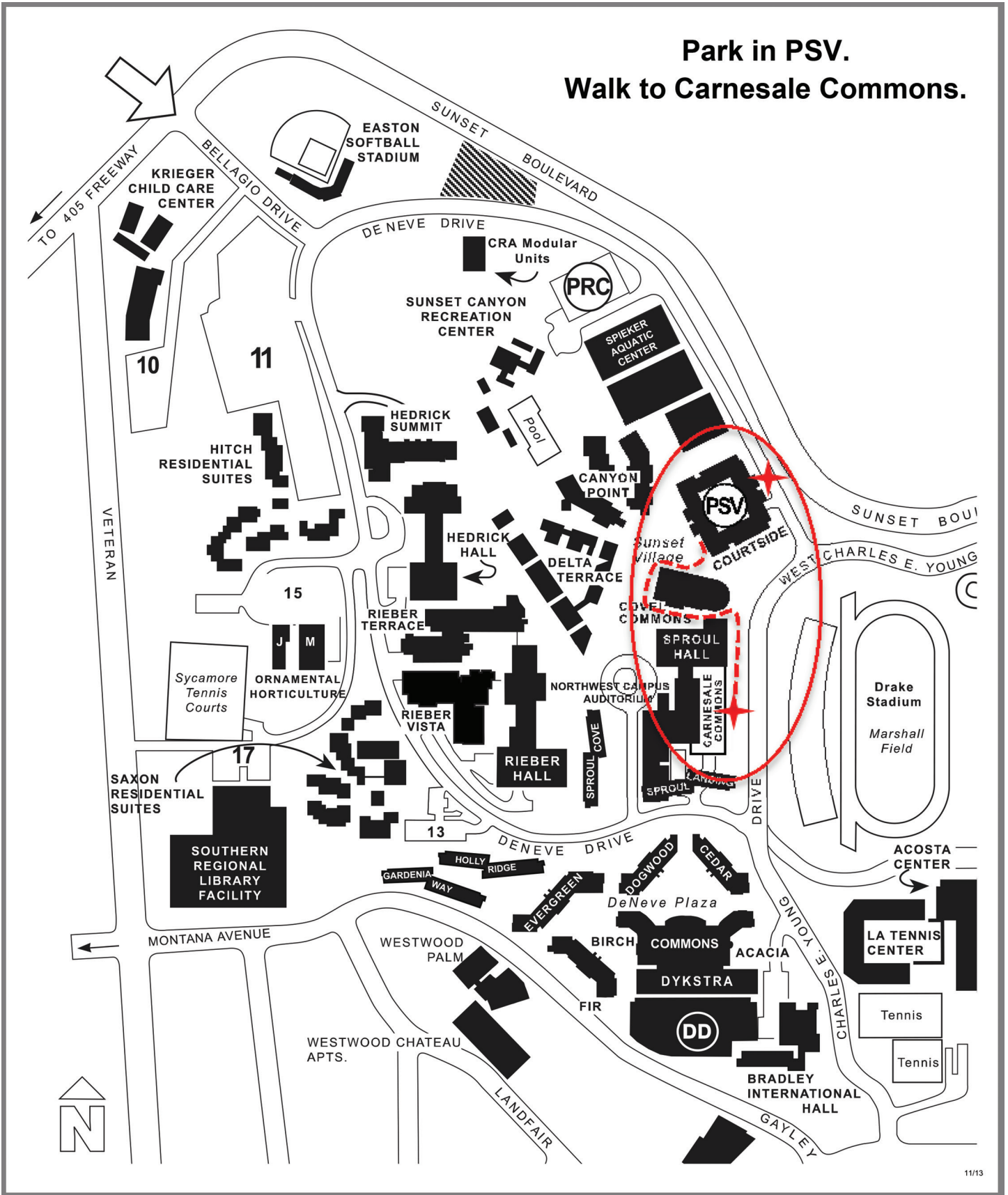
#### 3. Walk

Take the elevator or the stairs (located in the southwest corner of the parking garage) to the Lobby Level (L). Upon exiting the elevator, proceed straight ahead (about 10 feet) and turn RIGHT and walk along the perimeter of the Covell Commons building, turning LEFT at the corner, and passing the Covell Commons Lobby doors. Turn LEFT, to take the staircase DOWN to Charles E. Young Drive. Turn RIGHT at the base of the steps.

Follow the sidewalk passing Sproul Hall to Carnesale Commons. Enter the building through the double glass doors or take the building’s exterior staircases to your destination.

Palisades Room is located on the 3rd Floor.

