innovation
agora
CERAWEEK
by IHS Markit
IN REVIEW 2018

Diane Greene, CEO, Google Cloud

Bill Vass, VP, Engineering, Amazon Web Services

Ulrich Spiesshofer, President & CEO, ABB

Babur Ozden, Founder & CEO, Maana

Timothy Dove, President & CEO, Pioneer Natural Resources

Pratima Rangarajan, CEO, OGCI Climate Investments

Lord John Browne of Madingley, Board Member, IHS Markit & Executive Chairman, L1 Energy

Barbara Burger, President, Chevron Technology Ventures, Chevron

David Farr, Chairman & CEO, Emerson

Wan Shamilah Saidi, Chief Digital Officer, Petronas

Investment Strategies in the Low Carbon World: Atul Arya, SVP & Chief Energy Strategist, IHS Markit; **Diego Kuschnir**, Portfolio Manager, Tudor, Pickering, Holt & Co.; **Pratima Rangarajan**, CEO, OGCI Climate Investments; **Dominic Emery**, VP, Long-Term Planning, BP; and **Sarah Ladislaw**, SVP & Director, Energy and National Security Program, Center for Strategic & International Studies

ACCELERATION

The second edition of the Innovation Agora @ CERAWeek included a remarkable assembly of thought leaders on the transformative force of innovation and new technology. The Agora is an open marketplace for ideas, dialogue, and new experiences and connections. We featured examples of the new world of innovation and how the "great wave" of new technology – from blockchain to e-mobility, robotics, additive manufacturing, connectivity, cloud and digital technology – is transforming the energy future.

With over 200 speakers, more than 130 sessions, and 6,000 participants, the Agora showcased disruptive technologies and innovations. We were proud to host this exciting community of start-ups, technologists, investors, academics, energy companies, and government officials – all dedicated to shared learning and exploration.

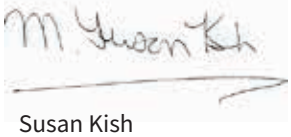
The Innovation Agora @ CERAWeek offered an immersive experience including:

- STUDIOS providing interactive dialogues with industry leaders on emerging and disruptive technologies, models of innovation and investment strategies—from robotics to the electrification of everything, cloud vs. edge, the future of work, and next generation biofuels.
- VOICES OF INNOVATION—new for 2018—offering intimate conversations with foremost and sometimes controversial thought leaders.
- PODS featuring deep-dive presentations in an intimate, relaxed setting, including Energy Innovation Pioneers and case studies and primers by leading technologists.
- EXPERIENCES featuring hand's on explorations of technologies—from the ABB Formula-E car to AI, the future of work, and next generation mobility.
- BLOCKCHAIN CENTRAL—daily meet-ups to discuss one of the newest technologies being implemented across the global energy industry.
- CAFÉ and LOUNGE providing the community with opportunities to work, connect, and explore.
- DISRUPTORS DINNER exploring the intersection of culinary art with innovation, inspiration, and disruption.

We want to acknowledge and thank all of the Agora Partners, including Agora Foundational Partners Tudor, Pickering, Holt & Co. and ABB, for their vision, commitment, and contributions to this CERAWeek initiative. We appreciate all of the CERAWeek delegates who engaged with the Innovation Agora over the course of the week—and look forward to your ideas and input as together we build the energy future.

Sincerely,

Jamey Rosenfield
Co-Chairman, CERAWeek &
SVP, IHS Markit



Susan Kish
Agora Curator, CERAWeek
IHS Markit

VOICES OF INNOVATION

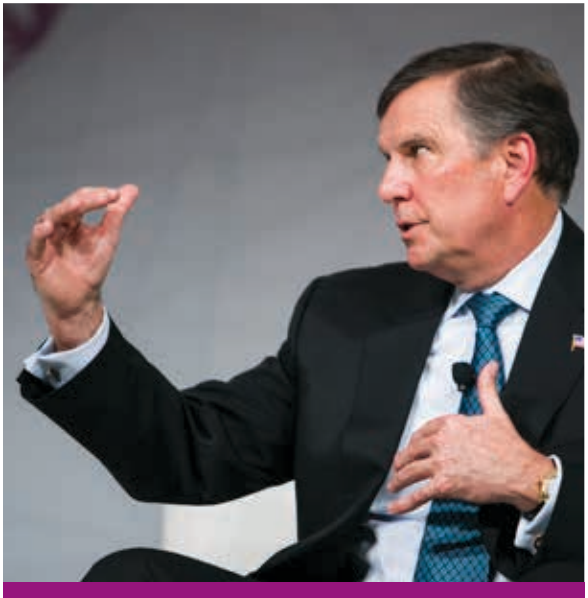
Voices of Innovation—new for 2018—offered intimate conversations with foremost and sometimes controversial thought leaders across technology, energy, and business, as well as several book signings.

Inventive Imagination: Maynard Holt, CEO, Tudor, Pickering, Holt & Co., and **Walter Isaacson**, University Professor of History, Tulane University & author of *Leonardo da Vinci*

Inspiring the Next Generation: Rich Wilson, President, sitesALIVE Foundation & author of *Race France to France*

Energy Transitions: Professor Vaclav Smil, Distinguished Professor Emeritus, University of Manitoba & author of *Energy and Civilization*

R&D Strategies for the Energy Future: Robert Armstrong, Director, MIT Energy Initiative, and



Educating Tomorrow's Workforce: David Farr, Chairman & CEO, Emerson

Ahmad Al Khowaiter, CTO, Saudi Aramco

Are We at a Tipping Point? Dr. Fatih Birol, Executive Director, International Energy Agency

Evolving Ourselves: Juan Enriquez, Managing Director, Excel Ventures & author of *Evolving Ourselves*

Taming the Sun: Varun Sivaram, Fellow, Council on Foreign Relations & author of *Taming the Sun*

Cloud Meets Energy: Diane Greene, CEO, Google Cloud; and **Ashok Belani**, CTO, Schlumberger

Progress and the Energy Future: Lord John Browne of Madingley, Board Member, IHS Markit & Executive Chairman, L1 Energy

STUDIOS

For CERAWeek 2018, we generously added to our Agora Studios, tripling the number and variety of sessions available to delegates. The redesigned spaces provided a platform for interactive discussion and dialogue with industry leaders on emerging and disruptive technologies. Topics included digitalization and blockchain in energy; mobility, transport, and the future of cities; advances in manufacturing and energy fuels; and innovative business models, leading edge technologies, and diversity.

