

innovation
agora



CERAWEEK®
by IHS Markit

Program Guide

March 5-9, 2018 | Houston, Texas

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#CERAWeek2018

#cwagora

Welcome

to Innovation Agora @ CERAWeek!

The second annual Agora@CERAWeek has many new features and a remarkable assembly of innovators and thought leaders. The Agora is an open marketplace for ideas, dialogue, and new experiences and connections. Together we will explore 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.

Located on the fourth floor and running throughout the week, the Agora offers a range of programs and experiences designed to engage and stimulate new thinking. We hope you will join this exciting community of start-ups, technologists, investors, academics, energy companies and government officials – all dedicated to shared learning and exploration.

- **Agora Studio Sessions** are interactive dialogues with industry leaders on emerging and disruptive technologies, models of innovation and investment strategies -- ranging from robotics to the electrification of everything, cloud vs edge, and educating the workforce of the future.
- **Voices of Innovation**, new to the Agora, offer “fireside chats” with foremost – and sometimes controversial – thought leaders across technology, energy, and business.
- **Agora Pods** are deep dive presentations in an intimate, relaxed setting, ranging from our Energy Innovation Pioneers, to case studies by leading technologists – as well as a few surprises.
- **Agora Experiences** are first hand explorations of technologies - from the ABB Formula-E car to competing with AI, the future of work, and next generation mobility.
- **Blockchain Central** meets daily at 2 PM in the Agora Lounge to discuss one of the newest technologies that has disruptive applications across the entire energy system.
- **Agora Café and Lounge** are both open throughout CERAWeek for connecting with colleagues, collaboration, and terrific locally roasted coffee.

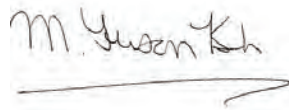
We want to acknowledge and thank all of the Agora Partners, including Agora Foundational Partners Tudor, Pickering, Holt & Co. and ABB, for their vision, commitment, and contributions to this CERAWeek initiative.

We hope you will make the Agora a daily part of your CERAWeek journey—and look forward to your ideas and participation as we, together, build the energy future.

Sincerely,



Jamey Rosenfield
Co-Chairman, CERAWeek
SVP, IHS Markit



Susan Kish
Agora Curator, CERAWeek
IHS Markit

Contents

About Agora	5
Voices of Innovation	6
Blockchain	8
Agenda	9
Schedule at a Glance	30
Experiences	32
Speakers	35
Agora Partners	43

With thanks to all our colleagues listed below and beyond, who helped produce the Innovation Agora 2018 @ CERAWeek.

Our CERAWeek Colleagues

IHS Markit

Oscar Abbink, Atul Arya, Peter Beddow, Christina Butkiewiczus, Charlene Davies, Ken Downey, Rob Fraser, Cliff Grossman, Kate Hardin, Jenalea Howell, Judson Jacobs, Ross Kiener, Susan Kish, Lauren Koch, Amy Lee, Sara Levy, Sam Lucero, Nishreen Mahesri, Paul Markwell, Megan Coontz McAllister, Bill Morelli, Deena Munn, Bob Perez, Jamey Rosenfield, Michele Rodrigues, Linda Sanders, Carolyn Seto, Justin Siller, Richard Slucher, Todd Szczebak, Pam Taylor, Linda Toyias, Tara Wannock, Ian Weightman, Sam Wilkinson, John Wright, Dan Yergin

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Explore, experience, and share ideas on the future of energy technology and innovation. Connect with technology leaders, innovation pioneers, and experts from companies and academia throughout your CERAWeek.

Area	Activity	Description	
Studio	Interact	Dialogues, Conversations	
Voices of Innovation	Listen	Fireside Chats with Thought Leaders	
Pod	Learn	Innovation Pioneers, Case studies, Start-ups Tech primers	
Experience	Discover	Prototypes, Games, Immersion	
Blockchain Central @ Lounge	Develop	Daily Meet-up at 2:00PM	
CERAWeek Social Hub	Share	Post Selfies & Engage	
Lounge	Connect	Collaborate in the Lounge & Agora Café	

Voices of Innovation

Join us in the Agora throughout the week for conversations with influential and inspirational thought leaders. Pre-registration recommended.

TUESDAY

7:30 - 8:40 AM



Agora Breakfast | Fatih Birol, Executive Director, IEA: Are We at an Energy Tipping Point?

Named by the Financial Times as “Energy personality of the year,” Dr. Birol is among the most influential and clarion voices on the energy future. Interviewed by Atul Arya, SVP and Chief Energy Strategist, IHS Markit.

10:45 - 11:30 AM



Agora Studio | Diane Greene, CEO, Google Cloud, and Ashok Belani, CTO, Schlumberger: Cloud Meets Energy

Is the cloud an opportunity or a threat for the energy sector? Join a preeminent Silicon Valley innovator and an energy technology leader as they discuss what disruptive changes and opportunities lie in store as the Cloud meets oil and gas.

