



**Compete.**

Council on  
Competitiveness

# Making Impact

## 2019-2020 Report

## Letter from the President & CEO

This year, *Making Impact* comes at a time of great uncertainty and tragedy for Americans, as the effects of the COVID-19 pandemic continue to ripple across the economy and society. While the release of our annual report is an opportunity to look back on the accomplishments of the past year, we are keenly aware of the challenges ahead for the Council and the country. Fortunately, the organization is well-positioned to meet these challenges with strong leadership and a committed membership lending its collective voice to our mission.

With record unemployment not seen since the Great Depression; shuttered businesses, production facilities and university campuses; disrupted supply chains; and volatile stock markets; the COVID-19 pandemic has hit hard the American economy and threatens the standard of living of every American. Nearly 40 million Americans have filed for unemployment, and forecasters are predicting the U.S. economy to contract between 3.6 and 7.4 percent on an annualized basis in 2020.



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

With guidance from the Council's Board and Executive Committee, we have integrated into the organization's policy agenda a critical focus on the post-COVID-19 economy. This effort includes updating the Council's 2007 report, *Transform*, that made the case for resilience in the face of economic disruptions. Reading that report anew, one cannot escape the fact that we may not have known that COVID-19 was going to happen, but we should have known something likely was going to disrupt the economy. The question is, why were we not better prepared?

Looking to our programs, the launch of our **National Commission on Innovation and Competitiveness Frontiers (Commission)** highlighted the second half of 2019. The Council's Board—Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; Industry Vice-chair, Mr. Brian T. Moynihan, Chairman and Chief Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness; Dr. Michael M. Crow, President, Arizona State University, and Uni-

versity Vice-chair, Council on Competitiveness; and Labor Vice-chair, Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chair, Council on Competitiveness—leads this flagship initiative.

By bringing together America's top minds from industry, academia, labor and national laboratories, the Commission will confront and overcome a range of critical challenges facing U.S. innovation capacity and capability. The Commission also aims to create momentum across the country to outpace the rest of the world's innovation efforts; build on the Council's deep history in defining and articulating America's innovation movement; and develop new-to-the-world partnerships to launch and scale innovation-based research, businesses and ventures in the United States. Since the Commission's launch, a nationwide community-building effort has brought together nearly 60 National Commissioners, and more than 200 innovation stakeholders and experts from nearly every sector of the U.S. economy to create this new call to action.

The Commission's work kicked off strongly in 2020, with a January Commission Community Launch Conference at Arizona State University. There, the Commission's network of experts and advisors tasked with incubating recommendations met for the first time. With an online platform for engagement already in place, the Commission's work was able to continue at full speed even as physical office spaces closed and planned regional meetings went virtual. In the first eight weeks of stay-at-home orders, the Commission community's hundreds of leaders engaged in nearly 50 virtual Working Group Dialogues, and our National Commissioners kicked off a video thought leadership series, *Competing in the Next Economy*, to introduce our work to more Council members, policymakers and the public. We remain on pace for the release of an initial action agenda for the nation on December 17, 2020, at our National Competitiveness Forum.

A complementary effort is underway through the Council's **University Leadership Forum (Forum)** that, under the leadership of Dr. Michael Lovell, President of Marquette University, and Mr. Jere Morehead, President of the University of Georgia, has focused on the future of U.S. higher education and its critical role in enhancing competitiveness. Even before the COVID-19 outbreak, the Forum was poised to pursue an aggressive call to action around three work streams: the fusion of STEM and the liberal arts, university-industry-government partnerships, and extreme innovation projects. In the face of the pandemic's tremendous disruption to higher education, the Forum has adapted to focus on the impact of the virus and help guide policy toward a stronger, more flexible educational system in the future.

Last November, the **Technology Leadership & Strategy Initiative (TLSI)** marked its 10th Anniversary and convened Dialogue 21. Themed around collaboration, the Dialogue highlighted the importance of evolving public-private partnerships (PPPs), as well as working across global markets. The former was highlighted during a wide-ranging and provocative set of presentations focused on the future of the U.S. microelectronics innovation ecosystem and industry, while the latter was reinforced with participation in the Dialogue from special guests from Australia. The TLSI has moved into its second decade with a new effort to increase more frequent and deeper engagement—launching in April 2020 a monthly recurring webinar series, *TLSI: Competitiveness Watch*, with TLSI members and key policymakers. The focus is on addressing issues of immediate import to public policy and identifying ways TLSI members can engage in solving those problems.

The Council also released in 2019 a major advanced computing report, *Explore*, capturing key insights from a three-year, U.S. Department of Energy-supported grant focused on the regional economic development power of America's advanced computing capability.

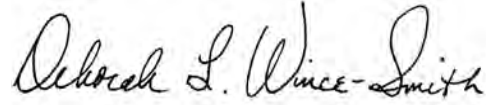
The Council's **Advanced Computing Roundtable (ACR)** also announced new and returning co-chairs: Mr. Rick Arthur, Sr. Principal Engineer, Advanced Computational Methods Research and Sr. Director, Digital Engineering, Digital Technologies, GE Research; the Honorable Dr. Patricia Falcone, Deputy Director for Science and Technology, Lawrence Livermore National Laboratory; Mr. Tommy Gardner, Chief Technology Officer, HP Federal; and Dr. J. Michael McQuade, Vice President for Research, Carnegie Mellon University.

And in April 2020, the Council delivered to the National Science Foundation *BUILD for Advanced Computing*, the final report in the **NSCI: Advancing U.S. Competitiveness through Public-Private Partnerships for Advanced Computing Initiative**. The project—chronicled in a set of six primers and post-reports spanning three dialogues hosted in 2018 and 2019 across the country by Council members—challenged hundreds of advanced computing stakeholders to envision and propose new PPP models to enhance the nation's investments in computing research and development. The Council will carry forward the work from BUILD into the Commission—as well as into its ACR initiative, and as part of a proposed leadership panel at SC20: The International Conference for High Performance Computing, Networking, Storage and Analysis.

Combined, these programs represent a powerful, interlinked policy agenda for the Council focused both on short- and long-term drivers of U.S. competitiveness—in essence, **Competing in the Next Economy**.

The Council is nothing without its members, and I thank you for your support, expertise, time and leadership during these challenging times. Together we will chart a path toward a stronger, more resilient and innovative economy.

Sincerely,



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

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## **COMPETE: LEADERSHIP**

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**COMPETE: LEADERSHIP**

# National Commission on Innovation & Competitiveness Frontiers

**INITIATIVE CO-CHAIRS**

**Dr. Mehmood Khan**  
 Chief Executive Officer  
 Life Biosciences, Inc.  
 Chairman  
 Council on Competitiveness



**Dr. Michael M. Crow**  
 President  
 Arizona State University  
 University Vice-chair  
 Council on Competitiveness



**Mr. Brian T. Moynihan**  
 Chairman and Chief Executive  
 Officer  
 Bank of America  
 Industry Vice-chair  
 Council on Competitiveness



**Mr. Lonnie Stephenson**  
 International President  
 IBEW  
 Labor Vice-chair  
 Council on Competitiveness



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

In today's global economy, low costs, high quality, rapid product and service design and deployment, and organizational dexterity all come together and form a baseline to compete—but, increasingly, these traits characterize many markets and nations. Long-term prosperity requires strengthening this baseline—but it requires more. It requires placing ever more attention on innovation to confer competitive advantage. Why? Innovation is a proven driver of productivity and economic growth, job creation, and rising living standards.

While the United States has stood apart from the rest of the world during the past half century in its record of sustained innovation, across industries old and new, and through the ups and downs of economic cycles, the nation today faces new realities and new imperatives transforming the context for continued innovation leadership. The nation faces a range of new—perhaps even existential—challenges to its global leadership in innovation. The nature of innovation, itself, has changed—at the same time that how to pursue innovation has shifted.



“We want to succeed at the benefit to—not at the cost of—others. This work of our National Commission is not a zero-sum game.”

**Dr. Mehmood Khan**

Chief Executive Officer, Life Biosciences, Inc.  
Chairman, Council on Competitiveness

To confront and solve for these challenges—and opportunities—the Council on Competitiveness (Council) launched a new, flagship initiative, the **National Commission on Innovation and Competitiveness Frontiers (Commission)** to leverage our broad, cross-sector membership in: creating momentum across the country to pick up the pace of innovation; defining and shaping America's innovation path for the 21st century; and developing new-to-the-world partnerships to launch and scale research, businesses and ventures.

On August 6-7, 2019, the Council kicked off the Commission with the Council's annual Chairman's Dinner, co-hosted by Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; and Dr. Eric Issacs, President, Carnegie Institution for Science.

Under the leadership of Council President & CEO, the Commission co-chairs and more than 35 CEOs, university presidents, labor leaders and national laboratory directors—the National Commissioners—the Council kicked off this new movement to develop the next generation of critical, actionable and measurable policy recommendations and private sector actions to bolster America's investments in talent, technology, innovation and infrastructure.

Throughout the kickoff event, Commissioners engaged in robust dialogue about the ways in which the Commission—through its organized Working Groups and Committees—would develop an innovation agenda for the country. Commissioners emphasized the need specifically to create action-oriented measurable outcomes—not only policy recommendations—that the Council's membership and affiliated constituencies could put into practice and track the results thereof. Of specific importance, Commissioners emphasized their work must improve outcomes for all constituencies—business, labor, education, research and consumers—for them to be deemed successful.

The major themes that emerged from kick-off event included:

- Shift the way the United States thinks about innovation and competitiveness from a narrow perspective to one that encompasses as broad a collection of stakeholders and participants as possible.
- Define the Commission's intended outcomes and set measures of success, then communicate these outcomes in a meaningful way to the public.
- Increase citizen and public access to research and the tools of innovation to scale innovation efforts.

- Inspire more inventive application of the tools of innovation to transform skills development.
- Ensure improved innovation outcomes are equitable and felt by everyone.
- Identify and support—or envision and suggest—efforts to enhance maximum creativity in U.S. innovation systems.
- Focus on public-private partnerships to reap benefits of new technologies.

The Commissioners endorsed the formation of three Working Groups to develop initial content and policy research, and conducted an extensive search for the most innovative leaders and practitioners from across industries, sectors and disciplines to be a part of this community that will populate the three working groups:

**1. Developing and Deploying at Scale Disruptive Technologies**—mapping promising, strategic technology and innovation pathways to enhance national economic and productivity growth.

**2. Exploring the Future of Sustainable Production and Consumption, And Work**—examining the ever-evolving disruption underway in the production and consumption of goods, and workforce development.

**3. Optimizing the Environment for the National Innovation Ecosystem**—exploring ways to optimize the entire system in which the nation’s innovators and entrepreneurs operate (from capital costs, to intellectual property regimes, to standards and regulations)—and examining the critical roles the private sector, and local, state and federal governments must play.

And as the Commission continues its effort and evolution, the Council is adding a fourth working group in the second half of 2020: **Unleashing the Capabilities of Work and Entrepreneurship**.

An Outreach & Engagement Committee—comprised of Commissioner-nominated marketing, government relations and external communications professionals—was also established to support the Commissioners and Council staff in efforts to propagate major findings.

National Commission on Innovation & Competitiveness Frontiers

National Commissioners

60+ distinguished leaders from industry, academia, national laboratories and other critical stakeholder groups, including the Council on Competitiveness Board:

- Dr. Mehmood Khan**  
Chief Executive Officer  
Life Biosciences, Inc.
- Mr. Brian T. Moynihan**  
Chairman and Chief Executive Officer  
Bank of America
- Dr. Michael M. Crow**  
President  
Arizona State University
- Mr. Lonnie Stephenson**  
International President  
IBEW
- Mr. Samuel R. Allen**  
Chairman  
Deere & Company
- Ms. Deborah L. Wince-Smith**  
President & Chief Executive Officer  
Council on Competitiveness

Advisory Committee

Three dozen+ multi-sector innovation leaders supporting the National Commissioners and guiding the Working Group agendas.

Outreach & Engagement Committee

Two dozen+ strategic communications, media and government affairs leaders supporting the creative education, advocacy and communications plans for the National Commission.

Working Groups

150+ innovators and leaders—from all sectors of the economy and across the entire country—brainstorming and developing actionable policy recommendations for the National Commission.

- 1. Developing and Deploying at Scale Disruptive Technologies**
- 2. Exploring the Future of Sustainable Production and Consumption**
- 3. Optimizing the Environment for the Nation’s Innovation Systems**
- 4. Unleashing Capabilities for Work and Entrepreneurship**



“At the moment, our nation has a tremendous inability to understand complexity. We need human enhancement recommendations as a core deliverable of this Commission.”

**Dr. Michael M. Crow**

President, Arizona State University  
University Vice-chair, Council on Competitiveness



“A guiding principle for the Commission is ‘innovation for all.’ We want to engage the public on how they think about innovation, learn how innovation can solve challenges, and then communicate the findings of our work back to them.”

**Mr. Brian Moynihan**

Chairman and Chief Executive Officer, Bank of America  
Industry Vice-chair, Council on Competitiveness

Commissioners will further benefit from a group of advisors nominated from within their network to form a committee to serve as a strategic screen—helping to coordinate and review the efforts of the Working Groups, as well as setting goals and tracking progress for the Working Groups. And in conjunction with the Council staff, this Advisory Committee will develop the final set of recommendations and reports for review, debate and approval by the National Commissioners and the Council Board.