DIGITALIZATION AND BLOCKCHAIN

As the volume of data continues to grow exponentially, applying that data to artificial intelligence, machine learning, and advanced analytics are becoming prerequisites in the energy industries. How fast and how successfully companies deploy these new tools determines key competitive advantages across all sectors.

- The Cloud, the Edge, and the Future of Connectivity
- Data and Analytics: The next frontier
- Blockchain Rising: What does it mean for upstream and trading?
- Blockchain, Electric Power, and the Consumer: Disruption on the horizon?

Thank you to our Co-Host of Blockchain Central at CERAWeek 2018

GBBC Global Blockchain Business Council

The Cloud, the Edge, and the Future of Connectivity: Cliff Grossner (Chair), Senior Research Director, IHS Markit; **Bill Vass,** VP, Engineering, Amazon Web Services; **Guido Jouret,** CDO, ABB; and **Claudio Fayad,** VP, Technology, Emerson Automation Solutions

STUDIOS

The Long Game: What's next in upstream tech? Oscar Abbink (Chair), Director, Energy Upstream, IHS Markit; **Timothy Dove,** President & CEO, Pioneer Natural Resources; **Patrick Stanley,** Analytics Leader, ConocoPhillips Canada; and **John Gibson,** Senior Advisor, Tudor, Pickering, Holt & Co.

DIGITALIZATION AND BLOCKCHAIN

- The Digitalization Transformation of Oil & Gas: What's next?
- The Long Game: What's next in upstream tech?
- Forecasting Oil Demand: Art or science?
- AI & Energy: Revolution or evolution?
- Energy & Cyber Risk

Blockchain, Electric Power, and the Consumer: Disruption on the horizon? Eduard Sala de Vedruna (Chair), Managing Director, PGCR, Energy, IHS Markit; **Veronica Garcia,** CEO & Founder, BitLumens; **David Martin,** Co-Founder & Managing Director, Power Ledger; **Hervé Touati,** CEO, Energy Web Foundation; and **Clark Wiedetz, Director, Microgrids, Siemens**

Data and Analytics: The next frontier: Paul Markwell (Chair), VP, Upstream Oil & Gas, IHS Markit; **Yaakov Mutnikas,** EVP, Financial Market Technologies, IHS Markit; **John Hague,** SVP & General Manager, APM, Aspen Tech; **Manas Satapathy,** Managing Director, Accenture Strategy; and **Doug Arent,** Deputy Associate Laboratory Director, Scientific Computing and Energy Analysis, National Renewable Energy Laboratory

The Digitalization Transformation of Oil & Gas: What's next? Jud Jacobs (Chair), Executive Director, Upstream Energy, IHS Markit; **Vivek Chidambaram,** Managing Director, Energy, Accenture Strategy; **Babur Ozden,** CEO, Maana; **Jonathan Crane,** VP, Wells Technology Development, Shell; **Wan Shamilah Saidi,** CDO, Petronas; and **Arshad Matin,** President, E&P Software, Emerson

EMERGING FUELS

As the movement toward decarbonization marches forward, meeting the growing need for energy across the globe with not only fossil fuels, but also more renewable solutions is mandatory.

- What Future for Hydrogen?
- Methane: The challenge of zero emissions
- Bio Fuel: Fulfilling the promise?
- Next Generation Nuclear: Moving forward now

INNOVATION ACROSS ENERGY

New technologies are creating the need for new structures and business models for financing innovation, new methods for incorporating research institutions into the ecosystem, and diversification across the workforce of the future.

- Waves of Innovation: Oceans, technology, and the energy future
- Energy Innovation Pioneers: Opportunities in the new energy landscape
- Energy Innovation Pioneers: Harnessing innovation to cut costs and increase consumer choice
- Inclusion and Diversity: Faces of the energy future
- New Ways to Finance Energy Innovation
- Electric Power: Disruption, innovation, and new business models

Methane: The challenge of zero emissions: Atul Arya (Chair), SVP & Chief Energy Strategist, IHS Markit; **Morgan Bazilian,** Executive Director & Reseach Professor, Payne Institute, Colorado School of Mines; **Mark Brownstein,** SVP, Energy, Environmental Defense Fund; and **Pratima Rangarajan,** CEO, OGCI Climate Investments

New Ways to Finance Energy Innovation: Carolyn Seto (Chair), Director, Upstream Technology & Innovation, IHS Markit; **John Gibson,** Senior Advisor, Tudor, Pickering, Holt & Co.; **Barbara Burger,** President, Chevron Technology Ventures, Chevron; **Johanna Schmidtke,** Investment Director, Saudi Aramco Energy Ventures; and **Rhea Hamilton,** Ventures Director, OGCI Climate Investments

Inclusion and Diversity: Faces of the energy future: Janice Ee-Ping Mah, Global HR Design & Planning Manager, ExxonMobil; **Ray Dempsey,** Chief Diversity Officer, BP; and **Carol SingletonSlade,** Global Head, Energy Practice, Egon Zehnder

STUDIOS

MOBILITY AND FUTURE TRANSPORTATION

Consumer and commercial transportation is being revolutionized with electrification, autonomy, and fuel diversity.

- EV vs. ICE: Battle of technologies
- Driving Innovation in Mobility: ABB Formula E
- EVs and the Grid: Challenges and opportunities

EVs and the Grid: Challenges and opportunities: Kate Hardin (Chair), Senior Director, IHS Markit; **Stephen Fitzpatrick,** Founder & CEO, OVO Energy; **Roger Kranenburg,** VP, Energy Strategy & Policy, Eversource Energy; **Sergej Mahnovski,** Director, Growth & Innovation, Edison International; **Francis O'Sullivan,** Director of Research, MIT Energy Initiative; and **Greg Scheu,** President, Americas Region, ABB

CITIES AND THE BUILT ENVIRONMENT

Urban development is undergoing a monumental shift toward increased electrification, advancements in mobility, and greater efficiency and resiliency needs to provide the habitat of the future.