11:35 - 12:35 PM



Agora Studio | Ahmad Al-Khowaiter, CTO, Saudi Aramco, and Robert Armstrong, Director, MIT Energy Initiative: R&D Strategies for the Energy Future

Hear from the head of a leading academic center of energy research and education in discussion with the head of long-range technology research and development at Saudi Aramco, one of the preeminent energy companies in the world. What makes innovation successful? Which technologies hold the greatest promise?

12:45 - 1:15 PM



Agora Studio | Juan Enriquez, Author and Managing Director, Excel Ventures: Evolving Ourselves

One of the most thought-provoking futurists and life science experts explores the implications for Homo Sapiens in light of advances in biotech, robotics, and technology. Are we at an evolutionary inflection point?

1:15 - 1:30 PM

Agora Book Corner @ the Agora Café | Book Signing

Join Juan Enriquez, Managing Director, Excel Ventures, and receive a signed copy of his book, *Evolving Ourselves: Redesigning the Future of Humanity—One Gene at a Time*.

WEDNESDAY

7:30 - 8:40 AM



Agora Breakfast | Lord Browne of Madingley, Board Member IHS Markit: Progress and the Energy Future

Insights from an energy visionary, industry leader, and prolific author who has been at the forefront of discussions on energy and society, innovation, technology, and how to tackle the dual challenges of energy demand growth and climate change. What can we expect in the future? Interviewed by Atul Arya, SVP and Chief Energy Strategist, IHS Markit.

9:30 - 10:15 AM



Agora Studio | Adam Jonas: Future of Mobility

Join this conversation with influential Wall Street analyst leading Morgan Stanley's research on the rapidly evolving mobility sector. What lies ahead for this disrupting and disruptive sector? What will be the next surprise? Interviewed by Jim Burkhard, Vice President, IHS Markit.

11:30 - 12:30 PM



Agora Studio | David Farr, Chairman and CEO, Emerson: Educating tomorrow's workforce

The energy industry faces the twin challenge of an aging workforce and rapid advancement in disruptive technologies. This is driving a fundamental rethinking of how to build the skills and workforce of the future. Hear from a leading business and industry leader as he shares his thoughts on what role the energy industry will play in advancing new workforce models and where innovation will happen.

2:10 - 2:50 PM



Agora Studio | Arcandra Tahar, Vice Minister of Energy and Mineral Resources, Republic of Indonesia: Technology & Future of Indonesia Upstream

Insights and perspective on innovation and technology in this key oil and gas country—and what it means for the rest of the world. Interviewed by Nick Sharma, MD APAC Head of Upstream Research & Consulting, IHS Markit.

2:10 - 2:50 PM



Agora Studio | Professor Vaclav Smil, Distinguished Professor Emeritus, University of Manitoba: Energy Transitions

Hear from one of the world's great authors and interdisciplinary thinkers on energy, environment, population change, food production and nutrition, technical innovation, risk assessment, and public policy. What does the history of energy transitions and scaling innovations tell us? Will the next transition be an evolution or revolution? Interviewed by Atul Arya, SVP and Chief Energy Strategist, IHS Markit.

2:50 - 3:05 PM

Agora Book Corner @ the Agora Café | Book Signing

Join Vaclav Smil to receive a signed copy of his book, *Energy and Civilization: A History*.

THURSDAY

7:30 - 8:40 AM



Agora Breakfast | Varun Sivaram, Author: Taming the Sun

Solar energy is the world's cheapest and fastest-growing power source, but its rise is in danger of stalling. Hear from a world authority on the future of solar and what innovations will be required to realize its promise—from creative financing, revolutionary technologies, and flexible energy systems. Interviewed by Atul Arya, SVP and Chief Energy Strategist, IHS Markit.

8:40 - 8:55 AM

Agora Book Corner @ the Agora Café | Book Signing

Join author Varun Sivaram to receive a signed copy of his book, *Taming the Sun: Innovations to Harness Solar Energy & Power the Planet*.

12:45 - 1:15 PM



Agora Studio | Rich Wilson, Author and head of sitesALIVE Foundation: Inspiring the Next Generation

Adventurer Rich Wilson turned his Vendee Globe solo circumnavigation sailing race into a living classroom for hundreds of thousands of young people on every continent. Every aspect of his journey was tracked in real time, offering an exciting STEM teaching opportunity. Learn about his voyage of discovery, and his ideas for engaging future generations of scientists and engineers.

1:15 - 1:30 PM

Agora Book Corner @ the Agora Café | Book Signing

Join Rich Wilson to receive a signed copy of his book, *Race France to France: Leave Antarctica to Starboard*.

6:00 - 6:30 PM



Agora Studio | Walter Isaacson, President, The Aspen Institute and Author, Interviewed by Maynard Holt, energy banker: Inventive Imagination

Join this up-close conversation with Walter Isaacson, bestselling author of *Einstein*, *Steven Jobs*, *The Innovators* and most recently *Leonardo da Vinci*. Isaacson is a foremost authority on innovation, genius, and the history of science and technology. What can the energy industry learn from the greatest innovators in human history? Interviewed by Maynard Holt, CEO, Tudor, Pickering, Holt & Co and founder of its Energy Technology (E-Tech) Investment Banking initiative.