**Park in PSV.  
Walk to Carnesale Commons.**





# Agenda

## MORNING

### 8:30 Registration and Light Breakfast

### 9:00 Welcome and Opening Remarks

**Gene Block**  
Chancellor  
UCLA

**Deborah L. Wince-Smith**  
President & CEO  
Council on Competitiveness

### 9:15 The Council and the Goals of Today's Dialogue

The United States is facing a promising frontier with Smart Manufacturing (SM), shaped by the opportunity of digitalization, the emergence of advanced operation and information technologies and the resulting generational re-emergence of advanced and highly productive manufacturing capacity on U.S. soil. This dialogue will focus on the democratization of SM as a practical necessity for the future of U.S. manufacturing—the result of demand for higher precision, higher value products and the faster, cheaper, safer and far better use of materials and energy with less environmental impact. Realization of the considerable economic, investment and market growth opportunity created by supply chain productivity, process precision and manufacturing performance with radically expanded application of data, information and modeling will be a key driver of U.S. competitiveness.

**William Bates**  
Executive Vice President and Chief of Staff  
Council on Competitiveness

**Chad Evans**  
Executive Vice President  
Council on Competitiveness

**Jim Davis**  
Vice Provost IT & Chief Academic Technology Officer, and Principal Investigator, CESMII  
UCLA

### 9:30 Building the Talent and Workforce for the Future

There has been, and continues to be, considerable national discussion on talent, workforce training and education for advanced manufacturing technologies. SM, and the process of manufacturing digitalization, requires much more than a workforce trained in data technologies. There is a growing need—and ability—to build and tap into a new culture of data consumers and data innovators and entrepreneurs. There is also a need to capitalize on an evolving culture of public and private partnerships to address complex, grand challenge level problems. Innovation, solutions and security can be spurred by an army of people with levels of expertise and proficiency in data partnerships and innovation and who know how to tap into and put into action an infinite array of possibilities created through access and exchange of data.

#### Key Questions

- Is there a need to rethink workforce training and education as part of a cultural shift to a data, innovation and partnership-driven economy?
- How can industry and academia work together to build and tap into this new cohort of data consumers but also data innovators and entrepreneurs?

**Lead Discussants****Gene Block**

Chancellor  
UCLA

**Jimmy Asher**

Senior Manager, Supply Chain and Manufacturing  
Operations Consulting  
Deloitte Consulting

**Luke Monck**

Senior Manager, Manufacturing Practice  
Deloitte

**10:30 Networking Break****10:45 Challenges and Best Practices**

There is much discussion that U.S. manufacturing needs to spur democratization of technology, knowledge, and innovation. This is particularly acute for SM, where success depends on extensively scaled data exchange and interoperability agreements and partnerships. Democratization can occur through shared infrastructure that facilitates openness and interoperability in manufacturing and reduces the complexity of data and information use. What are today's SM digitalization transformation challenges and best practices for U.S. manufacturing?

**Key Questions**

- What is the SM scorecard today? What is working and what the roadblocks standing in the way of transformation?
- What are some examples of replicable transformation best practices in manufacturing?

**Lead Discussant****Sam George**

Partner Director, Azure IoT  
Microsoft

**11:45 The National Commission on Innovation and Competitiveness Frontiers**

In 2019, the Council launched a new initiative, the National Commission on Innovation and Competitiveness Frontiers (Commission). The Exploring the Future of Production, Sustainable Consumption and Work Working Group of the Commission aims to map out the forces driving innovation and motivations shaping the future economy.

**Deborah Wince-Smith**

President & CEO  
Council on Competitiveness

**AFTERNOON****12:00 Lunch****12:30 Guest Presentation****John Dyck**

CEO  
CESMII, the Smart Manufacturing Institute

**1:00 Aligning Interests and Opportunities**

Openness, "open" platforms, interoperability, and shared infrastructure are not at all straightforward. For example, vendor, practitioner, integrator, university and government "business" interests can vary dramatically. Aligning interests and opportunities across multiple stakeholders is essential to the competitiveness of the manufacturing sector in the United States.

**Key Questions**

- What do industry executives, federal and state governments, and university leaders need to know today about SM?
- How can policymakers and users ensure that digitalization and democratization do not outpace security in the form of cyber threats from state and unaffiliated actors?
- How are the voices of small, medium and large practitioners, providers, integrators, universities and government aligned to address risk and opportunity?

## Lead Discussants

### Michelle Pastel

Manager of Technology and Engineering  
Development  
Corning Glass

### Doug Lawson

CEO  
ThinkIQ

## 2:00 U.S. Private and Public Investment in Enabling Smart Manufacturing

The United States places a high reliance on market forces relative to government policy and investment compared to other countries for both initial change and sustainability. Are U.S. manufacturing industry, the Manufacturing USA Institutes, the national labs, agency research and development programs, and state programs adequately prioritizing these to keep pace with consumer and global market demand and technology, investment and innovation around the globe? Does the United States have the right balance to achieve SM at a good pace and sustain it?