- Energy, Mobility, and the Future of the City
- Building the Resilient Grid of the Future: Microgrids and beyond
- Habitat: Future of the built environment
- Electrification of Everything: The transformation of energy systems

Building the Resilient Grid of the Future: Microgrids and beyond: Blake Eskew (Chair), VP, Global Consulting, IHS Markit; **John Berger,** Founder & CEO, Sunnova Energy; **Dr. Reginald DesRoches,** Dean of George R. Brown School of Engineering, Rice University; **Jon Jipping,** EVP & COO, ITC Holdings; and **Steven Martin,** VP & CDO, GE Energy Connections

ADVANCED MANUFACTURING

Factories are looking more like laboratories, with robotics and advanced computing driving manufacturing that turns new materials into products with increasing efficiency, revolutionizing industrial processes and businesses.

- Manufacturing Without Borders: Agile and additive
- Energy + Robotics

Energy + Robotics: Ian Weightman (Chair), SVP, Technology, IHS Markit; **Morag Watson,** Chief Digital Innovation Officer, BP; **Ulrich Spiesshofer,** President & CEO, ABB; and **Jim Bellingham,** Director, Center of Marine Robotics, Woods Hole Oceanographic Institution

PODS

Agora Pods featured deep-dive presentations in an intimate, relaxed setting, ranging from Energy Innovation Pioneers to case studies and primers by leading technologists. These dynamic sessions were digitally recorded for replay and distribution.

START-UPS

- Innovation Pioneer: Introduction to 1366 Technologies | 1366 Technologies
- Powering Digital Transformation in the Energy Industry with Predictive Digital Twins | Akselos
- Authentix: Fingerprinting petroleum for product authentication & integrity | Authentix
- DNA Sequencing: Revealing the reservoir | Biota, a TPH disruption company
- BitLumens – An introduction | BitLumens
- Innovation Pioneer: Introduction to Claroty | Claroty
- Innovation Pioneer: Introduction to Clean Energy Collective | Clean Energy Collective
- How Data Liberation Is Creating and Shaping New Winners and Alliances | Cognite
- Convergence: EPs, cloud & machine learning | Deep Data
- Innovation Pioneer: Introduction to ES Xplore | ES Xplore
- Innovation Pioneer: Introduction to FogHorn | FogHorn Systems
- Disrupting Subsea Service | Houston Mechatronics, a TPH disruption company
- Hydroswarm: Global Offshore IoT – An introduction | Hydroswarm
- The Opportunities in Superconducting Materials | MetOx, a TPH disruption company
- Nanolaminated Alloys for Improved Return on Oilfield Assets | Modumetal
- Innovation Pioneer: Introduction to M-TriGen | M-TriGen
- Saving Processing Costs and Reducing Emissions with Methaforming | NGT Global AG
- Innovation Pioneer Alumni: Rheidiant – Oilfield assets & IoT | Rheidiant
- Tachyus | Tachyus, a TPH disruption company
- ThinkTopic | ThinkTopic, a TPH disruption company
- Innovation Pioneer: Introduction to Water Lens | Water Lens

DNA Sequencing: Revealing the reservoir – Biota | Ajay Kshatriya, CEO & Co-Founder, Biota, a TPH disruption company

Hydroswarm: Global Offshore IoT – An introduction | Sampriti Bhattacharyya, Founder & CEO, Hydroswarm

Disrupting Subsea Services | Matt Ondler, Co-Founder & CEO, Houston Mechatronics, a TPH disruption company

PODS

Digital Innovation & Transformation with Salesforce | Austin Miller, Lead Solution Engineer, Salesforce

Urban Mobility: GM initiatives | Alex Keros, Director Urban Mobility, General Motors

INDUSTRY IMPACT

- New Frontiers for the Built Environment: Adaptive buildings | Aircuity
- Data Residency: Emerging challenges | Amazon Web Services
- Urbanova, Creating the Shared Energy Economy | Avista Utilities
- Mineral Foundations of the Energy Transition | Colorado School of Mines
- FIRST Global Challenge: Energy impact | DEKA Research
- A Future Energy Leaders Conversation: Attracting and retaining great talent | Emerson Automation Solutions
- Efficiency in Innovation: What's driving the brain? | Feed the Fire
- Inspiring the Next-Generation Workforce | FIRST
- A New Energy System | GE Power
- Urban Mobility: GM initiatives | GM
- Innovative Energy Technology Ventures Models | Hunt Energy Enterprises
- Israeli Innovative Water Treatment and Desalination Technologies | Israel Ministry of Energy and Water Resources
- 5G: Implications for the energy systems | IHS Markit
- Meta: Augmented reality for productivity in energy | Meta
- Electricity Rates for the 21st Century: The evolving nervous system of the power sector | MIT
- 21st Century Energy Innovation Strategies | National Renewable Energy Laboratory
- Modern CAD Tools for Modern Design | Onshape
- Feeding the Planet: Where energy and agriculture intersect | Plenty
- AI and the Workforce of the Future | Rice University
- Digital Innovation & Transformation with Salesforce | Salesforce

A Future Energy Leaders Conversation: Attracting and retaining great talent | Steve Sonnenberg, Senior Advisor, Emerson Automation Solutions

FIRST Global Challenge: Energy impact | Dean Kamen, Founder & CEO, DEKA Research

PODS

Machine Learning-Driven Asset Optimization | Michael Brooks, Senior Director, Asset Performance Management, Aspen Tech

Digitalizing the Energy Industry | Donald Bartusiak, Chief Process Controls Engineer, EM Research and Engineering, ExxonMobil