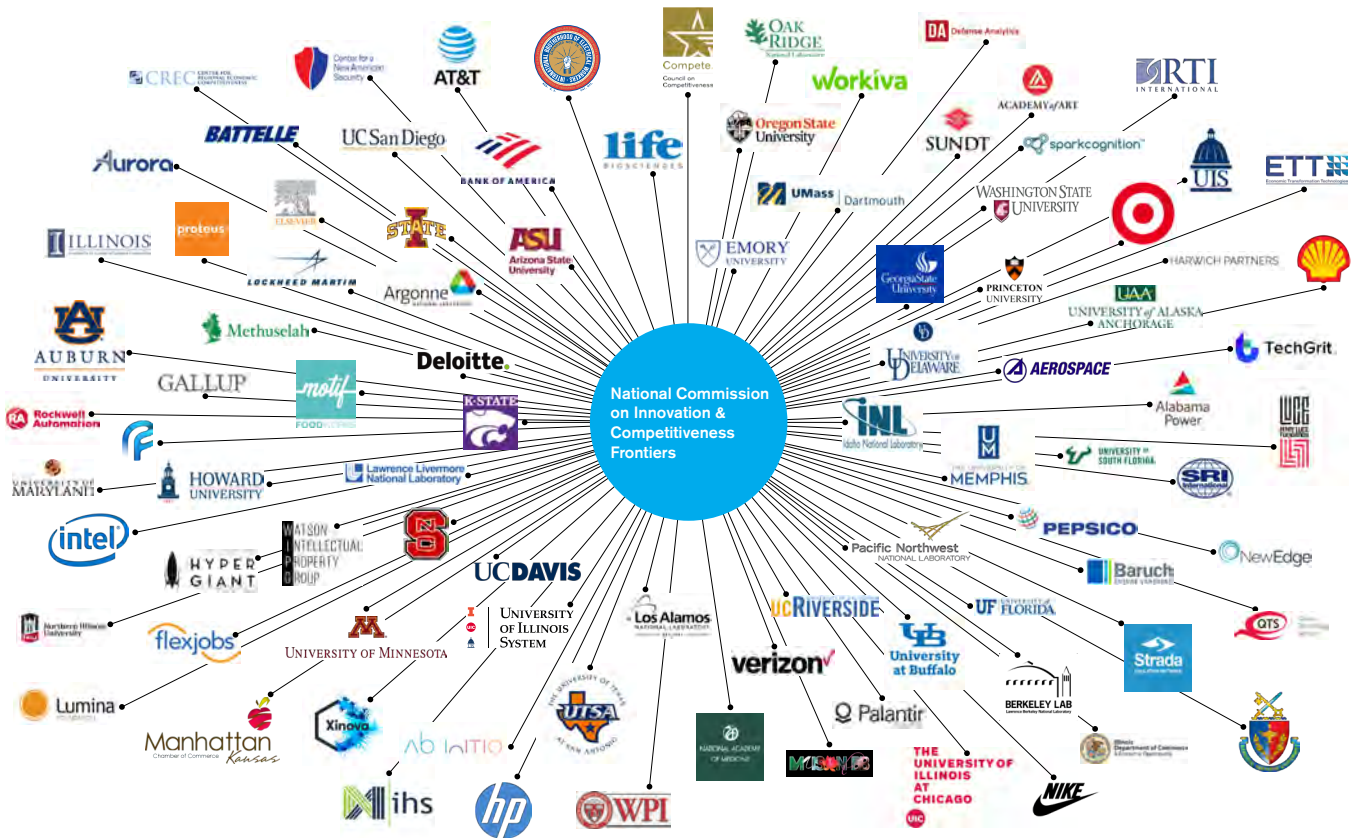
The Commission started work right away in 2020—gathering its community of Working Groups, Advisors, and strategic communications leaders at Arizona State University on January 16, 2020, for a Launch Conference to begin the policy recommendation co-creation process. The Conference—led by Commission Co-Chairs Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman,

Council on Competitiveness; and Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness, convened nearly 200 industry, university and national laboratory leaders from across the country.

Initial areas of focus for the National Commission Community emerged in a series of deep dive dialogues and campus-wide, innovation immersion tours designed to spur creative thinking and to allow the Commission community to bond. Working Groups, in support of the Commission's initial three pillars determined areas for further analysis and next steps:

**1. Developing and Deploying at Scale Disruptive Technologies.** This Working Group considered whether the United States is maintaining a competitive advantage globally in developing and deploying disruptive technologies. In order to maintain compet-

## National Commission on Innovation &amp; Competitiveness Frontiers Community (as of December 2019)



itive advantage, the Group determined it would take an inventory of U.S. strengths and weaknesses pertaining to disruptive technology. This review includes focusing on the decision cycles of disruption and iterative feedback between stakeholders, developers and consumers. Specific sectors to examine include microelectronics, manufacturing, bio-genomics, materials sciences and renewable energy.

**2. Exploring the Future of Sustainable Production and Consumption, and Work.** This Working Group examined two aspects of sustainability: “hard challenges,” such as material innovation and supply chain transformation, and the use of sustainable products throughout the supply chain; and “soft challenges,” defined as related to consumer behavior and culture, as well as sustainability thinking. Solutions for these challenges generally take longer to implement and require multiple stakeholders, including industry, regulatory bodies and individuals to succeed. Working Group members also focused on workforce challenges, including conversations on: education, non-degree credentialing and training, as well as ways in which organizations can help reinvent

the ways society thinks about workforce recruitment, retention and management. Several areas for further assessment included the increasing use of sustainable products in manufacturing; changing consumer behavior and changing corporate strategies to value and prioritize sustainability actions; and determining how innovation can be used to improve lives, with a particular focus on those who are currently most vulnerable.

**3. Optimizing the Environment for the National Innovation Ecosystem.** This Working Group focused on innovation infrastructure, including policy questions and opportunities related to competition. Competition generates opportunities for economic growth, and the group examined how best to achieve sustained 3-4 percent annual growth in the U.S. economy. To achieve this, the Group discussed having to overcome some critical barriers such as: unlocking underutilized patented technology and updating the U.S. IP protection framework; redefining capital to be more inclusive and encompassing of the people, expertise, equipment and infrastructure that goes into an innovation; optimizing access to financial capital,



*Participants at the August 2019 Launch Meeting of the National Commission on Innovation and Competitiveness Frontiers.*

in particular from seed and private VC funding that is concentrated in specific sectors and/or certain geographies; and assessing the “system” of U.S. tech investments (should there be, for example, more state-directed/led investment).

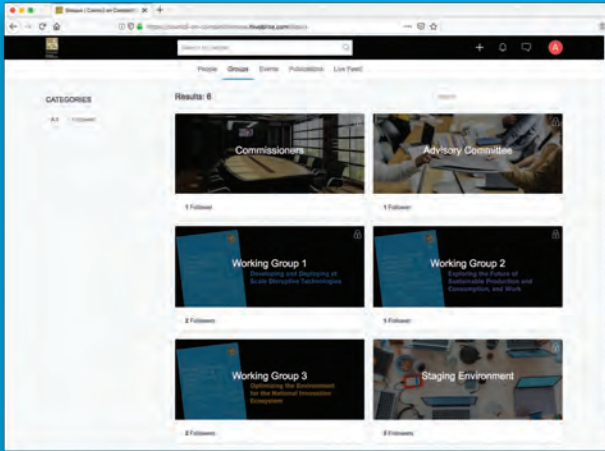
Following the Working Group discussions at Arizona State University, the Council began in earnest planning and facilitating the ongoing work of the Commission. In advance of the COVID-19 crisis, the Council had instituted a series of weekly recurring webinars for each of the three policy Working Groups. Since instituting the virtual collaboration, the Council has hosted nearly 50 virtual meetings across the three Working Groups. The output of these sessions will form the initial set of priorities and draft recommendations the National Commissioners will consider in their second meeting—a virtual session on June 16, 2020.

The virtual Working Group sessions began on March 31st and completed this first phase on May 22nd. Phase I of the Working Group sessions yielded insights and areas for further assessment ahead of the National Commissioner’s meeting on June 16th.

Key findings included:

The **Developing and Deploying at Scale Disruptive Technologies** Working Group

- A warning the United States risks losing technology supremacy in multiple critical arenas to China threatening the country’s long term competitiveness.
  - Vital technologies discussed included artificial intelligence, advanced computing, quantum information sciences, communications, energy, biotechnology, material science-based applications and 5G.
- Concern with the concentrated nature of venture capital investment by industry and geographic region leaving most of the country without the capacity to scale up innovation in a meaningful way.
- Ongoing challenges with respect to intellectual property, especially negotiation of technology transfer agreements between academia and industry. Importantly, the current COVID-19 pandemic has motivated some stakeholders to develop streamlined solutions to expedite collaboration related to vaccines and treatments.



In pursuit of engaging the Commission Community beyond the ASU launch conference, the Council launched a Commission-specific online collaboration and engagement platform to support the development, curation and sharing of policy recommendations. An innovation tool to support the creative process of the Commission, the online platform is a collaborative space for Commissioners, Advisors, Working Group members and the Outreach and Communications Committee to research and engage in dialogue. The collaboration platform, located at [innovation.compete.org](http://innovation.compete.org), facilitates virtual, ongoing discussions with stakeholders and is a nexus for the sharing of background research, resources and publications.



“This is going to be the most diverse workforce we’ve ever had—that’s our strength, and we should embrace that and consider how we can improve the diversity across our workforce.”

**Mr. Lonnie Stephenson**

International President, IBEW  
Labor Vice-chair, Council on Competitiveness

The **Exploring the Future of Sustainable Production and Consumption, and Work** Working Group.

- The importance of strengthening entrepreneurship and increasing entrepreneurial opportunity by cultivating the talent pool for entrepreneurship, ensuring enterprises receive the support they need to be successful, and making the entrepreneurial environment more inclusive
- Extensive discussions related to identifying critical tenets of sustainable production. The Working Group argued that a stronger commitment by government and industry to invest in sustainable development and innovation to drive action is also needed and could make the U.S. (both in the manufacturing and the services sector) globally more competitive.
- The need for U.S. manufacturers to develop a more concerted and coherent value proposition regarding digitalization to leverage the efficiencies, sustainability and democratization of smart manufacturing.
- The need to upskill the workforce and align workers’ capabilities with future industry needs, including skills in digitalization, artificial intelligence and high-performance computing. These efforts will need to be accelerated to keep pace with technology changes and positively impact productivity and individual prosperity.



“Productivity is a key metric that is not getting enough focus. The Council and Gallup identified education, healthcare, and housing as low productivity areas with increasing costs—but ripe for innovation.”

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

- Issues related to the short-term COVID-19 impact and longer-term vulnerabilities of global supply chains such as:
  - Identifying weaknesses in the supply chains, particularly with small companies, and working together to address and fix those vulnerabilities
  - Possibly decoupling from China and relocating factories not only to the U.S., but to Western Hemisphere nations that might be more expensive than China, but closer physically, enabling a shorter product delivery time.
  - Building integrity of intellectual property ownership into supply chains to enable greater source-of-origin requirements for product components, especially pharmaceuticals.



*Dr. Wayne A.I. Frederick, President, Howard University*

#### The **Optimizing the Environment for the National Innovation System** Working Group.

- The importance of optimizing the entire system in which the nation's innovators and enterprises operate including capital, infrastructure and legal frameworks.
- The need to explore funding mechanisms outside of the traditional venture capital system, which does not possess sufficient resources to shoulder the burden of the needed exponential innovation growth.
- The importance of the U.S. developing means to co-invest, de-risk, and provide technical assistance to make large infrastructure investments, including a national high-speed broadband network.
- A re-commitment to bolster regional competitiveness within the context of national competitiveness (an issue long championed by the Council).
- The necessity of a re-examination of the intellectual property and antitrust rules and regulations.

The next evolution of the Working Groups will begin after the first report-out to the National Commissioners on June 16, 2020. The intent of this next phase with co-chair leadership is to have the voice and leadership of peers advance the work of the Commission toward developing actionable policy recommendations that can be refined throughout the Summer and into early Fall with an eye toward the Commission Year 1 “Call to Action” to debut at the December 17, 2020, National Competitiveness Forum.



“It is hard to win the big global challenges as a company alone—we must, as a nation, embrace both competition and collaboration.”

**Dr. René Lammers**  
Chief Science Officer, PepsiCo, Inc.

**KEY 2019–2020 PUBLICATIONS-TO-DATE**

Released May 19, 2019, *Launch* was a summary of the kick-off meeting of the National Commission on Innovation and Competitiveness Frontiers.

Released January 16, 2020, *Commission Community Launch Conference* was the agenda and primer for the kick-off of the National Commission Working Groups, Advisory Committee and Outreach and Engagement Committee held at Arizona State University.



**THIS PAGE**

*At left: Dr. Gary May, Chancellor, University of California, Davis.*

**OPPOSITE PAGE**

*Top: Participants at the National Commission Community Launch Conference on January 16, 2020, at Arizona State University.*



“New public-private partnerships are absolutely key to reaping the benefits of new technologies. We also need to make sure to reap the benefits and prosperity of technology advancements in the country.”

**The Honorable Patricia Falcone**

Deputy Director for Science and Technology, Lawrence Livermore National Laboratory



“We need to develop proposals and actions that can ‘move the needle.’ Which metrics do we want to influence, and which matter for the Commission?”

**Dr. Steven Ashby**  
Laboratory Director, Pacific Northwest National Laboratory  
Senior Vice President, Battelle



“It is apparent that our STEM programs are not enough. Putting drawings down on paper is where innovation starts, and it is important that we [the arts] be where that innovation conversation starts.”

**Dr. Elisa Stephens**  
President, Academy of Art University



*Mr. Brian Moynihan, Chairman and Chief Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness; Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness; Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; and Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness.*

Each Working Group is being Co-Chaired by representatives from industry, academia, national laboratory and labor along with Distinguished Fellows from the Council on Competitiveness.

Co-Chairs for the **Developing and Deploying at Scale Disruptive Technologies** Working Group

**Mr. Mike Cassidy**

Director, Emory Biomedical Catalyst  
Emory University

**Mr. Andre Doumitt**

Director, Innovation Development  
The Aerospace Corporation

**Dr. Paul Hommert**

Former Director  
Sandia National Laboratories

**Dr. Laurie Locascio**

Vice President for Research  
University of Maryland

**Mr. Toby Redshaw**

SVP, Enterprise Innovation & 5G Solutions  
Verizon

**Dr. John Sarrao**

Deputy Director—Science, Technology & Engineering  
Los Alamos National Laboratory

**Dr. Anthony Tether**

Former Director  
Defense Advanced Research Projects Agency

Co-Chairs for the **Exploring the Future of Sustainable Production and Consumption, and Work** Working Group

**Ms. Stacy Lippa**

Former Group Vice President,  
Food Supply Chain  
Target

**Dr. Albert Pisano**

Dean and Walter J. Zable  
Distinguished Professor, Jacobs  
School of Engineering  
University of California, San Diego

**The Honorable Branko Terzic**

Managing Director  
Berkeley Research Group, LLC

**Dr. Mohammad Zaidi**

Strategic Advisory Board Member  
Braemar Energy Ventures

Co-Chairs for the **Optimizing the Environment for the National Innovation System** Working Group

**Dr. Peter Dorhout**

Vice President for Research  
Kansas State University

**Mr. Tad Lipsky**

Assistant Professor and Director  
of the Competition Advocacy  
Program at the Global Antitrust  
Institute  
George Mason University

**Ms. Vickie Lonker**

Vice President Global Networking  
Product Management  
Verizon Business Group

Co-Chairs for **Unleashing the Capabilities of Work and Entrepreneurship** Working Group

**Mr. Leslie Boney**

Vice Provost and Director  
Institute for Emerging Issues  
North Carolina State University

**Dr. Lee Cheatham**

Director, Technology Deployment  
and Outreach  
Pacific Northwest National  
Laboratory

**Dr. Carol Dahl**

Executive Director  
The Lemelson Foundation

**Dr. Lloyd Jacobs**

Former President  
University of Toledo

**Ms. Erica Volini**

Global Human Capital Leader  
Deloitte

**Ms. Julie Meier Wright**

Strategic Advisor  
Collaborative Economics



“We need to bring in new, younger innovators who add distinctive expertise to the conversation and who think about things differently.”