## Key Questions

- Is the U.S. adequately prioritizing policy and investment to keep pace with consumer and global market demand that SM and related advanced digital technology, investment, and innovation around the globe?
- What is the balance between market forces and investment for manufacturing cyber security?
- Is the U.S. manufacturing base on track to compete in the global marketplace when it comes to digital technology?

## Lead Discussants

### Mark Johnson

Director, Center Advanced Manufacturing, Clemson  
& Former Director, DOE Advanced Manufacturing  
Office

### Kiran Sheth

Distinguished Engineering Associate  
ExxonMobil Research & Engineering

## 3:00 Smart Manufacturing and a National Agenda for Cybersecurity

Specialized, closed-circuit cyber-physical systems have been in place in large industrial and manufacturing facilities for years. However, the economic advantages of the internet, increasing functionality of commodity networking and information technology, and the diversification of supply chains that include many small businesses has led to new cybersecurity risks that now affect the safety and availability of the services provided by critical infrastructures.

### Steven F. Ashby

Director  
Pacific Northwest National Laboratory

## 3:15 Smart Manufacturing and the Larger Council Agenda

The SM discussion will inform the work of the Commission, and the Production, Consumption and Work working group as it looks to prepare the United States for the coming, and constantly evolving, shifts in how Americans create, use and otherwise contribute to society.

### William Bates

Executive Vice President and Chief of Staff  
Council on Competitiveness

## 3:45 Closing Remarks from UCLA and the Council on Competitiveness

## 4:00 Event Concludes

## 4:15 Closing Reception

## 5:15 Reception Ends

# Participants

**Jose Anaya**

Director  
El Camino Community College

**Steven F. Ashby**

Laboratory Director  
Pacific Northwest National  
Laboratory

**Jimmy Asher**

Senior Manager, Supply Chain  
and Manufacturing Operations  
Deloitte

**William Bates**

Executive Vice President  
Council on Competitiveness

**Gene Block**

Chancellor  
UCLA

**John Chisholm**

CEO  
Chisholm Ventures

**Jim Davis**

Vice Provost IT & Chief Academic  
Technology Officer, and Principal  
Investigator, CESMII  
UCLA

**Kelly Dodds**

Advanced Manufacturing  
Technical Director  
Raytheon

**John Dyck**

CEO  
CESMII

**Chad Evans**

Executive Vice President  
Council on Competitiveness

**Patricia Falcone**

Deputy Director for Science and  
Technology  
Lawrence Livermore National  
Laboratory

**Sam George**

Partner Director, Azure IoT  
Microsoft

**Richard Heisey**

Director of Product Engineering  
CNH Industrial

**Scott Hibbard**

Vice President  
Bosch

**John Hopkins**

Chief Executive Officer  
IACMI

**Pam Hurt**

Director, Business Capture, Brand,  
Membership  
National Center for Manufacturing  
Sciences

**Leszek Izdebski**

Group Vice President, Digital  
Transformation  
ABB

**Mark Johnson**

Director, Center for Advanced  
Manufacturing  
Clemson University

**Gail Johnson-Roth**

Principal Director, Enterprise  
Systems Engineering  
Corporate Chief Engineer's Office  
The Aerospace Corporation

**Pramod Khargonekar**

Vice Chancellor of Research  
University of California, Irvine

**Dominik Knoll**

CEO  
AVA Ventures

**Bruce Kramer**

Director Civil, Mechanical and  
Manufacturing Innovation  
National Science Foundation

**Dimitris Lagoudas**

Associate Vice Chancellor for  
Engineering Research  
Texas A & M University

**Doug Lawson**

CEO  
ThinkIQ

**Glen Lewis**

Principal & Operations, Energy  
& Supply Chain Management  
Advisor  
Glen Lewis Group, LLC &  
University of California Davis