TECHNOLOGY DEEP DIVE

- Securing Your Power with Superconductors | Applied Materials
- Oleo Sponge: A revolution in oil spill cleanup | Argonne National Laboratory
- Machine Learning-Driven Asset Optimization | Aspen Tech
- Innovation Pioneer Alumni – Atrex | Atrex Energy
- Innovation Pioneer Alumni: Azima Global | Azima Global
- Bitcoin & Energy: Best friends? | BitFury
- The Future of Electrical Resiliency: Natural gas microgrids | Enchanted Rock
- Energy Web Foundation: An introduction | Energy Web Foundation
- Digitalizing the Energy Industry: Open process automation | ExxonMobil
- Rural Electrification | GE Power
- Innovation Pioneer Alumni - GlassPoint | GlassPoint
- Why Blockchain Will Reshape Your Industry | Global Blockchain Business Council
- Blockchain 101 | Global Blockchain Business Council
- OilCoin Digital Reserve – An introduction | OilCoin Digital Reserve
- Disruption in Lithium Ion: Powermers | Powermers
- Computation of Robot Motion – An essential tool for automation | Rice University
- Tribomechadynamics: The future of oil & gas efficiency | Rice University

Computation of Robot Motion – An essential tool for automation | Dr. Lydia Kavraki, Professor, Computer Science & Engineering, Rice University

Applying Artificial Intelligence to Optimize Oil Production | Dr. Christoph Kandziora, Technology & Innovation, Siemens

Rural Electrification | Ricky Buch, Commercial Director, Energy Access & Hybrid Distributed Power, GE Power

Why Blockchain Will Reshape Your Industry | Tomicah Tillemann, Chairman, Global Blockchain Business Council

How Data Science Will Define the Future of Oil, Gas, and Petrochemicals | Nick Revelas, Industry VP, Uptake

Revolutionizing the Onshore Seismic Industry | Michael Lambert, President & CEO, Wireless Seismic Inc.

- Microfluidic Visualization of Oil Processes: A real "reservoir-on-a-chip" | Rice University
- Applying Artificial Intelligence to Optimize Oil Production | Siemens
- What's Next in Battery Storage for Offshore & Marine | Siemens Offshore Solutions
- GCEP and Beyond | Stanford University & ExxonMobil
- How Data Science Will Define the Future of Oil, Gas, and Petrochemicals | Uptake
- Revolutionizing the Onshore Seismic Industry | Wireless Seismic
- Coal to Carbon Products | Wyoming Innovation Park
- Modular Immersion Cooled Battery Pack for Commercial Vehicles | XING Mobility

PODS

CASE STUDIES

- The Future of Human-Plant Collaboration: A case study demo | ABB
- Digital 2.0: The refinery of the future | Accenture Strategy
- How to Restore Capital Project Confidence | Emerson
- Innovative Pumped Storage Solution | ITC Holdings
- AI Crude Flexibility Application for Reducing Refinery Equipment Failure | Maana
- Digital Upstream for Optimizing the Lifecycle of Wells | Maana & BHP
- How Chevron Is Using AI-Driven Knowledge Models for Piping Consolidation | Maana & Chevron
- Better Cities Through Imaging | New York University
- Blockchain-Enabled Distributed Energy Markets: Power Ledger | Power Ledger
- Pipelines 4.0: Emerging opportunities and challenges | Siemens
- Sunnova, Puerto Rico, and the Emergence of Wireless Power | Sunnova Solar Energy
- Imagine: Design through innovation and sequence | Synthesisdesign
- Is "Net-Zero" a Progressive or Regressive Design Policy? | University of California Irvine
- Energy Systems That Always Work: Advanced analytics software | Uptake
- Oceans of Data: Unveiling the hidden planet | Woods Hole Oceanographic Institution

How Chevron Is Using AI-Driven Knowledge Models for Piping Consolidation | Javier Canon, Director of Customer Delivery, Maana, and Esteban Montero, Systems Engineer, Chevron

The future of Human-Plant Collaboration: A case study demo | Hakon Berg, Technology Development Manager, ABB, and Libby Smith, Strategic Account Manager, ABB

Digital 2.0: The refinery of the future | Rodrigo Barragán, Senior Manager, Accenture Strategy

ENERGY INNOVATION PIONEERS

Each year, CERAWeek identifies a select few Energy Innovation Pioneers to showcase their technologies in the Innovation Agora, allowing delegates to interact with them and experience their promise to disrupt the energy industry for themselves.

This year, we featured technologies facilitating the decentralization and democratization of operational decisions, offering the potential to transform the nature of field operations.

Opportunities in the New Energy Landscape: Carolyn Seto (Chair), Director, Upstream Technology & Innovation, IHS Markit; **Galina Antova,** Co-Founder & Chief Business Development Officer, Claroty; **Keith Cole,** Founder & CEO, Water Lens; **David King,** CEO, FogHorn Systems; and **Dan Meyer,** CEO, ES Xplore

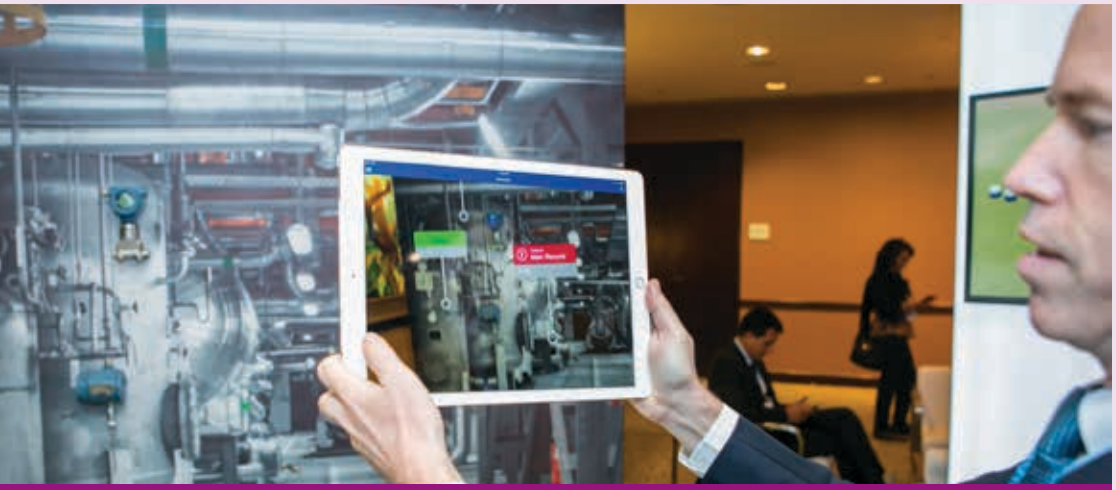
Harnessing Innovation to Cut Costs and Increase Consumer Choice: Alex Klaessig (Chair), Director, Power, Gas, Coal, & Renewables, IHS Markit; **Paul Spencer,** CEO, Clean Energy Collective; **Frank van Mierlo,** CEO, 1366 Technologies; and **Kevin Robert,** Chairman & CEO, M-TriGen