**Dr. Jonathan McIntyre**  
CEO, Motif FoodWorks, Inc.

## CALENDAR OF EVENTS

### 2019

#### AUGUST 6

##### Chairman's Dinner

Carnegie Institution for Science  
Washington, D.C.

#### AUGUST 7

##### Launch—First National Commissioners Meeting

Council on Competitiveness  
Washington, D.C.

### 2020

#### JANUARY 16

##### National Commission Community Launch Conference

Arizona State University  
Tempe, AZ

### Virtual Meetings, Phase 1

#### MARCH 31

Working Group 1  
Working Group 3

#### APRIL 1

Working Group 2

#### APRIL 2

Working Group 1  
Working Group 3

#### APRIL 7

Working Group 1  
Working Group 3

#### APRIL 9

Working Group 1  
Working Group 3

#### APRIL 10

Working Group 2

#### APRIL 13

Working Group 2

#### APRIL 14

Working Group 1  
Working Group 3

#### APRIL 16

Working Group 1  
Working Group 3

#### APRIL 17

Working Group 2

#### APRIL 20

Working Group 2

#### APRIL 21

Working Group 1  
Working Group 3

#### APRIL 23

Working Group 1  
Working Group 3

#### APRIL 24

Working Group 2

#### APRIL 27

Working Group 2

#### APRIL 28

Working Group 1  
Working Group 3

#### APRIL 30

Working Group 1  
Working Group 3



*Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; and Dr. Michael M. Crow, President, Arizona State University, and University Vice-chairman, Council on Competitiveness.*



*The Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chairman, Council on Competitiveness; and Ms. Janet Foutty, Chair of the Board, Deloitte.*

**MAY 1**  
Working Group 2

**MAY 4**  
Working Group 2

**MAY 5**  
Working Group 1  
Working Group 3

**MAY 7**  
Working Group 1  
Working Group 3

**MAY 8**  
Working Group 2

**MAY 11**  
Working Group 2

**MAY 12**  
Working Group 1  
Working Group 3

**MAY 14**  
Working Group 1  
Working Group 3

**MAY 15**  
Working Group 2

**MAY 18**  
Working Group 2

**MAY 19**  
Working Group 1  
Working Group 3

**MAY 21**  
Working Group 3

**MAY 22**  
Working Group 2

**MAY 25**  
Working Group 2, Co-Chair  
Briefing

**MAY 26**  
Working Group 1, Co-Chair  
Briefing

**MAY 28**  
Working Group 3, Co-Chair  
Briefing

**MAY 29**  
Working Group 4, Co-Chair  
Briefing

**JUNE 16**  
Second National Commissioners  
Meeting

## Upcoming

**JUNE-SEPTEMBER**  
Phase 2 Working Group Weekly  
Sessions & Engagement  
of Advisors and Outreach/  
Engagement Committee

**DECEMBER 16**  
Third National Commissioners  
Meeting  
Washington, D.C.

**DECEMBER 16-17**  
National Competitiveness Forum  
Council on Competitiveness  
Washington, D.C.



“The number one challenge in innovation will always be ‘But we’ve always done it this way!’”

**Dr. Mark Becker**  
President, Georgia State University



**Top right:** Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness; and Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness.

**Center:** Dr. Dennis Assanis, President, University of Delaware.

**Bottom:** Dr. M. David Rudd, President, University of Memphis; and Mr. Bill Eggers, Executive Director, Center for Government Insights, Deloitte.



“Building strong relationships between our national laboratories, entrepreneurs and industry will drive innovation. That ought to be a goal for this Commission.”

**Dr. Thomas Zacharia**

Director, Oak Ridge National Laboratory



“The Commission must examine the impact of disruptive technologies on both consumers and companies.”

**Ms. Janet Foutty**

Chair of the Board, Deloitte



**Center:** Dr. Kim Wilcox, Chancellor University of California, Riverside.

**Bottom:** Dr. Kirk Schulz, President, Washington State University.



“In education, we need to examine how learning links to earning and put innovative tools into the hands of individuals, as opposed to thinking mainly about systemic reform of established institutions.”

**Mr. Andy Thompson**

Co-Founder, Proteus Digital Health



**Top:** Dr. Marianne Walck, Deputy Director for Science and Technology and Chief Research Officer, Idaho National Laboratory; and Dr. Robert E. Johnson, Chancellor, University of Massachusetts Dartmouth.

**Center:** Gen. Richard Myers, President, Kansas State University.

**Bottom:** Mr. George Fischer, Senior Vice President and Group President, Verizon Global Enterprise.



“We need to focus not on the negative side of social disruption that comes from innovation. Rather, we need to focus on how we mitigate social disruption.”

**Dr. Pradeep Khosla**

Chancellor, University of California, San Diego



**Top:** Dr. W. Kent Fuchs, President, University of Florida.

**Center:** Dr. Paul Kearns, Director, Argonne National Laboratory.

**Bottom left:** Mr. Sridhan Sudarsan, Chief technology Officer, Spark-Cognition, Inc.

**Bottom right:** Dr. Keoki Jackson, Chief Engineer and Vice President of Engineering and Program Operations, Lockheed Martin.

“The Commission would serve the nation—the world—well by bringing converging sciences to solutions.”

**Dr. Victor Dzau**  
President, National Academy of Medicine



**Center left:** Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness.

**Bottom left:** The Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness.

**Top:** Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness.

**Center right:** Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness.

**Bottom right:** Dr. Mark Becker, President, Georgia State University; and Dr. Jim Clements, President, Clemson University.



“The Council has shown its ability to have a great impact. The Commission must build on this strength.”

**Dr. Michael Witherell**

Director, Lawrence Berkeley National Laboratory



**Top:** Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; and Dr. Elisa Stephens, President, Academy of Art University.

**Center:** Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness; Mr. Chris Musselman, Head, Commercial Business Development, Palantir Technologies; and Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness.

**Bottom left:** Mr. Thomas Baruch, Founder and CEO, Baruch Future Ventures.

**Bottom right:** Dr. Sethuraman Panchanathan, Executive Vice President, ASU Knowledge Enterprise Development and Chief Research and Innovation Officer, Arizona State University.



**Top:** Members of the National Commission Advisory and Communications and Outreach Committee at the Community Launch Conference at Arizona State University.



**Center:** Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness; and Mr. Chris Musselman, Head, Commercial Business Development, Palantir Technologies.

**Bottom:** Dr. Theresa Mayer, Executive Vice President for Research and Partnerships, and Professor of Electrical and Computer Engineering, Purdue University; Dr. Neal Woodbury, Chief Science and Technology Officer, Knowledge Enterprise, Arizona State University; and Dr. Greg Morin, Director for the Office of Strategy, Performance, and Risk, Argonne National Laboratory.





**Top:** Members of the National Commission Working Group 1 at the Community Launch Conference at Arizona State University.

**Center left:** Lieutenant Colonel Stewart Parker, Senior Military Fellow, Center for a New American Security; Ms. Anne Tucker, Professor of Law, Georgia State University; and Mr. Noel Kinder, Chief Sustainability Officer, Nike.

**Center right:** Dr. Roberto Alvarez, Executive Director, Global Federation of Competitiveness Councils; Ms. Yasmin Hilpert, Senior Policy Director, Council on Competitiveness; and Ms. Stacy Lippa, former Group Vice President, Food Supply Chain, Target.

**Bottom:** Members of the National Commission Working Group 1 at the Community Launch Conference at Arizona State University.



*Top: Members of the National Commission Working Group 2 at the Community Launch Conference at Arizona State University.*

*Bottom: Members of the National Commission Working Group 3 at the Community Launch Conference at Arizona State University.*

**COMPETE: LEADERSHIP**

## 2019 National Competitiveness Forum

On December 17-18, 2019, the Council on Competitiveness (Council) brought together more than 200 Members, experts and stakeholders for its Annual Dinner and National Competitiveness Forum (NCF). The 2019 Annual Dinner was held on December 17 at the Andrew Mellon Auditorium in Washington, D.C. The Dinner—hosted by the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; and Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness—featured a keynote speech by Admiral James G. Foggo, III, Commander, Allied Joint Force Command Naples; Commander, U.S. Naval Forces Europe; and Commander, U.S. Naval Forces Africa.



*Top: The Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness.*

*Bottom: Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness.*

Admiral Foggo shared his insights on the nexus of long-term, strategic competition and national security, as well as, on the influence of national and global competitiveness strategies on the United States' complex security environment. He emphasized the pivotal role of U.S. leadership at the frontiers of



*Admiral James G. Foggo, III, Commander, Allied Joint Force Command Naples; Commander, U.S. Naval Forces Europe; and Commander, U.S. Naval Forces Africa.*

innovation, calling out the enduring mission of the Council to harness the power of dynamic leaders from business, academia, labor and national labs to work together to shape a future economic prosperity security and global competitiveness agenda for our country.

The next day, on December 18, the NCF was held at the Ronald Reagan Building and International Trade Center. The focus of the 2019 NCF was on the work of the Council's National Commission on Innovation and Competitiveness Frontiers.

Opening the 2019 NCF, the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness, cautioned that persistent lagging productivity is not just an economic issue but also poses profound social challenges. She noted that other systemic stresses are being placed on the US economy, rising deficits and debt that together are hindering critical investments in new knowledge and enabling infrastructure that historically have served as the underlying platforms and seed corn for long-term economic growth and prosperity. She warned that global competition is racing ahead, as the industries of the future unfold before our eyes. Artificial intelligence, robotics, biotech, big-data, cyber, quantum, and the next generation of semiconductors looking beyond Moore's law are all in play and other nations are making massive strategic investments and integrating their

research and industrial enterprises to rapidly deploy these revolutionary systems that will both underpin and determine economic strength and security as well as the geopolitical leadership of democracies around the globe. The U.S., she emphasized must respond with bold vision bold investment and bold action or we will risk losing jobs, strategic global markets and even the ability to guide the ethics and values associated with the deployment of these new exponential technologies.

The National Commission Co-chairs: Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness; Mr. Brian T. Moynihan, Chairman and Chief Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness; Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chair, Council on Competitiveness; Dr. Thomas Zacharia, Director, Oak Ridge National Laboratory; and the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness, participated in a moderated discussion with Mr. Chad Evans, Executive Vice President, Council on Competitiveness, to discuss the Outlook of the National Commission. The panel also marked the formal release of the



**Top:** Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness; Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; Mr. Brian T. Moynihan, Chairman and Chief Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness; Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chair, Council on Competitiveness; Dr. Thomas Zacharia, Director, Oak Ridge National Laboratory; and the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness, in a moderated discussion with Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness.

**Bottom:** The Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness.



Council's new report *Launch*, which highlighted initial findings from the National Commission's inaugural meeting earlier in the year.

Setting the stage for the panel. Mr. Evans stated that through the National Commission, led by the Council's Board and nearly 60 Commissioners, the Council hopes to change the future trajectory of American innovation capacity.

Dr. Khan noted that every innovation starts as an invention, and inventions require investment in R&D. While industry investment in R&D is increasing, most of this focuses on applied research, and without basic research supplying a pipeline of ideas stemming from serendipitous discoveries, opportunities for applied research, and with it innovation, will dry up. He elaborated that the U.S. must recognize the biggest inno-

ventions are occurring at the convergence of different disciplines: "Institutions cannot exist in silos, and we need to rethink and ask questions right down to the fundamentals."

Dr. Crow expressed that the U.S. is a large and exceptionally diverse country, but we are living off the fumes of past innovation. America now has global competitors and face a rapidly evolving landscape, and needs to make education and human capital development a goal of every sector and organization, and modernize our education system.

Mr. Moynihan explained that the United States must view its economic leadership relative to China, which is in a much stronger position that it was during the Council's 2004 National Innovation Initiative. In the near term, the United States need to increase



**Top:** Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness.

**Bottom:** Mr. Brian T. Moynihan, Chairman and Chief Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness.

**Top:** Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness.

**Bottom:** The Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness.

research funding, reform patents protections in trade deals and in general, and preserve incentives to innovate.

Building upon her opening remarks, Ms. Wince Smith described how the United States was still reaping the benefits of the prior 30 years of tremendous innovation and public private partnerships, but nothing has been done in 30 years to redesign these partnerships to address the fundamental challenges today.

Mr. Stephenson told the NCF audience how IBEW is constantly updating its training as workers are doing much different work than in the recent past. He explained how the union is increasing the use of virtual training and simulation for their electrical workers, and manufacturing workers are adjusting to the new skills needed as robotics become increasingly integrated into manufacturing.

Sharing his perspectives from the national lab community, Dr. Zacharia noted that Americans are living in an era of democratized innovation. "An average consumer with an iPhone6 has more computing power in their pocket than the most advanced supercomputers of the 1990s".

The NCF featured keynote speeches by the Honorable Dan Brouillette, Secretary, U.S. Department of Energy and by the Honorable Mark Warner, United States Senator (D-VA).

Secretary Brouillette shared the U.S. Department of Energy's agenda for critical issues facing our nation's competitiveness, security and future growth.

In his talk the Secretary highlighted efforts being made by the administration to ignite growth and unleash U.S. innovation capacity. Secretary Brouillette highlighted the administration's work to reduce



**Top:** Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chair, Council on Competitiveness.

**Bottom:** Dr. Thomas Zacharia, Director, Oak Ridge National Laboratory; and Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness.

the cost of business, bring jobs home, and improve productivity, including reducing the U.S. corporate tax rate from 35 percent to 21 percent to improve global competitiveness. The Secretary noted that a key driver of U.S. economic growth is America's competitive advantage from diverse, abundant, low-cost energy. He pointed out that the United States leads the world in oil and gas production and is #2 in both wind and solar production. All this progress, the Secretary said, is due to the power of innovation. When Americans innovate more and regulate less, we can increase production while driving down costs and emissions. Looking to the future, the Secretary closed by noting that DOE's next frontier will be industries of the future, especially computing, manufacturing, and biosciences with key investments being made in AI, exascale computing, and quantum information science.