**Haresh Malkani**

Chief Technology Officer  
CESMII

**Rob Massoudi**

Vice President, Digital  
Transformation  
ABB

**Larry Megan**

R&D Director  
Praxair

**Luke Monck**

Senior Manager, Manufacturing  
Practice  
Deloitte

**James Nokes**

Principal Director of the Space  
Materials Laboratory  
The Aerospace Corp

**John Orth**

EVP Operations  
Ryerson

**Michelle Pastel**

Manager of Technology and  
Engineering Development  
Corning Glass

**Jennifer Pilat**

Vice President, Engagement  
DMDII

**Dave Pritts**

Vice President Business  
Development and Marketing  
ThinkIQ

**Gregg Profozich**

Director, Advanced Manufacturing  
Technologies  
CMTC

**Steve Prusha**

Program Manager, Strategic  
JPL

**Sudarsan Rachuri**

Program Manager CESMII  
DOE

**Jon Riley**

Senior Vice President  
National Center for Manufacturing  
Sciences

**Katie Sarro**

Senior Policy Director  
Council on Competitiveness

**Rob Schoenthaler**

CEO  
Atollogy

**Kiran Sheth**

Distinguished Engineering  
Associate  
ExxonMobil Research and  
Engineering

**Todd Steyer**

Sr. Manager, Materials &  
Manufacturing Technology  
The Boeing Company

**Marcus Sturm**

Director, Global Manufacturing IT  
PepsiCo

**Suresh Sunderrajan**

Interim Associate Laboratory  
Director  
Argonne National Laboratory

**Laurie ten Hope**

Deputy Director, R&D Division  
California Energy Commission

**Dawn Tilbury**

Assistant Director for Engineering  
National Science Foundation

**Rick Van Dyke**

Supply Chain Engineering Director  
PepsiCo Americas Foods

**Roger Wakimoto**

Vice Chancellor of Research  
UCLA

**Jim Watson**

CEO  
CMTC

**Deborah L. Wince-Smith**

President & CEO  
Council on Competitiveness

## Sponsors

**Deloitte.**



# Lead Discussant Bios

## Jimmy Asher

Senior Manager, Supply Chain and Manufacturing Operations  
Deloitte Consulting

Jimmy Asher is a senior manager in Deloitte's Supply Chain & Network Operations practice helping manufacturers chart their digital transformation. By bridging gaps between corporate strategy and implementation, he brings a holistic approach that combines operational needs, emerging technologies, and proven systems.

With more than 25 years of industrial automation, operational technology, and manufacturing software experience as a practitioner, consultant, and software leader in a variety of industry verticals and production modes, Jimmy advocates for Smart Manufacturing (SM) and digital transformation. He is an industry expert in Control Systems (PLC/DCS/SCADA), Industrial Historians, MES/MOM, and SM. Drawing on his experience, he brings unique insights to many levels of a client's organization. This enables tailored solutions that deliver end-to-end operational visibility solutions, insights and operational performance to meet business needs.

Jimmy holds a BS in mechanical engineering from Virginia Tech. He serves as the Vice-Chair of MESA International, which is an industry non-profit promoting SM.

## Steven F. Ashby

Director  
Pacific Northwest National Laboratory

Dr. Steven F. Ashby has served as the Director of the Pacific Northwest National Laboratory (PNNL) since April 2015. He is responsible for establishing the Laboratory's vision and setting its strategic direction. Under his leadership, PNNL's exceptional staff are advancing the frontiers of science and addressing complex challenges in energy, the environment and national security. In particular, the Laboratory is providing national leadership in climate science, the power grid, nuclear nonproliferation and environmental remediation.

Dr. Ashby previously served as PNNL's Deputy Director for Science and Technology, and was responsible for integrating PNNL's science and technology capabilities to meet national needs. Toward that goal, he led institutional strategic planning activities, stewarded an \$80M discretionary research portfolio, and promoted Laboratory-wide efforts to elevate PNNL's standing in the broader scientific community. He also oversaw the Laboratory's technology commercialization, government relations and research integrity functions. He served as a member of DOE's Laboratory Operations Board and was past chair of the DOE National Laboratory Chief Research Officers Working Group, which advises the National Laboratory Director's Council on scientific and programmatic issues.

Before joining PNNL in 2008, Dr. Ashby spent nearly 21 years at Lawrence Livermore National Laboratory (LLNL), ultimately serving as Deputy Principal Associate Director for Science and Technology. He previously oversaw the activities of the 500-person

Computing Applications and Research Department. Dr. Ashby was the founding director of LLNL's Center for Applied Scientific Computing, which was established in 1996 and has since matured into one of the world's premier scientific computing research organizations.

Dr. Ashby is widely recognized as a leader in computational science and has worked to advance it as a discipline throughout his career. His research focused on computational mathematics and scalable numerical algorithms; he is considered an expert in polynomial iterative methods and adaptive preconditioning techniques for large sparse linear systems. He has published numerous papers, and he has worked in a variety of areas, including large-scale scientific simulation (with application to electromagnetics and subsurface flow and transport), numerical linear algebra, massively parallel computing, and applied computer and data sciences. He remains active in the computational science community, including participation in the Society for Industrial and Applied Mathematics.

In 2013, Dr. Ashby was elected a Fellow of the American Association for the Advancement of Science in the mathematics section for "exceptional technical contributions and scientific leadership in applied mathematics and computational science, particularly the development of novel numerical methods and robust software for parallel computers, as well as for exemplary service to the field of computational science and engineering." He also was elected to the Washington State Academy of Sciences in 2013.

He holds a B.S. in Mathematics/Computer Science from the University of Santa Clara. He earned his M.S. and Ph.D. in Computer Science from the University of Illinois at Urbana-Champaign.