EXPERIENCES

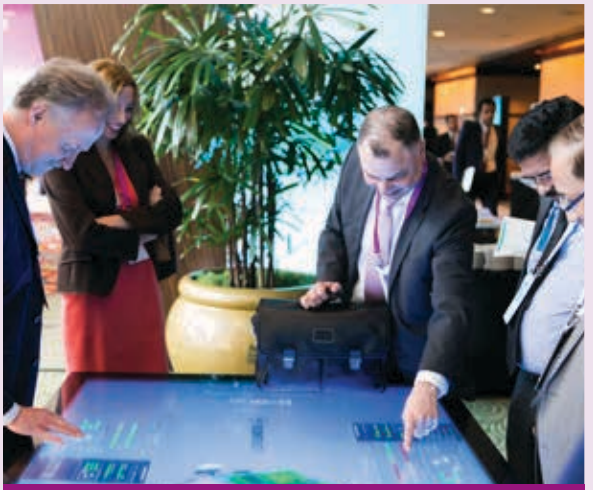
In 2018, the Agora hosted a range of Agora Experiences, designed with our partners to engage Agora participants with innovation and disruptive technologies directly – out of the laboratory and into our daily lives.

Beyond Electric: An augmented reality transportation experience by ABB

Formula-E Race Car by ABB



Digital Ecosystem: The future of work by Emerson



The D2O Lab by Aspen Tech

LOUNGE AND CAFE

We're proud to have Houston-based Greenway Roasters return to our Agora Café. The Lounge and Café provided the community with opportunities to work, connect, and explore.

DISRUPTORS DINNER

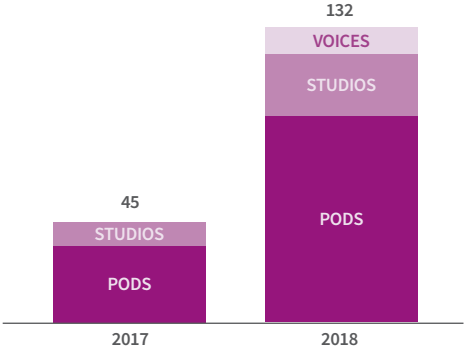
Kaiser Lashkari, Chef, Himalaya Restaurant & Catering, and **Ruffy Sulaiman, Executive Chef**, Hilton Americas

Maynard Holt, CEO, Tudor, Pickering, Holt & Co.

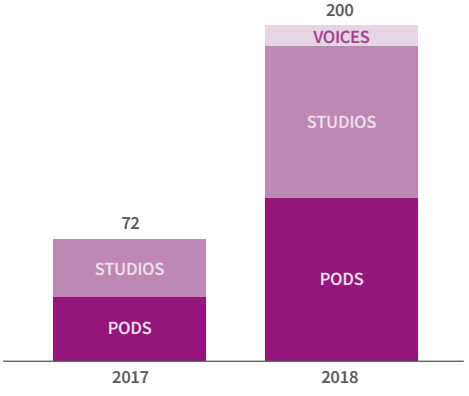
Brought to the Agora by Foundational Partner Tudor, Pickering, Holt & Co., the Disruptors Dinner featured creative chefs exploring the intersection of culinary art with innovation, inspiration, and disruption.

AGORA IMPACT

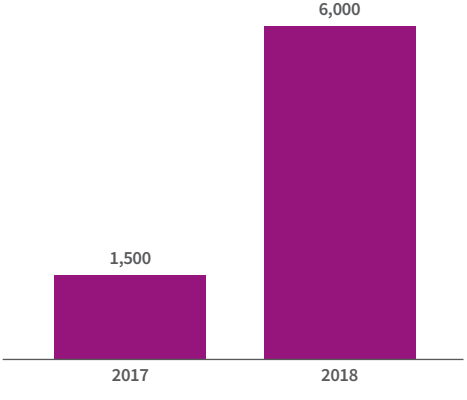
Number of Agora Sessions
~3x increase



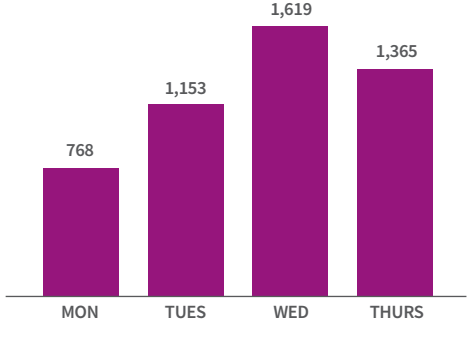
Number of Agora Speakers
~3x increase



Number of Agora Participants
~4x increase



Cups of Coffee Served in the Agora



CERAWEEK MEDIA IMPACT

CERAWeek General Media

- Generated **13+ billion** total global media mentions
- **300+** accredited journalists attended CERAWeek
- CNBC dedicated over **4** hours live
- Approximately **100** segments of broadcast news coverage by CNBC, Nightly Business Report, Bloomberg TV, and others

CERAWeek Social Media

- **23,000** social media mentions and over **1 million** Twitter impressions
- Approximately **42,000** unique visitors to Digital Hub from paid media campaigns
- Facebook ads drove **21,000+** unique visitors, surpassing all the other sources
- AdWords drove **13,000+** unique visitors from across the Google Ad Network

Blockchain Sessions 13	**Experiences** 7	**Start-Up Pods** 35	**Book Signings** 5
Countries 75	**Voices of Innovation** 12	**Agora Receptions** 7	**Videos Produced** 247

FOUNDATIONAL PARTNERS

Thank you!