**Top:** The Honorable Dan Brouillette, Secretary, U.S. Department of Energy.

**Bottom:** The Honorable Mark Warner, United States Senator (D-VA).

Senator Warner delivered a powerful statement addressing head-on the dynamics of the U.S.-China relationship. The Senator asserted that China is the foreign policy challenge of our time and represents the greatest threat to U.S. competitiveness. He contended that by making a play for supremacy in all of the advanced 21st century technology arenas—5G, artificial intelligence, quantum computing, robotics and biotech areas—China is seeking global dominance and doing so by not competing in an open and fair global market. The Senator outlined the elements of a strategic response the United States needs to enact: (1) protect U.S. critical supply chains, (2) increase export controls of critical and dual-use technologies, (3) limit Chinese investments in sensitive and critical technologies, and (4) ensure the Chinese government cannot continue to hide investments in anonymous shell companies.



*The Honorable Dan Brouillette, Secretary, U.S. Department of Energy; and the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness.*



*The Honorable Mark Warner, United States Senator (D-VA); and Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness.*

Dr. Crow moderated a conversation with the Honorable Ted Cruz, United States Senator (R-TX) and the Honorable Betsy DeVos, Secretary, United States Department of Education on Exploring the Future of Workforce Development in the United States. Dr. Crow set the stage for the discussion by describing the U.S. as the most successful economic democracy every, but at a critical juncture as it faces unprecedented global competition. He emphasized that the U.S. has an opportunity through the diversity of its population to achieve something unique in history: a large, highly educated, creative, adaptive population hailing from all over the world, if we develop universities that scale to the complexity of this country.

Secretary DeVos emphasized the importance of allowing schools to innovate enabling different regions and different institutions to experiment with models and find the best ones. She cautioned that much of what students do in school has not changed in decades and is no longer relevant.

Senator Cruz agreed that education is foundational to achieving the American Dream noting that everything from lifetime income attainment to health outcomes to the likelihood of incarceration is strongly correlated with educational attainment. Americans, he said, should not tolerate vast inequities that result in one's chances of success in life to be determined by wealth or zip code. He closed by adding that increasing the number of workers with technical educations will

increase the number of blue-collar union members, and ensure there are constituencies on both sides of the aisle with a stake in the success of this initiative.

The NCF also featured a moderated discussion between Mr. Bill Bates, Executive Vice President, Council on Competitiveness and the Co-chairs of the University Leadership Forum: Dr. Michael R. Lovell, President, Marquette University; and Mr. Jere W. Morehead, President, University of Georgia. The conversation was focused on the future of higher education with a focus on the issues highlighted in the Council report *Elevate: Optimizing the Role of Higher Education in the Emerging Innovation Landscape*.

Mr. Bates framed the panel around three core themes: the integration of arts and humanities with science, technology, engineering and math; the need for national and international collaboration to address extreme innovation projects; and the important role of university-industry partnerships in spurring commercialization and economic development. Dr. Lovell and Mr. Morehead reflected upon the importance of building support among students, parents and faculty for the importance of multi-display programs that will strengthen student career prospects. They also described key regional partnerships with businesses that provide internships, mentors, and commercialization pathways for student and faculty entrepreneurs.



**Top:** Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness; Mr. Brian T. Moynihan, Chairman and Chief Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness; the Honorable Dan Brouillette, Secretary, U.S. Department of Energy; the Honorable Deborah L. Winco-Smith, President & CEO, Council on Competitiveness; Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; and Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chair, Council on Competitiveness.

**Center left:** A moderated discussion between Mr. Bill Bates, Executive Vice President, Council on Competitiveness, and the Co-chairs of the University Leadership Forum: Dr. Michael R. Lovell, President, Marquette University; and Mr. Jere W. Morehead, President, University of Georgia.

**Center right:** The Honorable Ted Cruz, United States Senator (R-TX); and the Honorable Betsy DeVos, Secretary, U.S. Department of Education; in a moderated conversation with Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness.



**Bottom:** Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness; the Honorable Deborah L. Winco-Smith, President & CEO, Council on Competitiveness; the Honorable Betsy DeVos, Secretary, United States Department of Education; the Honorable Ted Cruz, United States Senator (R-TX); and Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness.



#### THIS PAGE

**Top left:** Ms. Janet Foutty, Chair of the Board, Deloitte.

**Top right:** Mr. Sridhar Sudarsan, Chief Technology Officer, SparkCognition.

**Bottom:** Mr. G. Michael Hoover, Chairman, President & CEO, Sundt Construction.

#### OPPOSITE PAGE

**Top left:** Mr. Andrew Thompson, Co-founder, Proteus Digital Health.

**Top right:** Mr. Keith Lynn, Program Manager, Lockheed Martin's AlphaPilot innovation challenge.

**Bottom left:** Mr. Shyam Sankar, President, Palantir Technologies.

**Bottom right:** The Honorable Steve Isakowitz, President and CEO, The Aerospace Corporation and National Commissioner.

A core element of the 2019 NCF was a series of focused presentations highlighting and amplifying the key themes of the Council's National Commission: (1) Developing and Deploying at Scale Disruptive Technologies, (2) Exploring the Future of Sustainable Production and Consumption, and Work, and (2) Optimizing the Environment for National Innovation Systems.

## 1. Developing and Deploying at Scale Disruptive Technologies.

Ms. Janet Foutty, Chair of the Board, Deloitte and National Commissioner, provided opening comments on the immediate and urgent need to develop and deploy at scale disruptive technologies that would further increase U.S. innovation capacity. Ms. Foutty highlighted that "At a time when technology is the driving force behind change and growth across all industries, governments and academia, we must be able to have leaders who can anticipate and adapt new technology."

Mr. Sridhar Sudarsan, Chief Technology Officer, SparkCognition and National Commissioner centered his remarks around the disruptive potential of artificial intelligence. He made the case that broad application of AI can have significant impacts on public policy making process. For the work of the Commission, for instance, Mr. Sudarsan stated that the United States can use AI to play an advisory role and scale the kinds of thinking for which humans have a limited capacity.

The Council has long advocated for significant investments in U.S. infrastructure. Mr. G. Michael Hoover, Chairman, President & CEO, Sundt Construction and National Commissioner, highlighted that maintaining and improving our infrastructure is essential to keeping America competitive in the global marketplace. Mr. Hoover gave examples of how next generation technology, augmented reality and AI can help build next generation infrastructure in the United States.



Mr. Andrew Thompson, co-Founder, Proteus Digital Health in his remarks, highlighted that in most sectors, technology makes innovations better, faster, and cheaper, but in healthcare, technology makes innovations slower, more expensive, and not much better. Mr. Thompson stated that we should be using software to expand the benefits of medical professionals' expertise, customize medications to fit people's genetics and lifestyle, and be able to remotely monitor people's health before they develop acute problems.

Mr. Keith Lynn, Program Manager for Lockheed Martin's AlphaPilot innovation challenge shared with NCF participants the exciting innovations emerging from the confluence of the aerospace, sports and entertainment industries. The AlphaPilot innovation challenge is a public competition focused on high-speed autonomous drone flight. Formed in partnership with the Drone Racing League and NVIDIA, AlphaPilot launched in early 2019 and attracted over 424 teams from around the world.

Mr. Shyam Sankar, President, Palantir Technologies stated that America's unique opportunity is our ability to dominate in R&D through a cycle of application and feedback. He emphasized that the key is feeding in the right data to train algorithms and make them more valuable, which requires asking the right question.

The Honorable Steve Isakowitz, President and CEO, The Aerospace discussed why maintaining a competitive aerospace sector is essential for U.S. growth, productivity, jobs and national security. In recent years this previously restricted domain has started to open—paving the way for commercial engagement and viability. This new and expanding potential for commercial development both follows and catalyzes further industry-funded applied research and sets the stage for a new field of competition in defense and cybersecurity as the United States enters what can be considered the next space race.



## 2. Exploring the Future of Sustainable Production and Consumption; and Work

The aging U.S. science and engineering workforce is a key point of discussion for the future of the American innovation ecosystem. Known globally as a mentor for students in STEM education, Dr. Gary May, Chancellor of the University of California, Davis and National Commissioner, provided his perspectives on how to attract young and diverse students to STEM fields to sustain the future of the U.S. economy and ensure our productivity growth and competitiveness.

Dr. May stated that besides being the right thing to do morally, there is also a practical benefit to increasing diversity: diverse groups come up with better and more innovative ideas. He said that it is also crucial to provide role models for future generations of students—"You can't be what you can't see."

Dr. René Lammers, Chief Science Officer, PepsiCo, Inc. provided the NCF audience with his perspective on the on the future of sustainable food production

and consumption, and how to address the challenges of the modern food system within the context of its impact to national competitiveness.

He noted that even today, science breakthroughs are helping humans protect our food supply by producing more food with less water, energy, and fertilizer, and processing foods with a lighter touch to preserve nutrients. Further progress, however, will depend on collaboration and needed increases to U.S. investment in food science, where funding has lagged for decades.

Ms. Eileen Murray, former Co-CEO, Bridgewater Associates, focused her remarks on the critical need for a diverse workforce as an underpinning to U.S. innovation.

Diversity, Ms. Murray said, leads to improved corporate performance and faster innovation, and is even more powerful when coupled with inclusion. The key to success is unlocking the power of diverse thought through constant and consistent inclusion.

### THIS PAGE

*Top left:* Dr. Gary May, Chancellor, University of California, Davis.

*Top right:* Dr. René Lammers, Chief Science Officer, PepsiCo, Inc.

*Bottom:* Ms. Eileen Murray, former Co-CEO, Bridgewater Associates.

### OPPOSITE PAGE

*Top:* Dr. Joon Yun, President and Managing Partner, Palo Alto Investors LP.

*Bottom:* Mr. Charles O. Holliday, Jr., Chairman, Royal Dutch Shell plc.



### 3. Optimizing the Environment for the National Innovation Ecosystem

Dr. Joon Yun, President and Managing Partner, Palo Alto Investors LP, said that much like children can often see things right in front of them that adults no longer can, many of our current problems have solutions that are right under our noses. One of those problems is a result of culture evolving faster than biology—that of stake holding. In the modern world, we no longer have “skin in the game” in each other’s lives, leading us to focus on ourselves. This lack of alignment means that competitive environments turn into a “race to the bottom” instead of everyone having an interest in improving the system.

The Council’s Chairman Emeritus, Mr. Charles O. Holiday Jr., Chairman, Royal Dutch Shell plc, reflected on the Council’s 2007 report Transform and the need especially today for resiliency and innovation with a human touch.

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Technology, he said, is moving so fast that if we do not develop humanity at the same rate as our technology transforms, things will end badly for our society. He noted that it isn't possible to slow the rate of progress in AI, but it is possible to increase our capacity to use it and understand it; and we must also think about building a society that is resilient in the face of AI-induced disruption.

His Excellency Toomas Hendrik Ilves, Distinguished Visiting Fellow, Hoover Institution, Stanford University; and former President of the Republic of Estonia closed the NCF—highlighting how his small country has made significant leaps forward in digitizing all aspects of society; and, in doing so, driven incredible innovation and prosperity gains. Estonia's digitization journey began with schools and banking in the 1990s, followed by online voting in the early 2000s. Estonia's latest effort is a comprehensive genome project that will fuel a new era of personalized medicine. In sharing these global best practices, the former President hinted at potential paths for the U.S. journey toward digital-enabled innovation.



*His Excellency Toomas Hendrik Ilves, Distinguished Visiting Fellow, Hoover Institution, Stanford University; and former President, Republic of Estonia.*

The National Competitiveness Forum will be held virtually on December 17.



**COMPETE: LEADERSHIP****University Leadership Forum****UNIVERSITY LEADERSHIP FORUM  
CO-CHAIRS**

**Dr. Michael R. Lovell**  
President  
Marquette University



**Mr. Jere W. Morehead**  
President  
University of Georgia

**STEM & LIBERAL ARTS TASK  
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Former President  
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**Dr. Ruth V. Watkins**  
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University of Utah

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FORCE CO-CHAIRS**

**Dr. Laurie A. Leshin**  
President  
Worcester Polytechnic Institute



**Dr. M. David Rudd**  
President  
The University of Memphis

Colleges and universities are critical components of the U.S. innovation ecosystem and are being called upon to play ever-evolving roles in research, economic development, skills training and life-long learning. They are essential for building talent; achieving scientific breakthroughs; creating new technologies, products, companies and organizations; and contributing local economies. Yet, budgetary constraints and the rapid pace of change across the economy mean these expectations are under constant pressure.

Understanding, anticipating and promoting change in the current models for higher education is imperative for competitiveness in the 21st century. The University Leadership Forum (Forum) enables leaders from America's top academic institutions to work in concert with each other and as part of the broader Council membership, including CEOs, labor union leaders and national laboratory directors, to: understand how the innovation landscape is changing; consider actions the institution might take; mobilize to lower or eliminate shared barriers; and identify potential innovation partners. While academia is the focus, industry and other stakeholders participate to share best practices on cooperation to continue relationships for innovation.

Inspired by the Global Federation of Competitive Councils' University and Research Leadership Forum, the Council launched the Forum in 2019 to understand how colleges and universities contribute to the competitiveness of the United States and to maximize the value they add to the U.S. economy. In year one, the Forum will focus on three topics:

1. **Extreme Innovation Task Force:** The Extreme Innovation task force explores the critical role higher education plays in translating new, disruptive technologies from the lab to the marketplace. It will look at how America's academic institutions are managing questions around funding, ethics, technology transfer and other rising challenges—which will in turn determine the economic value these technologies create for the nation.
2. **The University-Industry-Government Partnerships Task Force:** The research and development of many of the world's game-changing technologies would not be possible without partnerships between industry, academia and government. Programs and projects that bring together these stakeholders allow for mutually beneficial outcomes that support academic research, enhance industry capabilities and support local and regional economic development. Industry relies on colleges and universities for investment in early-stage technology, proof of concept for new processes and products, academic expertise, and the education and training of students to successfully enter the workforce. At the same time, industry partners can provide critical guidance on technological and economic trends, including skillsets needed for students to thrive in the workforce.