### **William Bates**

Executive Vice President  
Council on Competitiveness

Bill Bates is Executive Vice President of the Council on Competitiveness and was the founding Executive Director of the Global Federation of Competitiveness Councils. Recently, he led multi-year initiatives to

explore the economic opportunity for advanced manufacturing in the United States and the development of a national cyber security agenda. Bill is the chief architect of the Council's National Competitiveness Forum (NCF), the annual C-suite conversation that sets a pro-growth agenda for the U.S. policymakers. He is a frequent speaker both nationally and internationally on a range of competitiveness and innovation topics from education to technology policy to advanced manufacturing. Bill is currently spearheading a new Council initiative, the University Leadership Forum, to draw greater attention to higher education's role in U.S. competitiveness from leadership in game changing technologies to the development of the next generation of entrepreneurs.

As the first Executive Director of the Global Federation of Competitiveness Councils (GFCC), Bill helped establish and build a network of more than 30 competitiveness councils from around the world. He managed the Council's role as secretariat to the GFCC, oversaw membership engagement and outreach and directed the development of annual policy reports, including Best Practices in Competitiveness Policy.

He previously served as Director of Government Relations for the United States Telecom Association. Prior to that, he was Chief of Staff and Legislative Director to House Commerce Committee member, U. S. Congresswoman Anna Eshoo (D-CA) where he advised the Congresswoman on a wide range of technology issues including telecommunications, biotechnology and intellectual property. Before joining Ms. Eshoo, he was an Associate with the Washington, DC-based public affairs company, Cassidy & Associates.

He holds a master's degree in government from Johns Hopkins University and a bachelor's degree in government and History from Cornell University. In his spare time, he runs ultramarathons and is a member of the Marine Corps Marathon Runners Club, having completed the race seven times.



**Gene Block**

Chancellor  
UCLA

Gene Block became chancellor of UCLA in August 2007. As chief executive officer, he oversees the university's three-part mission of education, research and service.

He has defined academic excellence, civic engagement, diversity and financial security as top priorities for his administration. A champion of public universities, his dedication to access and affordability has enhanced UCLA's position as a national leader in enrolling undergraduates who are Pell Grant recipients, come from underrepresented groups and go on to become first-generation college graduates.

Under Chancellor Block's leadership, UCLA has been named the number one public university in the United States, has grown its profile internationally and receives \$1 billion annually in research grants. In one of the largest capital campaigns ever undertaken by a public university, UCLA surpassed its \$4.2 billion Centennial fundraising goal more than a year ahead of schedule.

An expert in neuroscience, Chancellor Block's current research focuses on the effects of aging in the nervous system and how it impacts biological timing in mammals, including humans. He holds faculty appointments in psychiatry and biobehavioral sciences in the UCLA David Geffen School of Medicine and in integrative biology and physiology in the UCLA College of Letters and Science.

Chancellor Block holds a bachelor's degree in psychology from Stanford University and a master's and Ph.D. in psychology from the University of Oregon. Before becoming chancellor of UCLA, Block served as vice president and provost of the University of Virginia, where he was also the Alumni Council Thomas Jefferson Professor of Biology. During his 29 years there, he served as vice president for research and public service and as founding director of the National Science Foundation Science and Technology Center in Biological Timing.

Chancellor Block has served on the executive boards of several leading organizations, including the Association of American Universities, National Collegiate Athletic Association, Association of Public and Land-grant Universities and the Association of Pacific Rim Universities. He is the recipient of numerous professional awards and is a member of the American Academy of Arts and Sciences and a fellow of the American Association for the Advancement of Science.

**Jim Davis**

Vice Provost IT & Chief Academic Technology Officer, and Principal Investigator, CESMII  
UCLA

Jim co-founded the Smart Manufacturing Leadership Coalition (SMLC) and led UCLA's role in forming CESMII, the Smart Manufacturing Innovation Institute, the 9th Manufacturing USA Institute and the 3rd DOE institute to be awarded. Jim is the Principal Investigator of CESMII as a program within UCLA. He also currently serves as Principal CIO Advisor, is leading the Institute's cybersecurity strategy, and remains involved with the Institute's SM Platform architecture, technology plan and roadmap.

At UCLA, Jim is Vice Provost, IT & CATO with accountability for university-wide planning and strategic investment in research and educational technologies, mobility applications, privacy/security, and internal and external community partnerships. Jim heads the UCLA Office of Information Technology that oversees CESMII, UCLA's Institute for Digital Research and Education (IDRE) and the Innovate@UCLA program. Jim is also on UCLA's Department of Chemical and Biomolecular Engineering where he has done research and consulted extensively on AI, machine learning, intelligent systems, monitoring/control, and data/modeling systems across diverse industries including chemicals, refining, paper, packaging, metals and glass.

Jim has past work experience with Amoco Chemicals and was formerly the CIO at UCLA and The Ohio State University and Board Chair of the Corporation of Education Network Initiatives in California (CENIC). He is a Fellow in the American Institute of

Chemical Engineers and is currently on the Board of Governors of the Manufacturing Leadership Council and the Leadership Council for MForesight: Alliance for Manufacturing Foresight. Jim led the MForesight report on Cybersecurity for Manufacturers.