We would like to thank all of our CERAWeek 2018 Partners who supported and helped make possible the Innovation Agora program.

AGORA PARTNERS

accenturestrategy

aramco energy ventures

aspentech
Technology That Loves Complexity

EMERSON

GE

Hunt CONSOLIDATED, INC.

MAANA
Knowledge Accelerated

RICE
Energy and Environment Initiative

salesforce

SIEMENS
Ingenuity for life

Stanford | Precourt Institute for Energy

TOTAL
COMMITTED TO BETTER ENERGY

UPTAKE

GROUND BREAKERS

- **Oscar Abbink,** Director, Energy Upstream Research Group, IHS Markit
- **Mark Abbott,** President & Director, Woods Hole Oceanographic Institution
- **Haitham Al-Ghais,** Director, Market Research, Kuwait Petroleum Corporation & Kuwait Governor for OPEC
- **Ahmad Al-Khowaiter,** CTO, Saudi Aramco
- **Corie Allemand,** Director, Pipelines, Siemens
- **Galina Antova,** Co-Founder & Chief Business Development Officer, Claroty
- **Doug Arent,** Deputy Associate Laboratory Director, Scientific Computing and Energy Analysis, NREL
- **Robert Armstrong,** Director, MIT Energy Initiative
- **Atul Arya,** SVP & Chief Energy Strategist, IHS Markit
- **Charlie Atkins,** Director, Development, Wyoming Innovation Park
- **Neil Atkinson,** Head, Oil Industry and Markets Division, IEA
- **Fellipe Balieiro,** Senior Consultant, IHS Markit
- **Rodrigo Barragán,** Senior Manager, Accenture Strategy
- **Kurt Barrow,** VP, Oil Markets, Midstream and Downstream Energy, IHS Markit
- **Edward Barry,** Applications Scientist, Argonne National Laboratory
- **Don Bartusiak,** Chief Process Control Engineer, EM Research and Engineering, ExxonMobil
- **El Medhi Basslim,** Research Analyst European Power and Renewables, IHS Markit
- **Morgan Bazilian,** Executive Director & Research Professor, Payne Institute, Colorado School of Mines
- **Ashok Belani,** CTO, Schlumberger
- **James Bellingham,** Director, Center of Marine Robotics, Woods Hole Oceanographic Institution
- **Alexei Beltyukov,** Founder, NGT Global AG
- **Sally Benson,** Director, Global Climate & Energy Project, Stanford University
- **Hakon Berg,** Technology Development Manager, ABB
- **William J. (John) Berger,** Founder & CEO, Sunnova Energy
- **Sampriti Bhattacharyya,** Founder & CEO, Hydroswarm
- **Nazeer Bhore,** Manager, Breakthrough Research, ExxonMobil
- **Dr. Fatih Birol,** Executive Director, International Energy Agency
- **Thomas Birr,** SVP, Innovation & Business Transformation, innogy
- **Dr. Sibani Lisa Biswal,** Associate Professor, Chemical & Biomolecular Engineering Material Science & NanoEngineering, Rice University
- **Ryan Blitstein,** VP, Renewable Energy, Uptake
- **Chris Borroni-Bird,** Founder, Afreecar
- **Donald E. Bossi,** President, FIRST
- **Dr. Matthew Brake,** Professor, Mechanical Engineering, Rice University
- **Wendell Brase,** Associate Chancellor, Sustainability, University of California-Irvine
- **Lee Brenner,** Head, Partnerships, Global Blockchain Business Council
- **Michael Brooks,** Sr. Director, Asset Performance Management, Aspen Tech
- **Lord John Browne of Madingley,** Board Member, IHS Markit & Executive Chairman, L1 Energy
- **Mark Brownstein,** SVP, Energy, Environmental Defense Fund
- **Ricky Buch,** Commercial Director, Energy Access & Hybrid Distributed Power, GE Power
- **Barbara J. Burger,** President, Chevron Technology Ventures, Chevron
- **Scott Burger,** PRIME Technology Investment Advisor, MIT
- **Jim Burkhard,** VP, IHS Markit
- **Sabine Busse,** SVP, Group Head, Marketing & Sales, ABB
- **Javier Canon,** Director, Customer Delivery, Maana
- **Dr. Praveen Cheekatamarla,** Director, Research and Product Development, Atrex Energy
- **Vivek Chidambaram,** Managing Director, Energy, Accenture Strategy
- **Keith Cole,** CEO & Founder, Water Lens
- **Jonathan Crane,** VP, Wells Technology Development, Shell
- **Helen Currie,** Chief Economist, ConocoPhillips