The University-Industry-Government Partnerships task force is identifying, analyzing and decoding new and emerging models for university-industry partnerships to showcase best practices and identify the key structures, capabilities and functions needed to replicate successful partnerships.

3. **The Fusion of STEM and Liberal Arts & Humanities Disciplines Task Force:** Multi-disciplinary education comprising fields such as biomimicry, computer graphics and a host of dual degree programs have become a difference-maker for U.S. students that will allow them to compete globally. This shift includes the integration of STEM education and the arts through a concept called STEAM (Science, Technology, Engineering, Arts and Math), which promotes greater interaction across fields. Liberal arts and Humanities provide critical insight, judgement and ethics to develop new exponential and disruptive technologies. The Fusion of STEM and Liberal Arts & Humanities Disciplines task force is exploring new and emerging models for how colleges and universities are bringing together the disciplines.

## University Leadership Forum Members

Dr. Eric J. Barron  
President  
The Pennsylvania State University

Dr. Mark P. Becker  
President  
Georgia State University

Dr. Richard C. Benson  
President  
University of Texas at Dallas

The Honorable Rebecca M. Blank  
Chancellor  
University of Wisconsin—Madison

Dr. Robert A. Brown  
President  
Boston University

The Honorable Sylvia Matthews Burwell  
President  
American University

Dr. Michael M. Crow  
President  
Arizona State University

The Honorable Mitchell E. Daniels, Jr.  
President  
Purdue University

Dr. John DeGioia  
President  
Georgetown University

Dr. Wayne A. I. Frederick  
President  
Howard University

Dr. Julio Frenk  
President  
University of Miami

Dr. E. Gordon Gee  
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Colorado School of Mines

Dr. Robert E. Johnson  
Chancellor  
University of Massachusetts, Dartmouth

Dr. Pradeep K. Khosla  
Chancellor  
University of California, San Diego

Dr. Timothy L. Killeen  
President  
University of Illinois System

Dr. Steven Leath  
President  
Auburn University

Dr. Gary S. May  
Chancellor  
University of California, Davis

Gen. Richard B. Myers  
President  
Kansas State University

Mr. Eloy Ortiz Oakley  
Chancellor  
California Community Colleges

Dr. Christina H. Paxson  
President  
Brown University

Dr. Rodney K. Rogers  
President  
Bowling Green State University

Dr. Clayton Rose  
President  
Bowdoin College

Dr. Mark S. Schlissel  
President  
University of Michigan

Dr. Joseph E. Steinmetz  
Chancellor  
University of Arkansas

Dr. Elisa Stephens  
President  
Academy of Arts University

Dr. Claire Sterk  
President  
Emory University

Dr. Elizabeth Stroble  
President  
Webster University

Dr. Kumble Subbaswamy  
Chancellor  
University of Massachusetts Amherst

Dr. Satish K. Tripathi  
President  
The University at Buffalo

Dr. Kim A. Wilcox  
Chancellor  
University of California, Riverside

Dr. W. Randolph Woodson  
Chancellor  
North Carolina State University

At the launch of the Forum, the Council released *Elevate. Optimizing the Role of Higher Education* in the Emerging Innovation Landscape, which highlighted the goals, concepts and charters for each of the task forces.



In late 2019, Council staff held a series of telephone calls with the co-chairs and members of each of the task forces to develop and adopt a “Call-to-Action” for 2020 focused on policy, organizational and outreach actions. Major themes that emerged during the calls included:

- A clear sense of immediacy and urgency around **greater integration of STEM and the arts** to respond to grand challenges, workforce skills requirements, national security needs, and global labor competition. The tighter integration of ethics into curricula was a common thread across task forces.

- In contemplating the future of **extreme innovation projects** that by necessity cross borders and oftentimes engage economic and national security competitors, **a new paradigm for collaboration** may be needed that addresses the blurring of what is defense and non-defense research. There was an acknowledgment that if we don't act, government may act for us.
- While some hesitancy was expressed related to addressing the current system of incentives tied to **tenure and promotion**, there was general agreement that current models must evolve to take full advantage of **potential partnerships**.

These agendas will guide the Forum in 2020 as its members share best practices, explore new educational models, and develop policy recommendations across the three workstreams. The Forum is intended both as an internal think tank to the Council on the critical role of higher education to U.S. competitiveness, and as impact player in state and federal policy-making. Council staff is developing outlines for policy papers and proposed additional research that could be undertaken by the ULF.

On April 28, 2020, the ULF convened the first of a series of virtual calls to respond to the massive economic and social disruptions caused by COVID-19. This is a challenge for which the Council is well-suited to play an important role in helping guide the country forward. Members of the ULF see the Forum paying a critical role in formulating the Council's response, as academic institutions are at the forefront of both the current mitigation efforts and the development of creative solutions both short and long term. Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness, highlighted the University's experience in adapting to the pandemic and shared his thoughts on a path forward for how institutions of higher education can emerge stronger from the experience.



While the Forum came together to address a set of critical issues facing higher education from collaboration at the edge of science to the ongoing merger of disciplines to the increasing role partnerships play in driving regional economic development and innova-

tion, the COVID-19 pandemic has focused attention around the immediate crisis, which is exacerbating issues related to access, cost, and even what "going to college" means.

On May 28, 2020, Senator Mark Warner (D-VA), joined the Forum's virtual call. In an engaging discussion the Senator heard from members how to open campuses safely in the fall; the impact of Covid-19 on the research enterprise and how federal agencies need to support schools, colleges and Universities; and the viability of many smaller schools that were struggling financially before the virus.



The Senator gave the Forum insights on the state of play in terms of public support for higher education and future COVID-19 relief packages and what he thought Congress will address over the course of the remaining legislative session. He also discussed challenges the United States must face related to ongoing national security concerns with China and Chinese Graduate Students in America.

In addition to the monthly calls of the Forum members, for the rest of 2020 and beyond, the ULF will explore the following specific initiatives:

1. **Development of a national media campaign to feature voices from business leaders (with arts degrees or minors), highlighting their personal stories, as well as describing the potential at the intersection of arts and science both as a career enhancer and as a pathway to solve grand challenges.** It became clear from the Forum discussions that there is a perception problem among students and parents when it comes to the value of the arts and humanities in relation to many of today's jobs. Yet, surveys show that companies value many of the soft skills such as writing, problem solving, ethics, teamwork, and creativity as much, if not more, than they do traditional STEM skills alone. By highlighting these stories, momentum can be built both externally with parents and students, and internally among degree departments for great attention to the opportunities created by increased interaction across disciplines.

2. **Development of new curricula at colleges and universities to increase the integration between STEM and arts/humanities.** To be able to provide students with the multidisciplinary degree programs and concurrent skills that companies desire, higher education must do better at developing and offering these programs. Yet, college and university leaders speak often of the silos inherent in current degree programs and even, at times, distrust among different departments.
3. **Exploration of revisions to tenure and promotion policies at colleges and universities to encourage and reward cross-disciplinary collaboration and support for new programs.** In many ways, the current system of tenure and promotion is stacked against collaboration across disciplines and with outside partners, yet it is just these types of interactions that have been shown to lead to greater job opportunities and degree-to-career pathways. The Council is already partnering with other organizations to identify best practices in tenure and promotion policies that could provide the foundation for their broader use.
4. **Development of a framework for international collaboration in light of increased national security concerns from state actors seeking security and economic advantage.** Exposing students to different cultures, viewpoints and perspectives is an important part of a high-quality education. Furthermore, the opportunity to collaborate with international programs and researchers has been a hallmark of the U.S. higher education system for decades. However, state actors exploiting this open system for their own national security and economic interests has raised legitimate concerns with this open system of international collaboration. The Council and the Forum are well-positioned to seek common ground and a path forward for higher education that would obviate government action.

## CALENDAR OF EVENTS

### 2019

#### OCTOBER

**University Leadership Forum—The Fusion of STEM and Liberal Arts & Humanities Disciplines Task Force and Co-chairs Meeting**

Conference Call

#### NOVEMBER 13

**University Leadership Forum—University-Industry-Government Partnerships Task Force and Co-chairs Meeting**

Conference Call

#### NOVEMBER 13

**University Leadership Forum—Extreme Innovation Task Force and Co-chairs Meeting**

Conference Call

### 2020

#### APRIL 28

**University Leadership Forum Meeting**

Virtual

#### MAY 28

**University Leadership Forum Meeting**

Virtual

#### JUNE 29

**University Leadership Forum Meeting**

Virtual

#### JULY 28

**University Leadership Forum Meeting**

Virtual

#### AUGUST 28

**University Leadership Forum Meeting**

Virtual

#### SEPTEMBER 28

**University Leadership Forum Meeting**

Virtual

#### OCTOBER 28

**University Leadership Forum Meeting**

Virtual

#### NOVEMBER 30

**University Leadership Forum Meeting**

Virtual

- 5. Highlighting successful partnerships, coupled with the creation of a Council branded “Top Partnership Model” certification or award that would acknowledge and highlight replicable partnerships.** There’s no question that successful models for university-industry partnerships exists and that they are creating tremendous opportunities for students and faculty to work closely with businesses on commercializing new ideas, aligning skills needs and enhancing economic development within regions. The challenge has been replicating these successful models across the country, especially outside of known hotspots like Silicon Valley and the 128 Corridor. By recognizing successful programs with an award and making the templates for success more readily available and well-known, more colleges and universities will be able to implement similar efforts.

## COMPETE: LEADERSHIP

## Network of Leaders



**Top:** Mr. Steven Rogers, Managing Director, Consumer Industry Center, Deloitte Services LP; Mr. Ray Kasmak, Director of Business Development, IBEW; Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness; and Mr. Stuart Hadley, Assistant Vice President for Policy Affairs and Executive Director of Federal Relations, Arizona State University.

**Center:** Dr. James P. Clements, President, Clemson University; and Dr. Gary S. May, Chancellor, University of California, Davis.

**Top:** Mr. George Fischer, Senior Vice President and Group President, Verizon Global Enterprise; the Honorable Paul M. Dabbar, Under Secretary for Science, U.S. Department of Energy; Dr. Michael Witherell, Director, Lawrence Berkeley National Laboratory; and the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness.

**Center:** The Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chair, Council on Competitiveness; and Mr. Kenneth Cooper, International Secretary-Treasurer, IBEW.



**Top left:** Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chair, Council on Competitiveness; Mr. Brian T. Moynihan, Chairman and Chief, Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness; the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; and Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness.

**Top right:** Mr. Josh Kampel, CEO, Techonomy; Mr. Michael Kratsios, Chief Technology Officer, The White House; and Ms. Ekaterini Maillou, Senior Policy Coordinator, Immediate Office of the Secretary, U.S. Department of Health and Human Resources.

**Center:** Mr. Nicholas A. Michalak, Co-founder and CEO, SomniFix; Dr. Robert E. Johnson, Chancellor, University of Massachusetts Dartmouth; Ms. Janet Foutty, Chair of the Board, Deloitte; Mr. Bill Eggers, Executive Director, Center for Government Insights, Deloitte; and Mr. Christian Smith, U.S. Marine Corps.

**Bottom:** Mr. Tom Dailey, Senior Vice President and General Counsel—International, Verizon; Mr. Kenneth Cooper, International Secretary-Treasurer, IBEW; and Mr. Lonnie Stephenson, International President, IBEW, and Labor Vice-chair, Council on Competitiveness.



**Top left:** Dr. Steven F. Ashby, Laboratory Director, Pacific Northwest National Laboratory; Ms. Margaret Brooks, Senior Manager, Enterprise Innovation and 5G Solutions, Verizon Business Group; and Dr. Ushma Kriplani, Manager, Strategic Planning and Initiatives, Argonne National Laboratory.

**Top right:** Dr. Robert E. Johnson, Chancellor, University of Massachusetts Dartmouth; and Mr. William "Bill" Bohnett, President, Whitecap Investment.

**Center left:** Mr. Jeffrey J. Wilcox, Vice President, Digital Transformation, Lockheed Martin; Mrs. Mary Snitch; Mr. Thomas Snitch, Director, Federal Relations, Bowling Green State University; and Dr. Rodney K. Rogers, President, Bowling Green State University.

**Center right:** Mrs. Shahida Khan; the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; Dr. Elisa Stephens, President, Academy of Arts University; and Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness.

**Bottom:** Ms. Maria-Elena Tierno, Business Development Leader, Constellation Energy; Dr. Luis M. Proenza, President Emeritus, The University of Akron; Mr. Stuart Hadley, Assistant Vice President for Policy Affairs and Executive Director of Federal Relations, Arizona State University; and Mr. Narasimha Reddy, Associate Dean of Research, Texas A&M University.





**Top left:** Dr. Marianne Walck, Deputy Director for Science and Technology and Chief Research Officer, Idaho National Laboratory; Dr. Roger Falcone, Professor of Physics, University of California, Berkeley; and the Honorable Dr. Patricia Falcone, Deputy Director for Science and Technology, Lawrence Livermore National Laboratory.

**Bottom left:** Mr. Charlie Riordan, Vice President for Research, Scholarship & Innovation, University of Delaware; Ms. Amy Lientz, Director, Partnerships, Engagement and Technology Deployment, Idaho National Laboratory; Mr. Stuart Hadley, Assistant Vice President for Policy Affairs and Executive Director of Federal Relations, Arizona State University; and Mr. Neal Woodbury, Professor and Chief Science Officer, Arizona State University.

**Top right:** Dr. Eric Isaacs, President, The Carnegie Institution for Science; and Dr. Victor Dzau, President, National Academy of Medicine.

**Center:** Mr. William D. Lese, Managing Partner, Braemar Energy Ventures; Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness; Ms. Gianna Sagazio, Innovation Director, CNI; Dr. Carmel G. Ruffolo, Research Associate Professor/Associate Vice President for Research and Innovation, Marquette University; Mr. Luca Sagazio; and Mr. Rafael Lucchesi, Director General, CNI.

**Bottom right:** Dr. Jonathan McIntyre, CEO, Motif FoodWorks, Inc.; Dr. Michael Witherell, Director, Lawrence Berkeley National Laboratory; and Dr. Marianne Walck, Deputy Director for Science and Technology, and Chief Research Officer, Idaho National Laboratory.