### **John Dyck**

CEO

CESMII, the Smart Manufacturing Institute

John Dyck was appointed CEO of CESMII, the Smart Manufacturing Institute, in June of 2018. John is practical visionary with a passion for innovation in the Manufacturing IT space. He's known globally as a domain expert on both technology and business management in the nexus that often separates IT and Operations. For the past 5 years, he has been focused on how innovations like Cloud and the Industrial Internet of Things (IIoT) impact manufacturing and has pioneered the application of these technologies in a wide range of manufacturing operations across many industries. John was recently awarded a number of patents for the application of IIoT and analytics in manufacturing workflows and business processes.

John comes to CESMII from Rockwell Automation (NYSE: ROK), where he was the Global Director of Software Business Development. In this role, he helped drive the transformation of Rockwell Automation to a leadership position in software for manufacturing. He was responsible for strategy development, and the acquisition and development of capabilities needed to transform their software portfolio. John developed and began the execution of a multi-year software acquisition strategy to shape Rockwell Automation's software portfolio. He was a key leader in shaping their Industrial Internet of Things (IIoT) strategy and was responsible for their global Strategic Alliance with Microsoft (Nasdaq "MSFT" @ microsoft). Prior to his role at Rockwell Automation, John led the Product Management and Marketing teams for GE Fanuc (now GE Digital), (NYSE: GE) with responsibilities for the entire Production Management software portfolio (Proficy), including Workflow, Historian, Portal, Tracker, MES and many other

software modules. He developed close relationships with many large, key manufacturers. Mr. Dyck played a key role in building a software startup in the Manufacturing Intelligence space. As Vice President of Sales, Marketing and Business Development for ActivPlant, he was instrumental in raising over \$20M in VC funding, and developed and implemented a successful sales and channel strategy, resulting in significant revenue growth.

John currently serves as the immediate-past Chairman of MESA International's (Manufacturing Enterprise Solutions Association) Board of Directors. He holds a degree in Electronics Engineering from Conestoga College.

### **Chad Evans**

Executive Vice President

Council on Competitiveness

As Council EVP overseeing all programs and initiatives, Chad develops and manages the Council's policy agenda and workstream, including: developing of the Council's 2019 flagship National Commission on Innovation & Competitiveness Frontiers; creating both the Building University-Industry-Lab Dialogue for Advanced Computing effort and the Exploring Innovation Frontiers Initiative with the National Science Foundation; forming the American Energy & Manufacturing Competitiveness Partnership with the U.S. Department of Energy; and helping to shape and launch the National Engineering Forum.

During the past decade, Chad has built and shepherded the Council's Technology Leadership and Strategy Initiative, engaging Fortune 500 chief technology officers, university vice presidents of research and national laboratory deputy directors to make the policy and business cases for America's innovation-enabling investments in talent, technology and infrastructure.

He has also helmed C-suite innovation summits, dialogues and immersions across Latin America, Europe, Australia and Asia, with a particular focus on Brazil, including four U.S.-Brazil Innovation Summits and 20+ Innovation Learning Laboratories held in

both nations. And this year, he has helped to launch the first-ever U.S.-Australia CTO Dialogue.

Chad holds an M.S. from the Georgetown University School of Foreign Service, with an Honors concentration in International Business Diplomacy from Georgetown's Landegger Program. He has a B.A. in Political Science and International Affairs from Emory University.

He is Secretary to the Board of the Council on Competitiveness; Treasurer to the Board of the Global Federation of Competitiveness Councils; a member of the Texas A&M Engineering Experiment Station Advisory Board; an ARCS Foundation National Science and Engineering Advisory Council member; a fellow of The German Marshall Fund of the United States; a steering committee member of the South Big Data Hub; and a past member of the Lawrence Livermore National Laboratory Industry Advisory Council and the World Economic Forum Advisory Board on Russian Competitiveness.

### **Sam George**

Partner Director, Azure IoT  
Microsoft

Sam George is the Director of Azure IoT, responsible for the Azure IoT Suite, Azure IoT Services and our IoT Device SDK. He has been at Microsoft since 1997 years and has spent time in all three engineering disciplines (development, test and program management). Sam spent most of his career as a dev manager, dev lead or developer, and in 2011, switched to a program management leadership position. Sam is responsible for Platform as a Service (PaaS) and Internet of Things (IoT) offerings. As a GPM he is responsible for Microsoft's developed facing platform offerings, including features and API shape—as well as business and market strategy. His team works directly with customers and top tier partners to evolve the product.