- **Bashir Dabbousi,** Director, Technology Strategy & Planning, Saudi Aramco
- **Jeff Dalgliesh,** Head, Oil & Gas Digitalization, Maana
- **Fernando De Mattos,** Head, Technology Shale and Conventional Petroleum, BHP
- **Ray Dempsey,** Chief Diversity Officer, BP
- **Dr. Reginald DesRoches,** Dean, George R. Brown School of Engineering, Rice University
- **Dan Diehl,** CEO, Aircuity
- **Greg Dobler,** Director, CUSP Urban Observatory, New York University
- **Mike Donohue,** VP, Thermal Generation and Utilities, Uptake
- **Timothy L. Dove,** President & CEO, Pioneer Natural Resources
- **Raymond Eby,** VP, Automotive Electrification Program, 3M
- **Dan Eisner,** Co-Founder, OilCoin Digital Reserve
- **Juan Enriquez,** Managing Director, Excel Venture Management
- **Blake Eskew,** VP, Global Consulting, IHS Markit
- **Claudio Facchin,** President, Power Grids Division, ABB
- **David Farr,** Chairman & CEO, Emerson
- **Claudio Fayad,** VP, Technology, Emerson Automation Solutions
- **Andrew Feltham,** Research Geophysicist, TOTAL
- **Oliver Fetzer,** CEO, Synthetic Genomics
- **Dr. Philip Forshee,** Senior Principal Scientist, Authentix
- **Philippe Frangules,** VP & GM, Power, Gas, Coal & Renewables, IHS Markit
- **Gary Freburger,** President, Process Automation Business, Schneider Electric
- **Ric Fulop,** Co-Founder & CEO, Desktop Metal
- **Veronica Garcia,** CEO & Founder, BitLumens
- **John Gibson,** Senior Advisor, Tudor, Pickering, Holt & Co.
- **Paul Goodfellow,** EVP, Wells, Shell
- **Diane Greene,** CEO, Google Cloud
- **Roger Griffiths,** Team Principle & CTO, Andretti Autosport
- **Cliff Grossner,** Senior Research Director, IHS Markit
- **Dr. Alec Gruss,** Head, Digital Solutions, Siemens
- **John Hague,** SVP & GM, APM Business Unit, Aspen Tech
- **Susan Hakkarainen,** Co-Chairman & Co-CEO, Lutron Electronics
- **Dr. Bracha Halaf,** Chief Scientist, Israel Ministry of Energy and Water Resources
- **Katherine Hamilton,** Chair, 38 North Solutions
- **Rhea Hamilton,** Venture Director, OGCI Climate Investments
- **Kate Hardin,** Senior Director, IHS Markit
- **Dr. Terry Harvill,** President, Grid Development, ITC Holdings
- **Jon Hirschtick,** Co-Founder & CEO, Onshape
- **David Hobbs,** Head, Research, KAPSARC
- **Mike Hogan,** CEO, Deep Data
- **Maynard Holt,** CEO, Tudor, Pickering, Holt & Co.
- **Tim Holt,** CEO, Siemens Power Generation Services
- **Burt Hurlock,** CEO, Azima Global
- **Walter Isaacson,** University Professor of History, Tulane University & author of *Leonardo da Vinci*
- **Judson Jacobs,** Executive Director, Upstream Energy, IHS Markit
- **Jim Jewitt,** President, MetOx
- **Ben Jolliffe,** Founder, Feed the Fire
- **Adam Jonas,** Managing Director, Global Auto & Shared Mobility Research, Morgan Stanley
- **Guido Jouret,** CDO, ABB
- **Dean Kamen,** Founder & CEO, DEKA Research
- **Dr. Christoph Kandziora,** Technology Consultant, Technology & Innovation, Siemens
- **Dr. Lydia Kavraki,** Professor, Computer Science, Bioengineering, Electrical & Computer Engineering, and Mechanical Engineering, Rice University
- **Paul Kearns,** Director, Argonne National Laboratory
- **Kurt Kelty,** SVP, Operations and Market Development, Plenty
- **Alex Keros,** Director, Urban Mobility, GM

GROUND BREAKERS

- **Sila Kiliccote,** Managing Director, Grid Innovations, Stanford Precourt Institute for Energy
- **David King,** CEO, FogHorn Systems
- **Anthony Kirincich,** Head, Wind Catalyst Program, Woods Hole Oceanographic Institution
- **Curt Kirkeby,** Technology Strategist, Electric Utility Sector, Avista
- **Susan Kish,** Innovation Agora Curator, IHS Markit
- **Sam Kogan,** CEO & Co-Founder, Powermers
- **Roger Kranenburg,** Director, Global Power, Eversource
- **Ajay Kshatriya,** CEO & Co-Founder, Biota
- **Michael Lambert,** President & CEO, Wireless Seismic
- **Mike Lepech,** Associate Professor, Civil and Environmental Engineering, Stanford University
- **Dr. John M. Lervik,** CEO, Cognite
- **Thomas Leurent,** Co-Founder & CEO, Akselos
- **Lars Peter Lindfors,** SVP, Technology, Nesté
- **Victor Liu,** President, Hunt Energy Enterprises
- **Christina Lomasney,** President & CEO, Modumetal
- **Borghild Lunde,** SVP, Oil, Gas & Chemicals, Norway, ABB
- **Janice Ee-Ping Mah,** Global HR Design & Planning Manager, ExxonMobil
- **Sergej Mahnovski,** Director, Growth and Innovation, Edison International
- **Rodney Malcolm,** CFO, Trafigura Americas
- **Deborah Mann,** Director, European Power, Gas & Renewables, IHS Markit
- **Paul Markwell,** VP, Upstream Oil & Gas Research, IHS Markit
- **David Martin,** Co-Founder & Managing Director, Power Ledger
- **Steve Martin,** VP & CTO, GE Power
- **Arshad Matin,** President, E&P Software, Emerson
- **Lee Mazzocchi,** SVP, Grid Solutions, Duke Energy
- **Thomas McAndrew,** President & CEO, Enchanted Rock
- **Dan Meyer,** CEO, ES Xplore
- **Austin Miller,** Lead Solution Engineer, Salesforce
- **Marie Lynn Miranda,** Provost, Rice University
- **Mirko Molinari,** Global Commercial and Marketing Executive, Energy Storage, GE Power
- **Bill Morelli,** Senior Director, Enterprise & IT, IHS Markit
- **Dave Munz,** Director, OMC Sales, Authentix
- **Paul J. Murphy, Ph.D.,** Managing Director & GM, Fault Current Limiter products, Applied Materials
- **Yaakov Mutnikas,** EVP, IHS Markit
- **Michael Newell,** CEO, Ener-g-rotors
- **Tate Nurkin,** Executive Director, Strategic Assessments, IHS Markit
- **Jim Nyquist,** Group President, Systems and Solutions, Emerson Automation Solutions
- **Murat Ocalan,** CEO & Founder, Rheidiant
- **Dr. Jan Odegard,** Professor, Rice University
- **John O'Donnell,** VP, Business Development, GlassPoint
- **Matt Ondler,** CEO, Houston Mechatronics
- **Paul Orland,** Co-Founder & CTO, Tachyus
- **Francis O'Sullivan,** Director, Research, MIT Energy Initiative
- **Babur Ozden,** Founder & CEO, Maana
- **Dr. SSV Ramakumar,** Director R&D, Indian Oil
- **Jason Ramos,** Principal, Synthesisdesign
- **Pratima Rangarajan,** CEO, OGCI Climate Investments
- **Anuja Ratnayake,** Director, Emerging Technology Strategy, Duke
- **Nick Revelas,** Industry VP, Uptake
- **Mitch Riechmann,** Principal Solution Engineer, Salesforce
- **Kevin Robert,** Chairman & CEO, M-TriGen
- **Jeff Rose,** CEO, ThinkTopic
- **Wan Shamilah Saidi,** CDO, Petronas
- **Manas Satapathy,** Managing Director, Accenture Strategy
- **Greg Scheu,** President, Americas Region, ABB
- **Johanna Schmidtke,** Investment Director, Aramco Ventures