**Top left:** Mr. Craig Giffi, Vice Chairman and Senior Managing Principal, Deloitte LLP; Ms. Janet Foutty, Chair of the Board, Deloitte; the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; Mr. Lawrence Di Rita, Greater Washington D.C. Market President, Bank of America; Mr. Brian T. Moynihan, Chairman and Chief Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness; and Admiral James G. Foggo, III, Commander, Allied Joint Force Command Naples, Commander, U.S. Naval Forces Europe, and Commander, U.S. Naval Forces Africa.

**Center left:** VADM Fritz Roegge, USN, President, National Defense University; the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; and Dr. Larry Schuette, Director of Global Science & Technology Engagement, Lockheed Martin.

**Center right:** Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness; Mr. Lawrence Di Rita, Greater Washington D.C. Market President, Bank of America; Mr. Brian T. Moynihan, Chairman and Chief Executive Officer, Bank of America, and Industry Vice-chair, Council on Competitiveness; and Ms. Christine Sheehan, Chief of Staff, Gallup.

**Bottom:** Mr. G. Michael Hoover, Chief Executive Officer, Sundt Construction; Ms. Kathleen Merigan, Executive Director, Swette Center for Sustainable Food Systems, Arizona State University; and Dr. Thomas A. Campbell, Founder & CEO, FutureGrasp.





**Top:** Dr. Michael M. Crow, President, Arizona State University, and University Vice-chair, Council on Competitiveness; Admiral James G. Foggo, III, Commander, Allied Joint Force Command Naples, Commander, U.S. Naval Forces Europe, and Commander, U.S. Naval Forces Africa; the Honorable Deborah L. Winco-Smith, President & CEO, Council on Competitiveness; Mrs. Shahida Khan; and Dr. Mehmood Khan, Chief Executive Officer, Life Biosciences, Inc., and Chairman, Council on Competitiveness.

**Bottom:** Ms. Amanda Arnold, Executive Director of Federal Research Relations, Arizona State University; the Honorable Deborah L. Winco-Smith, President & CEO, Council on Competitiveness; Mr. Ruston Mody, Chief Executive Officer, VinTech Nano Materials; and Dr. Wendy Wintersteen, President, Iowa State University.

**Bottom:** Dr. Larry Schuette, Director of Global Science & Technology Engagement, Lockheed Martin; VADM Fritz Roegge, USN, President, National Defense University; Admiral James G. Foggo, III, Commander, Allied Joint Force Command Naples, Commander, U.S. Naval Forces Europe, and Commander, U.S. Naval Forces Africa; and Lieutenant General Daniel O'Donohue, Director, Joint Force Development, J7.



**Top:** Mr. Charles O. Holliday, Jr., Chairman, Royal Dutch Shell plc.; Mr. Toby Redshaw, SVP Enterprise Innovation and 5G Solutions, Verizon; Ms. Margaret Brooks, Senior Manager, Enterprise Innovation and 5G Solutions, Verizon Business Group; Mr. Scott Godwin, Mission Alignment Manager, Pacific Northwest National Laboratory; Mr. Michael Maiorana, SVP, Saes Public Sector, Verizon; and Mr. George Fischer, Senior Vice President and President, Global Enterprise, Verizon Business Group.

**Bottom:** Mr. Edward Jung, Founder and CEO, Xinoa, LLC; Dr. Jonathan McIntyre, Chief Executive Officer, Motif FoodWorks, Inc.; and Ms. Maggie Ng, Chief of Staff to CEO, Xinoa.

**COMPETE: LEADERSHIP****Technology Leadership and Strategy Initiative**

*Technology Leadership & Strategy Initiative Dialogue 21, November 2019.*

The United States has a long history of leadership in new technologies, products, processes and jobs that contribute to innovation based economic growth and prosperity.

As global competition increases and barriers to innovation continue to fall, the Council's Technology Leadership & Strategy Initiative (TLSI) provides a distinctive forum for members to explore U.S. and global research partnerships and develop policies to preserve and invigorate the nation's technology leadership—a core driver of national productivity over the past half-century.

The TLSI consists of 40+ Chief Technology Officers and research leaders at America's premier companies and institutions. Working together, these leaders identify and analyze technology trends, opportunities and challenges facing the country's technology leadership; facilitate partnerships between industry, university, government and national laboratories to accelerate innovation across the U.S. research and development landscape; and improve the nation's capacity for commercialization through investment in research and research infrastructure.

The past year has been one of growth and action for the TLSI, as it looked to strengthen its membership, develop new ways to engage and communicate as a group, and nurture partnerships formed with counterpart and complementary organizations in Australia.



**Top:** Dr. Keoki Jackson, Vice President and Chief Engineer, Lockheed Martin; Dr. France Córdova, Former Director, National Science Foundation; the Honorable Deborah L. Wince-Smith, President and CEO, Council on Competitiveness; and Mr. Chad Evans, Executive Vice President, Council on Competitiveness.

**At left:** Ms. Nicole M. Forrester, Director of Intergovernmental & Philanthropic Partnerships, CSIRO; the Honorable Patricia Falcone, Deputy Director for Science and Technology, Lawrence Livermore National Laboratory; and Dr. Paul Sanberg, Senior Vice President, Research and Innovation, University of South Florida.

The TLSI's efforts to anticipate the future also involved a look to the past. In November 2019, the TLSI convened Dialogue 21, where members celebrated the TLSI's 10th anniversary. The TLSI was formed amidst the great recession and while the technologies and processes of innovation have changed rapidly and dramatically in that time, the primary learnings surfaced in the initiative's early days regarding the importance of a considered approach to strengthening the nation's ability to produce and use cutting-edge technologies to enhance competitiveness still rings true.

Dialogue 21 highlighted the importance of evolving public-private partnerships and the need to work across global markets, recognizing the benefits and potential pitfalls of the modern global supply chains as well as the value to be created from leveraging a

diverse set of perspectives and experiences to problem solving. To this end, TLSI members and representatives of Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) worked to identify potential projects on which CTOs and other leading stakeholders from both nations can collaborate. One idea highlighted was to explore common technology platforms where leading institutions in both nations have capabilities and interest to partner, such as in artificial intelligence, quantum computing, aerospace/aviation and personalized medicine.

Former National Science Foundation Director, France Córdova, delivered the keynote address to TLSI Dialogue 21 participants and shared her thoughts on public-private partnerships and the critical role basic research plays in U.S. competitiveness. Dr. Córdova emphasized partnerships are crucial for long-term



**Top left:** Dr. Tommy Gardner, Chief Technology Officer, HP Federal; and Dr. Bogdan Vernescu, Vice Provost for Research and Professor of Mathematical Sciences, WPI.

**Top right:** Dr. Sridhar Sudarsan, CTO, SparkCognition; and Dr. Crystal Leach, Director of Industry Collaborations, The University of Georgia.

**Bottom:** Dr. Todd Combs, Associate Laboratory Director, Energy and Environment S&T, Idaho National Laboratory; Dr. Ushma Kriplani, Interim Associate Laboratory Director, Science & Technology Partnerships and Outreach, Argonne National Laboratory; and Dr. Jeanne Hossenlopp, Vice President for Research and Innovation, Marquette University.

investment and risk reduction. At the same time, she emphasized the power of the person—noting how the NSF changed its motto from “Where Discoveries Begin” to “Where Discoverers and Discoveries Begin,” highlighting the NSF’s generational investment in people at the heart of America’s innovation engine. The Director also flagged for researchers, policy makers and other stakeholders key drivers of long-term research and prosperity: understanding better the future of work; learning how to bring artificial intelligence to the fore in the face of intense global competition; and ensuring the protection of research—balancing the need to recruit foreign talent while maintaining the security of intellectual property (IP), and research knowledge and integrity.

Dialogue 22 was held virtually on June 8 and included important programmatic updates and a look to the future for key issues the TLSI should address.

1. A review of the major outcomes of the Council’s NSF-supported “Building Industry-University-Laboratory Dialogues” initiative—the aim of which was to surface potential public-private partnership models to ensure the United States has the most innovative and competitive computing ecosystem, including a global leadership position in the research, development and deployment of advanced microelectronics.
2. TLSI members participated in a conversation with leadership from DARPA’s Electronics Resurgence Initiative on the importance of U.S. leadership in this critical foundational technology area.



**Top left:** Ms. Nicole M. Forrester, Director of Intergovernmental & Philanthropic Partnerships, CSIRO; Ms. Susan Lucas-Conwell, Executive Vice President, CSIRO; Mr. Tim Bradley, General Manager, Emerging Technologies, Department of Industry, Science, Energy and Resources, Government of Australia; and Dr. Don Woodbury, Chief Technology Advisor, Skyworks Global Inc.

**Top right:** Mr. Jim Brinker, President and General Manager, Intel Federal LLC; Dr. Paul Sanberg, Senior Vice President, Research & Innovation, University of South Florida; and the Honorable Patricia Falcone, Deputy Director for Science and Technology, Lawrence Livermore National Laboratory.

**Bottom:** Dr. Neil Thompson, Research Scientist, MIT Computer Science and Artificial Intelligence Laboratory; and Dr. David Williams, Executive Dean of the Professional Colleges and Dean of the College of Engineering, The Ohio State University.



3. A conversation focused on “Designing Innovation Hotspots for the Future”—in which TLSI members learned about new developments and projects around the country to leverage regional assets to turbocharge innovation outcomes.
4. A discussion focused on “future” topics to explore in TLSI, including:
  - Are innovation stakeholders in the United States investing in areas for long-term national benefit?
  - What is the role of advanced hardware development and manufacturing for future U.S. competitiveness?
  - Does the United States have a globally competitive innovation infrastructure?
  - What is the balance between openness in the innovation process and U.S. national security?
  - How do we/can we obviate technological surprise?

## KEY 2019–2020 PUBLICATIONS-TO-DATE

Partner, a summary of the TLSI Dialogue 21, was released November 21, 2019.



## TLSI: Competitiveness Watch

In April 2020, the Council launched a monthly 1-hour webinar series, *TLSI: Competitiveness Watch*, engaging TLSI members with special guests presenting on a relevant, pressing topic. The inaugural webinar was held on April 16th and featured Council Distinguished Fellow, Dr. Steven Koonin, University Professor, NYU (and former Under Secretary of Science, U.S. Department of Energy; former Chief Scientist, BP; and former Provost, Caltech). Dr. Koonin focused his remarks on the U.S. government response to date to the COVID-19 crisis; the near-term issues surrounding a “safe and sustainable” restart to the U.S. economy; a set of longer-term issues to resolve and prepare for the next crisis (How do we price risk? Can we develop stress tests for critical systems and supplies? How do we build public understanding of the power and the limitations of models? Etc.)



The 2nd *TLSI: Competitiveness Watch* on May 21, 2020 featured Dr. Victor Dzau, President,



National Academy of Medicine (former President and CEO, Duke University Medical Center). Dr. Dzau's presentation called for a new set of 21st century tools to fight a 21st century war. He outlined the national and global costs of the COVID-19 pandemic; highlighted

the need for a less fragmented national response to the pandemic; reviewed the current status of testing in the United States as well as the opportunities to deploy digital technologies in predicting, managing and mitigating the crisis; highlighted the most up-to-date therapeutic and vaccine candidates; and ended with a review of global, \$9.2 billion fund to combat COVID-19.

As a consequence of COVID-19, the TLSI convened virtually for Dialogue 22 and engaged three key special guests: the Honorable Walter Copan, Under Secretary of Commerce for Standards and Technology and Director, National Institute of Standards and Technology, U.S. Department of Commerce; the Honorable Kimberly A. Reed, President and Chairman of the Board of Directors, the Export-Import Bank of the United States; and the Honorable Alan R. Shaffer Deputy Under Secretary of Defense Acquisition and Sustainment, U.S. Department of Defense, as key speakers.

The Dialogue was focused on a sharing of priorities of the U.S. Department of Commerce, the Export-Import Bank, and the U.S. Department of Defense—and an exploration of partnership opportunities.

## CALENDAR OF EVENTS

### 2019

**NOVEMBER 8****TLSI Dialogue 21**

Council on Competitiveness  
Washington, D.C.

### 2020

**APRIL 16****TLSI Competitiveness Watch Webinar**

Council on Competitiveness  
Virtual

**MAY 21****TLSI Competitiveness Watch Webinar**

Council on Competitiveness  
Virtual

**JUNE 8****TLSI Dialogue 22**

Council on Competitiveness  
Virtual

**JULY 16****TLSI Competitiveness Watch Webinar**

Council on Competitiveness  
Virtual

**SEPTEMBER 17****TLSI Competitiveness Watch Webinar**

Council on Competitiveness  
Virtual

**OCTOBER 15****TLSI Competitiveness Watch Webinar**

Council on Competitiveness  
Virtual

COMPETE: TECHNOLOGY

# Building University-Industry-Laboratory Dialogue (BUILD) for Advanced Computing

Funded by the National Science Foundation

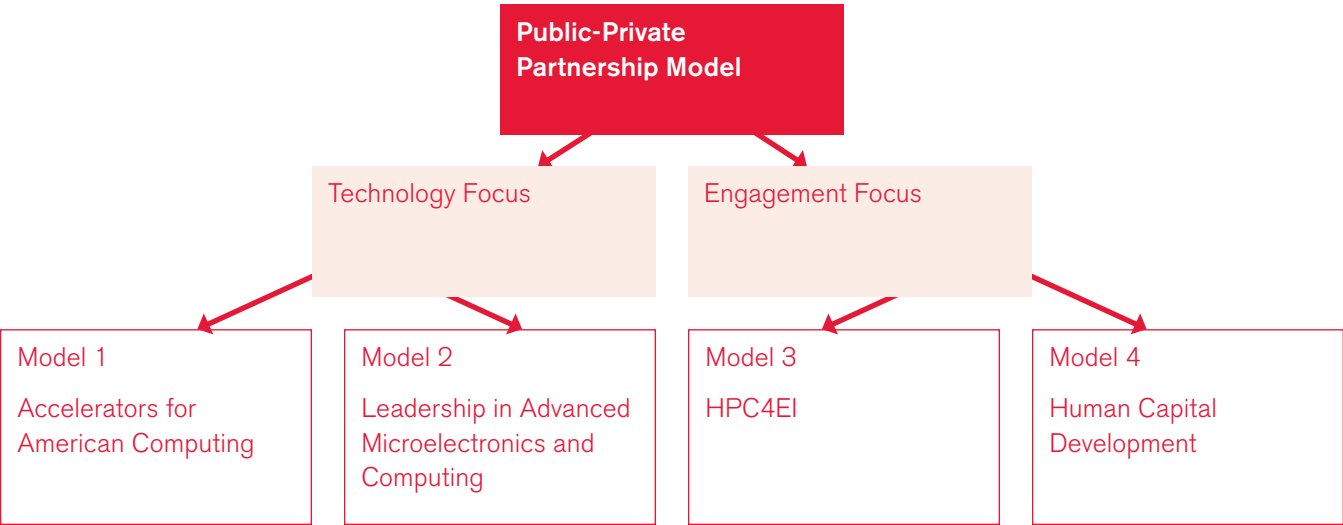
Drawing on more than 30 years of experience in helping to uncover, shape and develop public private partnerships, the Council—with the support of the National Science Foundation (NSF)—launched in 2018 an effort to overcome a series of barriers to the development and deployment at scale of critical advanced computing assets.