### **Mark Johnson**

Director, Center for Advanced Manufacturing  
Clemson University

Prof. Johnson has been an educator, an entrepreneur and a government official. At Clemson University he is the Director of the Center for Advanced Manufacturing and Thomas L. Hash Chair for Sustainable Development, Professor Johnson works at the intersection of science and technology innovation, public policy, and economic development related to the sustainable use of energy in manufacturing and advancement of manufacturing as the foundation of economic growth in the 21st century. Prior to Clemson, he was on the faculty of Materials Science and Engineering at NC State University. While at NC State, he was also the Director of Technology for the Technology, Entrepreneurship and Commercialization (TEC) Program, a joint graduate program between the Colleges of Engineering and Management. He was the first Director of Industry and Innovation Programs for the Future Renewable Electric Energy Delivery and Management (FREEDM) Systems Center, a National Science Foundation Engineering Research Center. Earlier in his academic career, he was a DARPA Young Faculty Award (YFA) recipient for his work on semiconductor materials and devices.

From 2010–2013, Mark was a Program Director during the start of the Advanced Research Projects Agency—Energy (ARPA-E) in U.S. Department of Energy. His portfolio a ARPA-E focused on grid-level energy storage, rare-earth materials and advanced electric power systems. From 2013–2017, Mark was the Director of Advanced Manufacturing for the U.S. Department of Energy, serving in both the Obama and Trump administrations. Under his leadership, the Advanced Manufacturing Office introduced their first strategic plan in nearly a decade and built significant congressional support for focused R&D as well as public-private partnerships, all related to technology innovation in U.S. manufacturing.

Earlier in his career, Mark was a principal in (at least) three different venture backed start-up businesses within the semiconductor industry: Quantum Epitaxial Designs (later merged with IQE International); EPI System (later merged with Veeco); and Nitronex (later merged with M/A Com).

### **Doug Lawson**

CEO  
ThinkIQ

Doug has founded, built and sold multiple software startups in the Industrial Sector. His understanding of customer challenges and his leadership creating innovative products to meet those challenges is widely respected in the Industry. The products from his startups are used in nearly a million plants globally. On a personal level ThinkIQ is the logical culmination of his career and, as CEO, he is intentionally creating a company that will have global impact, delivering enormous value to its customers, creating safer, better and trustable products with less environmental impact.

### **Luke Monck**

Senior Manager, Manufacturing Practice  
Deloitte

Luke is a senior manager in Deloitte's Energy, Resources & Industrials practice with a background in human capital. He has over 15 years of experience leading large scale organizational transformation initiatives for Fortune 100 companies. Luke supports his clients in responding to the digital revolution in manufacturing and brings them solutions to address the future of work in their organizations. He focuses on: designing and delivering adoption programs that link employee use of digital tools, technology, and standard work to value; developing and implementing experiential learning that provides manufacturers with critically scarce digital skills; and implementing new organizational structures and workforce / cultural strategies that align client organizations to disruptions in their environment.

Luke holds a PhD in Industrial Psychology from the City University of New York Graduate School/Baruch College. He currently serves as an Infantry officer in the Virginia Army National Guard.

### **Michelle Pastel**

Manager of Technology and Engineering  
Development  
Corning Glass

Michelle Pastel joined Corning in 1993 as a Systems Engineer. She is currently the Manager of Technology and Engineering Development in Corning's Manufacturing Technology and Engineering Division, Applied Processes for Manufacturing. Her department is focused on collaborating with Corning's Science & Technology Division, as well as Corning's businesses, to deliver differentiating technology solutions in the areas of measurements, advanced process control, imaging systems, data systems, and systems integration technologies for products and processes to enable Corning's research and development programs to innovate new products and manufacturing processes. Throughout Pastel's career, she has held technology, engineering and manufacturing positions in many divisions including Corning Optical Fiber, Components Products, Photonics Technologies, Optical Networking Devices, and MTE. These roles have included Production Support Leader, Technical Support Leader, New Product Introduction Leader, Process Development Leader, Technology Demonstration Leader, Portfolio Manager, Project Manager, and Department Manager. Through her work in MTE, she also has experience in other businesses including Corning Asahi Video, Consumer Products, American Video, Integrated Die Manufacturing, and S&T. She has delivered new systems to manufacturing, supported 24/7 manufacturing operations, delivered process improvements, and innovated new products and processes. She has been granted four patents. Through Michelle's extensive process and systems experience, she recognizes the value of SM.

**Kiran R Sheth, PhD**

Distinguished Engineering Associate  
ExxonMobil Research and Engineering

Kiran Sheth is a well-recognized expert in the modeling, control, and optimization community, and has over 30 years of experience in use of mechanistic models for manufacturing operations decision support systems. Currently, as a Distinguished Engineering Associate at ExxonMobil Research and Engineering, he is a key contributor in ExxonMobil's journey toward SM. In CESMII1, Kiran is an Executive Committee Member of Southern RMC2, and Co-Chair of Technology Standing Committee. As a champion of business-value driven innovations at ExxonMobil, Kiran's current focus is on the application of artificial intelligence, machine learning, computer vision, and natural language processing to manufacturing operations.