- **Carolyn Seto,** Director, Upstream Technology & Innovation, IHS Markit
- **Stig Settemsdal,** CTO, Siemens Offshore Solutions
- **Nick Sharma,** Managing Director, APAC Head of Upstream Research & Consulting, IHS Markit
- **Justin Siller,** Associate Director, IHS Markit
- **Leo Simonovich,** VP & Global Head Industrial Cyber and Digital Security, Siemens
- **Carol SingletonSlade,** Global Head, Energy Practice, Egon Zehnder
- **Varun Sivaram,** Philip D. Reed Fellow for Science and Technology, Council on Foreign Relations
- **Vaclav Smil,** Distinguished Professor Emeritus, University of Manitoba
- **Steve Sonnenberg,** Senior Advisor, Emerson Automation Solutions
- **Paul Spencer,** CEO, Clean Energy Collective
- **Ulrich Spiesshofer,** President & CEO, ABB
- **Shankari Srinivasan,** Managing Director, IHS Markit
- **Patrick Stanley,** Data Analytics & Integrated Planning Leader, ConocoPhillips
- **Ruffy Sulaiman,** Executive Chef, Hilton Americas
- **Vijay Swarup,** VP, R&D, ExxonMobil Research & Engineering
- **Gert Sylvest,** Co-Founder & CTO, Tradeshift
- **Arcandra Tahar,** Deputy Minister, Energy and Mineral Resources, Republic of Indonesia
- **Marc Taverner,** Head of Business Development, BitFury
- **Tomicah Tillemann,** Chairman, Global Blockchain Business Council
- **Hervé Touati,** CEO, Energy Web Foundation
- **Azizi Tucker,** Co-Founder & CTO, XING Mobility
- **Frank van Mierlo,** CEO, 1366 Technologies
- **Dr. Moshe Vardi,** Director, Ken Kennedy Institute for Information Technology, Rice University
- **Bill Vass,** VP, Engineering, Amazon Web Services
- **Eduard Sala de Vedruna,** Director, Energy Power, Gas, Coal & Renewables, IHS Markit
- **Michael Verkruyse,** Director, Customer Solutions, Maana
- **Morag Watson,** Chief Digital Innovation Officer, BP
- **Ian Weightman,** SVP, Technology, IHS Markit
- **John Werner,** VP, Meta
- **Tom Werner,** Chairman & CEO, SunPower
- **Lisa Westlake,** EVP & Chief Human Resources Officer, IHS Markit
- **Clark Wiedetz,** Director, Microgrids, Siemens
- **Scott WIlliams,** VP, Global Sales, Wireless Seismic
- **Richard Wilson,** President, sitesALIVE Foundation & author of *Race France to France: Leave Antarctica to Starboard*
- **Mike Wynne,** Senior Director, IHS Markit
- **Bob Yeager,** President, Automation, Power & Water Solutions, Emerson
- **Dr. Dana Yoerger,** Senior Scientist, Applied Ocean Physics & Engineering, Woods Hole Oceanographic Institution
- **Jeff Zindel,** VP & GM, Honeywell Industrial Cyber Security

"Congratulations! You have created, nurtured, and entrenched an iconic forum for the exchange of opinions regarding energy."

John W. Gibson, Jr.
Senior Advisor, Energy Technology
Tudor, Pickering, Holt & Co.

"The conference was orchestrated with perfection. The panels were fabulous, leading to fruitful conversations and excellent brain storming among the mix[ed] and diverse audience."

Veronica Garcia
Co-Founder & CEO
BitLumens

"CERAWeek's Innovation Agora is a must attend event for venture and private equity investors who want an executive-level perspective on the technology shaping the energy industry – both now and in the future."

John Tincoff
Director, Strategic Initiatives
Romulus Capital

"I attended several Agora sessions during the week, and uniformly, they were the highlight of the conference for me...a more intimate setting with more direct engagement with thought leaders talking candidly about their perspectives. I hope you continue to grow this program. It's terrific."

Mark Brownstein
VP, Climate & Energy
Environmental Defense Fund

CERAWeek and Innovation Agora 2019

March 11-15, 2019 | Hilton Americas and George R. Brown Convention Center | Houston, TX

For more information, contact:

Program and Participation:
Susan Kish: +1 617-784-7085
susan.kish@ihsmarkit.com

Partnership & Special Programs:
Todd Szczebak: +1 720-505-6730
todd.szczebak@ihsmarkit.com

Agora Studio: Electric Power: Disruption, innovation, and new business models: Philippe Frangules (Chair), VP & GM, Power, Gas, Coal & Renewables, IHS Markit; **Thomas Birr**, SVP, Innovation & Business Transformation, Innogy; **Katherine Hamilton**, Chair, 38 North Solutions; **Anuja Ratnayake**, Director, Emerging Technology Strategy, Duke Energy; and **Bob Yeager**, President, Automation, Power & Water Solutions, Emerson

About IHS Markit

IHS Markit (Nasdaq: INFO) is a world leader in critical information, analytics and solutions for the major industries and markets that drive economies worldwide. The company delivers next-generation information, analytics and solutions to customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions. IHS Markit has more than 50,000 key business and government customers, including 80 percent of the Fortune Global 500 and the world's leading financial institutions. Headquartered in London, IHS Markit is committed to sustainable, profitable growth.

Copyright ©2018 IHS Markit. All Rights Reserved.