The purpose of Building University-Industry-Lab Dialogue (BUILD) for Advanced Computing is to learn from past efforts—like the Council’s National Digital Engineering and Manufacturing Center (NDEMC) and recent, successful national manufacturing

institutes across the U.S. Departments of Defense, Energy and Commerce—to increase the effectiveness of U.S. research and development efforts in advanced computing. BUILD sought to identify new public-private partnership models to support next-generation advanced computing technologies—efforts as wide-ranging as high performance computing, quantum computing, artificial intelligence, machine learning, work to extend “beyond Moore’s Law,” etc.—at the heart of long-term economic and national security, productivity and inclusive prosperity.

BUILD was comprised of a series of three regional dialogues focused on identifying means to increase significantly the competitiveness of the U.S. high performance and advanced computing R&D ecosystem for the benefit of U.S. industry and academia, and to define/outline high-impact public-private partnership model(s) to accomplish this goal.

Since the final BUILD Dialogue held on May 14, 2019, hosted by Mr. James B. Milliken, Chancellor of the University of Texas System in Austin, TX, the Council has embarked on an extensive research effort to distill the findings of all dialogues and partic-



## BUILD Dialogue Series



ipant insights to put forward to the National Science Foundation. In April 2020, the Council delivered to the National Science Foundation the seven reports constituting the BUILD initiative—a primer and post report for each of the three dialogues, along with a final report.

The final report includes a set of suggested public-private partnerships models to optimize the potential of advanced computing in the United States.

**PPP Model 1—Accelerators for American Computing:** The slowing advancement of general computing technologies has slowed productivity growth and caused a breakdown in new technology investment lifecycle. This suggested PPP model would promote the development of a broad portfolio of specialized hardware to extend the ability of existing semiconductor manufacturing facilities to fuel widespread American productivity gains.

**PPP Model 2—Leadership in Advanced Microelectronics and Computing:** This PPP model would enable co-designing computing technology development with heavy industry involvement and improve the ability to scale promising technology to de-risk industry involvement.

**PPP Model 3—HPC4 Energy Innovation Initiative (HPC4EI):** In course of the BUILD Dialogues, the Council identified that companies are not using HPC as aggressively as possible. This PPP model would advance America's energy and manufacturing agenda through the deployment and use of high-performance computing, modeling and simulation capabilities across industry.

**PPP Model 4—Human Capital Development:** The Council recognized that relatively poor general awareness within industry—especially in SMEs—of the power of HPC, and modeling and simulation undermines potential U.S. competitiveness. A Human Capital Development PPP would resolve this barrier by overcoming education, training and cultural barriers to greater adoption and support for advanced computing across the U.S. economy.

Over the next year the Council will undertake new, active engagements with policymakers to promote the groundbreaking public-private partnerships proposed in BUILD for Advanced Computing.

## COMPETE: TECHNOLOGY

## Advanced Computing Roundtable

## INITIATIVE CO-CHAIRS

**Mr. Rick Arthur**

Sr. Principal Engineer  
Advanced Computational Methods  
Research

Sr. Director, Digital Engineering  
Digital Technologies  
GE Research

**The Honorable Patricia Falcone**

Deputy Director for Science and  
Technology  
Lawrence Livermore National  
Laboratory

**Mr. Tommy Gardner**

Chief Technology Officer  
HP Federal

**Dr. J. Michael McQuade**

Vice President for Research  
Carnegie Mellon University

Advanced computing is essential for industrial innovation, national security and leadership in nearly every scientific discipline. The Advanced Computing Roundtable (ACR) convenes national leaders from industry, academia and the national laboratories to explore how an ever-evolving advanced computing ecosystem can be kept globally competitive and leveraged for American prosperity.

With global competition at its peak, the strategic importance of advanced computing has never been greater. America must have world-class computing resources, skills, software and application models if it is to lead the revolutions underway in artificial intelligence, big data, the Internet of Things, genomics, materials, additive manufacturing and robotics. At the same time, computing itself is transforming as the race is on to extend Moore's Law, build systems with new architectures for modern challenges and develop quantum computers.

The ACR examines these issues and recommends actions for both policymakers and private sector stakeholders. The initiative builds on more than a decade of Council leadership and accomplishment animated by the realization that to out-compete, the United States must out-compute.



*The Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; the Honorable Patricia Falcone, Deputy Director for Science and Technology, Lawrence Livermore National Laboratory; and Mr. Bill Bates, Executive Vice President, Council on Competitiveness.*

In November 2019 the ACR convened its members for a meeting in the Cannon House Office Building on Capitol Hill. The agenda included important updates on a pending grant to the Department of Energy that would leverage the group's expertise to explore public-private partnerships to strengthen the U.S. microelectronics sector. Members identified several key issues the ACR is uniquely positioned to highlight for policymakers and generate greater awareness of the challenges and opportunities in the advanced computing area. These include:

- Technology shifts and the impact on students and workers
- New competitors in the advanced computing space represent as both economic and national security threats to national competitiveness
- The need for a national data strategy

- Greater awareness that advanced computing can power new industries and solve grand challenges

Following the ACR meeting, Council leaders joined ACR Co-chairs for a public briefing on the release of Explore—the final report documenting findings from the ACR's previous three year grant from the U.S. Department of Energy to explore issues related to advanced computing in regions, states and localities—and how advanced computing can drive economic development. The briefing emphasized the ability of advanced and high performance computing to accelerate the development of tools and technologies that will underpin future economic activity. ACR and Council leaders pushed for greater action at the federal level to prioritize efforts both maintaining America's leadership in this space and lowering the barriers for the private sector to leverage advanced computing.



The ACR also welcomed new leadership in the past year: Mr. Tommy Gardner, Chief Technology Officer of HP Federal, and Mr. Rick Arthur, Sr. Principal Engineer, Advanced Computational Methods Research and Sr. Director, Digital Engineering, Digital Technologies, GE Research as Co-chairs. We look forward to the enthusiasm and new perspectives they will bring to steering this group.

As noted, the Council submitted a panel proposal for the Supercomputing 2020 conference, expected to take place this November 2020 in Atlanta GA, featuring the ACR's thought leadership and recommendations on using public-private partnerships to push beyond Moore's Law. This panel has its genesis in the recent work by the Council, supported by the National Science Foundation, on how public-private partnership efforts can support the National Strategic Computing Initiative.



**Top left:** Dr. J. Michael McQuade, Vice President for Research, Carnegie Mellon University; and the Honorable Patricia Falcone, Deputy Director for Science and Technology, Lawrence Livermore National Laboratory.

**Top right:** Mr. Rick Heisey, Sr. Director, Shared Technology and Services, CNH Industrial; and Dr. Edward Seidel, President, University Wyoming.

**Bottom:** Dr. Edward Seidel, President, University Wyoming; Mr. Rick Arthur, Sr. Principal Engineer, Advanced Computational Methods Research, and Sr. Director, Digital Engineering Digital Technologies, GE Research; and Mr. Tommy Gardner, Chief Technology Officer, HP Federal.

The framing of the panel will be Dr. Thompson's work on why the changing economics of chip production are pushing the industry toward specialization, as well as a presentation of the results from a survey that Dr. Thompson and the Council conducted of how leading users of advanced computing from industry, the national labs, and academia, are experiencing these changes. The proposed panel will feature Dr. Neil Thompson, Research Scientist, MIT Computer Science and Artificial Intelligence Lab; Mr. Rick Arthur, Sr. Principal Engineer, Advanced Computational Methods Research and Sr. Director, Digital Engineering, Digital Technologies, GE; Dr. Maya Gokhale, Distinguished Member of Technical Staff, Lawrence Livermore National Laboratory; Ms. Irene Qualters, Associate Laboratory Director for Simulation and Computation, Los Alamos National Laboratory; and Mr. Daniel Armbrust, Co-founder and member of the Board of Directors, Silicon Catalyst, in a moderated conversation with Mr. William Bates, Executive Vice President, Council on Competitiveness.



**Top left:** Mr. Rick Arthur, Sr. Principal Engineer, Advanced Computational Methods Research, and Sr. Director, Digital Engineering Digital Technologies, GE Research, Mr. Tommy Gardner, Chief Technology Officer, HP Federal; and Mr. Chad Evans, Executive Vice President and Secretary to the Board, Council on Competitiveness.

**Top right:** Mr. Rick Heisey, Sr. Director, Shared Technology and Services, CNH Industrial; Dr. Edward Seidel, President, University Wyoming; Mr. Rick Arthur, Sr. Principal Engineer, Advanced Computational Methods Research, and Sr. Director, Digital Engineering Digital Technologies, GE Research; and Mr. Tommy Gardner, Chief Technology Officer, HP Federal.

**Bottom:** The Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; Dr. J. Michael McQuade, Vice President for Research, Carnegie Mellon University; the Honorable Patricia Falcone, Deputy Director for Science and Technology, Lawrence Livermore National Laboratory; and Mr. Bill Bates, Executive Vice President, Council on Competitiveness.

## CALENDAR OF EVENTS

### 2019

#### NOVEMBER 7

##### **Advanced Computing Roundtable Meeting**

Council on Competitiveness  
Washington, D.C.

#### NOVEMBER 7

##### **Public Briefing on the Release of Explore and Critical Advanced Computing Policy Concerns**

Council on Competitiveness  
Washington, D.C.

### 2020

#### JUNE 3

##### **Advanced Computing Roundtable Meeting**

Council on Competitiveness  
Virtual

#### NOVEMBER 15-20

##### **Council on Competitiveness Advanced Computing Roundtable Panel**

Supercomputing 2020 Conference  
Atlanta, GA

## COMPETE: MANUFACTURING

# Smart Manufacturing Dialogue

On June 4, 2019, the Council on Competitiveness and UCLA, home to the Clean Energy Smart Manufacturing Innovation Institute (CESMII), co-hosted a major dialogue on **Smart Manufacturing: Leveraging the Democratization of Innovation**.

The day-long session with more than 50 experts representing industry, academia, national labs and government focused on the democratization of smart manufacturing as a practical necessity for the future of U.S. manufacturing. Topics included creating and maximizing the value of innovation through the easy and secure movement of information; rethinking education, training and entrepreneurship in manufacturing; changing manufacturing infrastructure and the innovation ecosystem; aligning market and policy drivers for data centered enterprises; and addressing the need for new jobs and a new culture of data.

Highlighted at the dialogue was the Council's belief that the United States is witnessing the development and acceleration of some of the greatest advancements in science ever known driven by the vast deployment of sensors, the Internet of Things, artificial intelligence, big data analytics, gene editing, and nanotechnology. Each of these areas are disrupting sectors of the economy, but they are also converging and colliding with huge economic and national security implications. Smart manufacturing stands at the center of many of these tectonic shifts.

On February 26, 2020, the Council released, on Capitol Hill, *Smart Manufacturing: Leveraging the Democratization of Innovation* the final report from the dialogue. The report captures key insights and recommendations from the dialogue, including assessments of current challenges and opportunities across the manufacturing sector. Recommendations in the report were focused not only on policymakers at the state and deferral levels, but also on leaders from the private sector.



In conjunction with the release of the report, the Council and UCLA/CESMII hosted a moderated panel discussion on accelerating the adoption of smart manufacturing, an essential step in revitalizing U.S. manufacturing. Panelists included: Dr. Gene Block, Chancellor, University of California, Los Angeles; the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; Dr. Erich Barnsted, Head of Azure Industrial IoT, Microsoft; Mr. Kenneth E. Creasy, Senior Director, Advanced Technology, Innovation & Testing, J&J Global Supply Chain Strategy, Innovation & Deployment; and Dr. John Dyck, CEO, Clean Energy Smart Manufacturing Innovation Institute (CESMII). The panel was moderated by Council Executive Vice President, Bill Bates, who focused the discussion on the report's recommendations to ensure advanced technologies and capabilities reach as broad a cross section of American workers as possible.



**Top:** Dr. Kiran Sheath, Distinguished Engineering Associate, ExxonMobil Research and Engineering; Dr. Jim Davis, Vice Provost IT & Chief Academic Technology Officer, UCLA; Mr. John Dyck, CEO, Clean Energy Smart Manufacturing Innovation Institute; Dr. Gene Block, Chancellor, UCLA; Mr. William Bates, Executive Vice President, Council on Competitiveness; and Dr. Steven F. Ashby, Laboratory Director, Pacific Northwest National Laboratory.

**Bottom:** Dr. Steven F. Ashby, Laboratory Director, Pacific Northwest National Laboratory; Mr. Chad Evans, Executive Vice President, Council on Competitiveness; and Mr. John Chisholm, CEO, Chisholm Ventures.

Dialogue Sponsors

Deloitte.





**Top left:** Dr. Mark Johnson, Director, Center for Advanced Manufacturing, Clemson University; and Mr. Glen Lewis, Principal & Operations, Energy & Supply Chain Management Advisor, Glen Lewis Group, LLC, and University of California Davis.

**Top right:** Mr. Richard Heisey, Director of Product Engineering, CNH Industrial; and Ms. Gail Johnson-Roth, Principal Director, Enterprise Systems Engineering, Corporate Chief Engineer's Office, The Aerospace Corporation.

**Center left:** Dr. Todd Steyer, Sr. Manager, Materials & Manufacturing Technology, The Boeing Company; and Mr. Gregg Profosich, Director, Advanced Manufacturing Technologies, CMTC.