Kiran holds a BS in Chemical Engineering from Indian Institute of Technology (Mumbai), and MS & PhD in Chemical Engineering degrees from the University of Oklahoma (Norman). Kiran is also an author/co-author of 9 publications and 2 patents.

**Deborah L. Wince-Smith**

President & CEO  
Council on Competitiveness

The Honorable Deborah L. Wince-Smith is the President & CEO of the Council on Competitiveness, a non-partisan leadership coalition of CEO's, university presidents, labor union leaders and national laboratory directors, all committed to developing policy solutions and national initiatives to drive future productivity growth, prosperity for all Americans and the global success of American business. She has more than 20 years of experience as a senior U.S. government official, as the first Senate-confirmed Assistant Secretary for Technology Policy in the U.S. Department of Commerce in the administration of President George H.W. Bush, and as the Assistant Director for International Affairs in the White House Office of Science and Technology Policy in the Reagan admin-

istration. She served as a Senate-confirmed member of the Oversight Board of the Internal Revenue Service in the administrations of President George W. Bush and President Barack H. Obama.

Ms. Wince-Smith is also the President and Founder of the Global Federation of Competitiveness Councils (GFCC). She previously served on the Smithsonian National Board, the Secretary of State's Committee on International Economic Policy, the U.S. Naval Academy Foundation, and the Board of Governors of Argonne National Laboratory. She served as Chairman of the World Economic Forum's Global Agenda Council on Competitiveness and as a Public Director of NASDAQ-OMX.

Ms. Wince-Smith currently serves as a Commissioner on the Commission on the Theft of American Intellectual Property, as a member of Purdue University's Strategic Research Advisory Council (SRAC), and as a member of the Council of Japan's Science and Technology in Society (STS) Forum. As an expert in technology commercialization, Ms. Wince-Smith serves on the Board of Directors of Aerolase, Inc., NanoMech, Inc., and Q-Net Security, Inc.

Ms. Wince-Smith graduated magna cum laude and Phi Beta Kappa from Vassar College and earned a Master's Degree in Classical Archaeology from King's College, Cambridge University. She received an Honorary Doctorate in Humanities from Michigan State University, an Honorary Doctorate of Public Administration from the University of Toledo, an Honorary Doctorate of Law honoris causa from the Queens University Belfast, an Honorary Doctorate of Humane Letters honoris causa from Worcester Polytechnic Institute and, most recently, an Honorary Doctorate of Public Service from the University of South Carolina.

# About the Organizers

## Council on Competitiveness

For more than three decades, the Council on Competitiveness (Council) has championed a competitiveness agenda for the United States to attract investment and talent and spur the commercialization of new ideas.

While the players may have changed since its founding in 1986, the mission remains as vital as ever—to enhance U.S. productivity and raise the standard of living for all Americans. The members of the Council—CEOs, university presidents, labor leaders and national lab directors—represent a powerful, nonpartisan voice that sets aside politics and seeks results. By providing real world perspective to Washington policymakers, the Council's private sector network makes an impact on decision-making across a broad spectrum of issues from the cutting-edge of science and technology, to the democratization of innovation, to the shift from energy weakness to strength that supports the growing renaissance in U.S. manufacturing.

The Council's leadership group firmly believes that with the right policies, the strengths and potential of the U.S. economy far outweigh the current challenges the nation faces on the path to higher growth and greater opportunity for all Americans.

### Council on Competitiveness

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## UCLA

UCLA's core mission is education, research and service. Our primary purpose as a public research university is the creation, dissemination, preservation and application of knowledge for the betterment of our global society. To fulfill this mission, UCLA is committed to academic freedom in its fullest terms: We value open access to information, free and lively debate conducted with mutual respect for individuals, and freedom from intolerance. In all of our pursuits, we strive at once for excellence and diversity, recognizing that openness and inclusion produce true quality. These values underlie our three institutional responsibilities.

### UCLA

405 Hilgard Avenue  
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UCLA.edu

## **CESMII, the Smart Manufacturing Institute**

### **A Program at UCLA**

CESMII, the Smart Manufacturing Institute, is ensuring the power of change and innovation is at the fingertips of everyone who touches manufacturing. Headquartered in Los Angeles, CA, CESMII brings over \$140 million in committed public-private investment through a consortium of partners from across industry, academia and non-profit entities. CESMII is the 5th Institute sponsored by the U.S. Department of Energy and the 9th out of fourteen in the national Manufacturing USA network of institutes, each with a specialized focus to improve manufacturing competitiveness in the United States. CESMII's program and administrative home is with the University of California Los Angeles (UCLA).

#### **CESMII, the Smart Manufacturing Institute**

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