**Center right:** Mr. Michael Rinker, Manager of Energy Efficiency and Renewable Energy, Energy and Environment Directorate, Pacific Northwest National Laboratory; Mr. Jose Anaya, Director, El Camino Community College; and Dr. Hareesh Malkani, Chief Technology Officer, CESMII.

**Bottom:** Mr. Jim Watson, CEO, California Manufacturing Technology Consulting, Inc.; Ms. Laurie ten Hope, Deputy Director, R&D Division, California Energy Commission; and Mr. Jimmy Asher, Senior Manager, Supply Chain and Manufacturing Operations, Deloitte.



**Top left:** Dr. Gene Block, Chancellor, UCLA; and Mr. William Bates, Executive Vice President, Council on Competitiveness.

**Top right:** Dr. Luke Monck, Senior Manager, Manufacturing Practice, Deloitte or Ms. Michelle Pastel, Manager of Technology and Engineering Development, Corning Glass.

**Center left:** Dr. Larry Megan, R&D Director, Praxair.

**Center right:** Mr. Dominik Knoll, CEO, AVA Ventures.

**Bottom:** Mr. William Bates, Executive Vice President, Council on Competitiveness; Dr. Gene Block, Chancellor, UCLA; and Dr. Jim Davis Vice Provost IT & Chief Academic Technology Officer, UCLA.





**Top left:** Mr. Sam George, Director, Azure IoT, Microsoft.

**Top center:** Mr. Chad Evans, Executive Vice President, Council on Competitiveness.

**Top right:** Mr. John Dyck, CEO, Clean Energy Smart Manufacturing Innovation Institute.

**Center:** Participants of the Smart Manufacturing Dialogue.

**Bottom left:** Mr. Doug Lawson, Chief Executive Officer, ThinkIQ.

**Bottom right:** Mr. William Bates, Executive Vice President, Council on Competitiveness, the Honorable Deborah L. Wince-Smith, President & CEO, Council on Competitiveness; Dr. Gene Block, Chancellor, UCLA; Dr. Erich Barnstedt, Head of Azure Industrial IoT, Microsoft; Mr. Kenneth E. Creasy, Senior Director, Manufacturing Technology & Innovation and Advanced Engineering, Johnson & Johnson; and Dr. John Dyck, CEO, Clean Energy Smart Manufacturing Innovation Institute (CESMII).

## COMPETE: GLOBAL

# Global Partnerships



*GFCC Members present the Annual Flagship publications: The Global Competitiveness Principles and the Best Practices Report on Competitiveness Strategies.*

The Council on Competitiveness (Council) recognizes that to compete and prosper nationally, the United States must engage globally—defining, shaping and driving, through bilateral and multilateral partnerships, the world's innovation agenda. As the pace of technological change accelerates and geographic and political borders become more porous, the Council is engaging a set of strategic partners to advance a mutually beneficial, pro-growth agenda.

For nearly two decades—and particularly building off the findings and success of its National Innovation Initiative—the Council has developed and led a global innovation and competitiveness movement: a proactive agenda to solve globally-scaled, grand challenges and to meet profound opportunities at the heart of future productivity and prosperity. These efforts involve our members and thousands of other leaders in deep, bilateral collaborations, as well as multilateral engagements on nearly every continent.

From September 18-19, 2019, the Council led a delegation of leaders to the GFCC Global Innovation Summit, hosted by the Center for Research and Consulting and the Kazakhstan Competitiveness Council in Nursultan and Astana, Kazakhstan. The event brought together more than 250 leaders from academia, business and government from 15+ countries around the globe to discuss the issue “Transform Competitiveness! Nations—Energy—Industries—Cities—Talent”.

The two-day event included panel discussions, short expert impulse presentations and a number of workshops on the second day which were combined with excursions to some outstanding and innovative locations in Nursultan and Astana.

In addition to the Global Innovation Summit, GFCC Members and Fellows also convened for two high-impact events: the GFCC Annual Meeting on September 17 and a workshop for GFCC University members on September 19.



The Annual Meeting brought together members and fellows from around the globe to discuss GFCC initiatives and review their competitiveness agendas. Participants took part in in-depth discussions aimed at developing a common understanding on their individual agendas and the current state of GFCC. Events for the 2019 GFCC Global Innovation Summit spanned Nur-Sultan and Almaty, Kazakhstan.

The Next Annual Meeting of the GFCC will be held virtually on November 17-19, 2020, and will be co-hosted by Australia's Minister for Health, Greg Hunt, MP and Minister of Industry, Science and Technology, Karen Andrews, MP—and a follow-on Summit will take place in Melbourne, Australia in late 2021.

The Council also participated in the Annual meeting of the STS- Forum held in Kyoto, Japan on October 6-10, 2019.





#### OPPOSITE PAGE

**Top left:** Mr. Charles "Chad" Holliday, Jr., Chairman, Global Federation of Competitiveness Councils, and Chairman, Royal Dutch Shell plc.

**Top right:** The Honorable Deborah L. Wince-Smith, President, Global Federation of Competitiveness Councils, and President & CEO, Council on Competitiveness, opens the Global Innovation Summit 2019.

**Center left:** Mr. Simos Anastasopoulos, President, Council on Competitiveness of Greece (CompeteGR).

**Center right:** Dr. Roberto Alvarez Executive Director, Global Federation of Competitiveness Councils.

**Bottom:** Prof. James "Jim" Metson, Deputy-Vice Chancellor (Research), The University of Auckland.

#### THIS PAGE

**Top left:** Prof. Dr Mohamed Ibrahim Abdul Mutalib, Vice Chancellor and Chief Executive Officer, Universiti Teknologi Petronas; and Dr. Mariam Ali Al-Maadeed, Vice President for Research & Graduate Studies, Qatar University.

**Top right:** Dr. Roberto Alvarez, Executive Director, Global Federation of Competitiveness Councils; and Mr. Eldar Abdrazakov, Chairman, Kazakhstan Competitiveness Council, and Founder & CEO, Centras Group.

**Center left:** Dr. Elizabeth Stroble, Chancellor, Webster University; and Dr. Mohd Yusoff Sulaiman, President & CEO, MIGHT.

**Center right:** Dr. Miguel Athayde Marques Vice-Rector, Catholic University Portugal Former Chairman & CEO, Portuguese Stock Exchange (Euronext Lisbon).

## CALENDAR OF EVENTS

### 2019

**SEPTEMBER 16-19**

**Global Innovation Summit**

Center for Research and Consulting and the Kazakhstan Competitiveness Council in Nursultan, Kazakhstan  
Astana, Kazakhstan

**OCTOBER 6-10**

**STS Forum**

Kyoto, Japan

### 2020

**OCTOBER 4-6**

**STS Forum**

Virtual

**NOVEMBER 17-18**

**GFCC Annual Meeting & Global Innovation Summit**

Virtual



**Top:** Mr. Chad Evans, Executive Vice-President, Council on Competitiveness, and Treasurer, Global Federation of Competitiveness Councils.

**Center:** Dr. Michiharu Nakamura, Distinguished Fellow, Global Federation of Competitiveness Councils, Senior Advisor and former President, Japan Science and Technology Agency (JST), speaking at the GFCC Annual Meeting 2019.

**Bottom:** Mr. Adham Nadim, Chairman and Director, Nadim Industries; and Prof. Peter G R Smith, Founder & Director, Stratophase Pro Vice-Chancellor (International Projects), University of Southampton.

**Top:** Dr. Rohel Sanchez Sánchez, Rector, Universidad Nacional de San Agustín.

**Center:** Co-host Anuar Buranbayev, Managing Partner, Center for Research and Consulting; with Dr. Roberto Álvarez Executive Director, Global Federation of Competitiveness Councils.

**Bottom:** Mr. William "Bill" Bohnett, President, Whitecap Investment.



**Top:** 2019 Global Innovation Summit attendees signed up to different workshops discussing key competitiveness agenda issues with impulse presentations from Kazakh leaders.

**Center** The Honorable Deborah L. Wince-Smith, President, Global Federation of Competitiveness Councils, and President & CEO, Council on Competitiveness, opening the GFCC Annual Meeting 2019.

**Bottom left:** Ms. Yasmin M. Hilpert, former Senior Director of Policy and Engagement, Global Federation of Competitiveness Councils.

**Bottom right:** Tan Sri Dr. Ir. Ahmad Tajuddin Ali, Joint-Chairman, Malaysian Industry-Government Group for High Technology; and Mr. Simos Anastasopoulos, President, Council on Competitiveness of Greece.





**Top:** The GIS2019 organizing team: Mr. Chad Evans, Executive Vice President, Council on Competitiveness; Mr. Alexander Idrisov, Co-Founder, Eurasia Competitiveness Institute, and President, Strategy Partners; Ms. Yasmin Hilpert, Senior Director of Policy and Engagement, GFCC; Mr. Eldar Abdrazakov, Chairman, Kazakhstan Competitiveness Council, and Founder & CEO, Centras Group; the Honorable Deborah L. Wince-Smith, President, Global Federation of Competitiveness Councils, and President & CEO, Council on Competitiveness; Asset Issekeshiev, Executive Director, The Foundation of the First President; Dr. Roberto Alvarez, Executive Director, Global Federation of Competitiveness Councils; and Anuar Buranbayev, Managing Partner, Center for Research and Consulting.

**Center left:** Asset Issekeshiev, Executive Director, Foundation of the First President of the Republic of Kazakhstan, was honored with the Global Competitiveness Award by the Honorable Deborah L. Wince-Smith, President, Global Federation of Competitiveness Councils, and President & CEO, Council on Competitiveness; and Mr. Charles "Chad" Holliday, Jr., Chairman, Global Federation of Competitiveness Councils, and Chairman, Royal Dutch Shell plc (right), for his achievements as former mayor of Nur-sultan and his dedication to competitiveness. The trophy was handcrafted by Nadim Industries, a long-standing GFCC member and presented by Adham Nadim (left), President of Nadim Industries.



**Center right:** Mr. Alexander Idrisov, Co-Founder, Eurasia Competitiveness Institute, and President, Strategy Partners.

**Bottom:** Dr. Saif Al-Hiddabi, Asst. Secretary General, Research & Scientific Programs, Research Council Oman.



**Top:** Mr. Donald Black, CEO, GoProductivity Canada; Ms. Lori Schmidt, former CEO, GoProductivity, and President, Loral Management; and Mr. Brian Pardell, Associate Vice President for Continuing Education and Workforce Development at the Northern Alberta Institute of Technology.

**Center:** Dr. Margaret Drzeniek, Senior Fellow, Global Federation of Competitiveness Councils, and Managing Partner, Horizon Group.

**Bottom:** Ms. Jisu Hong, Associate Vice President for Economic Development and Innovation, University of Illinois; Dr. Saif Al-Hiddabi, Assistant Secretary General for Research & Scientific Programs, The Research Council–Oman; and Mr. Symeon Tsomokos, Founder and President, Delphi Economic Forum.

**Top:** Mr. Charles "Chad" Holliday, Jr., Chairman, Global Federation of Competitiveness Councils, and Chairman, Royal Dutch Shell plc; Dr. Mohammad Zaidi, Strategic Advisory Board Member, Braemar Energy Ventures, and former EVP & CTO, Alcoa; and Mr. William "Bill" Bohnett, President, Whitecap Investments, LLC.

**Center:** Mr. Chad Evans, Executive Vice President, Council on Competitiveness; Prof. Dr. Mohamed Ibrahim Abdul Mutalib, Vice Chancellor and Chief Executive Officer, Universiti Teknologi Petronas; and Dr. Mariam Ali Al-Maadeed, Vice President for Research & Graduate Studies, Qatar University.

**Bottom:** Mr. Brian Pardell, CEO, Go Productivity Canada.

# About the 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 laboratory 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.

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**Dr. Ray O. Johnson, Distinguished Fellow**  
Executive in Residence, Bessemer Venture  
Partners; and Former Senior Vice President and  
Chief Technology Officer, Lockheed Martin

**The Honorable Martha Kanter, Distinguished  
Fellow**  
Executive Director, College Promise Campaign

**Mr. Dominik Knoll, Senior Fellow**  
Former Chief Executive Officer  
World Trade Center of New Orleans

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Progress, and Professor, Information,  
Operations & Management Sciences, Leonard  
N. Stern School of Business, New York  
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& Burling LLP; and Former Under Secretary of  
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President, Larzelere & Associates LLC; and  
Former Director, Modeling and Simulation  
Energy Innovation Hub, Office of Nuclear  
Energy, U.S. Department of Energy

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**The Honorable Julie Meier Wright, Senior  
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Economic Development Corporation; and  
Former First Secretary of Trade & Commerce,  
State of California

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Chief Executive Officer, Groundswell; and  
Former Senior Advisor to the Director, Office of  
Management and Budget, Executive Office of  
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**Mr. Reuben Sarkar, Senior Fellow**  
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Transportation, U.S. Department of Energy

**Mr. Allen Shapard, Senior Fellow**  
Senior Director, Chair of Public Engagement  
Strategies  
APCO Worldwide

**Dr. Branko Terzic, Distinguished Fellow**  
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**Dr. Anthony J. Tether, Distinguished Fellow**  
Former Director, Defense Advanced Research  
Projects Agency, U.S. Department of Defense

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Senior Business Development Manager,  
Constellation Energy

**Dr. Thomas M. Uhlman, Distinguished Fellow**  
Founder and Managing Partner, New Venture  
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**Dr. William Wescott, Senior Fellow**  
Managing Partner, BrainOxygen, LLC.

**Dr. Mohammad A. Zaidi, Distinguished Fellow**  
Member, Strategic Advisory Board, Braemer  
Energy Ventures; and Former Executive Vice  
President and Chief Technology Officer, Alcoa,  
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## STAFF AS OF MARCH 2020

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**Mr. Chad Evans**  
Executive Vice President

**Ms. Marcy Jones**  
Special Assistant to the President & CEO and  
Office Manager

**Ms. Patricia Hennig**  
Vice President for Finance

**Ms. Kathy Trimble**  
Vice President

**Mr. Gourang Wakade**  
Vice President

**Ms. Yasmin Hilpert**  
Senior Policy Director

**Mr. Christopher Reigelsperger**  
Director for Information Technology and  
Services

**Mr. Joshua Oswalt**  
Policy Analyst

**Mr. Timothy Planert**  
Policy Analyst

**Dr. Roberto dos Reis Alvarez**  
Executive Director  
Global Federation of Competitiveness Councils  
(GFCC)

**Vanessa Rodrigues Puerta de Souza**  
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