6:30 - 6:45 PM

Agora Book Corner @ Agora Café | Book Signing

Join Walter Isaacson to receive a signed copy of his book, *Leonardo da Vinci*, courtesy of Agora Foundational Partner Tudor, Pickering, Holt & Co.

Blockchain @ CERAWEEK 2018

Learn & explore about blockchain and its impact on energy

MONDAY

2:00 - 3:00PM **Agora Lounge – Blockchain Central** | Meet and explore.
 Co-host: Global Blockchain Business Council (GBBC)

2:00 - 2:30PM **Agora Pod 1 – OilCoin Digital Reserve: An introduction**
Dan Eisner, Co-Founder, OilCoin Digital Reserve

4:15 - 5:15PM **Agora Studio 2 - Blockchain rising: What does it mean for upstream and trading?**

Dan Eisner, Co-Founder, OilCoin
Rodney Malcolm, CFO, Trafigura Americas
Gert Sylvest, Co-founder, GM, Tradeshift Frontiers
Morag Watson, Chief Digital Innovation Officer, BP
Tomicah Tilleman, Chairman, GBBC, Chair

TUESDAY

2:00 - 3:00PM **Agora Lounge – Blockchain Central** | Meet and explore. Co-host: GBBC

4:30 - 5:00PM **Agora Pod 1 – Why Blockchain will reshape the energy industry**
Tomicah Tilleman, Chairman, GBBC

WEDNESDAY

7:30 - 8:40AM **Breakfast Strategic Dialogue – New technology and the future of trading: strategies for a changing world**

Bart Chilton, Partner, OilCoin; Former Commissioner, US CFTC
Jason Leme, Partner, Hartre Partners
Hector Robler, Algorithmic Trading Sales, Quantitative Brokers
Denton Cinquegrana, Chief Oil Analyst, OPIS, IHS Markit, Chair

10:15 - 11:00AM **Agora Studio 2 – Blockchain, electric power, and the consumer: Disruption on the horizon?**

Veronica Garcia, CEO/Founder, Bitlumens
Dave Martin, Co-Founder and MD, Power Ledger
Hervé Touati, President, EnergyWeb Foundation
Clark Wiedetz, Director Microgrids, Siemens
Eduard Sala de Vedruna, Director, IHS Markit, Chair

2:00 - 2:30PM **Agora Pod 2 – Blockchain-enabled distributed energy markets**
David Martin, Co-Founder and MD, Power Ledger

2:00 - 3:00PM **Agora Lounge – Blockchain Central** | Meet and explore. Co-host: GBBC

4:00 - 4:30PM **Agora Pod 1 – BitLumens: an introduction**
Veronica Garcia, CEO/Founder, Bitlumens

THURSDAY

11:30 - 12:00PM **Agora Pod 1 – Bitcoin & Energy: Best friends?**
Marc Taverner, Head of Business Development, BitFury

2:00 - 3:00PM **Agora Lounge – Blockchain Central** | Meet and explore. Co-host: GBBC

4:00 - 4:30PM **Agora Pod 1 - Energyweb Foundation: An Introduction**
Hervé Touati, President, EnergyWeb Foundation

5:30 - 6:30PM **IHS Markit Expert Dialogue – Blockchain and electric power**
Catherine Robinson, Senior Director, European Gas and Energy Scenarios, IHS Markit
El Mehdi Basslim, Research Analyst, European Power, Gas, Coal, and Renewables, IHS Markit
Jone-Lin Wang, VP and Head of Research, IHS Markit, Chair



Agenda

Agenda



1:30 - 2:00 PM

Pod 1

Computation of robot motion: An essential tool for automation

- Dr. Lydia Kavraki, Professor, Computer Science & Engineering, Rice University

2:00 - 2:30 PM

Pod 1

OilCoin Digital Reserve: An introduction

- Dan Eisner, Co-Founder, OilCoin Digital Reserve

2:00 - 2:30 PM

Pod 2

DNA sequencing: Revealing the reservoir - Biota, a TPH disruption company

- Ajay Kshatriya, CEO, Biota

2:00 - 3:00 PM

Lounge

Blockchain Central

Come meet the people focussed on blockchain and the energy system. Experts, analysts, investors, corporate project leads and early stage companies from around the world gather every day at Blockchain Central. Co-hosted with Global Blockchain Business Council (GBBC).

2:10 - 2:50 PM

Studio 2

Energy + Robotics

Innovation in robotics is expanding dramatically, along with its application to the energy industry. What lies ahead for the robotics revolution? What frontier technologies and opportunities are emerging? How are robotics transforming upstream and downstream oil operations? How can companies take advantage of the power of robotics?

- Jim Bellingham, Director, Center of Marine Robotics, Woods Hole Oceanographic Institution
- Ulrich Speishoffer, President & CEO, ABB
- Morag Watson, Chief Digital Innovation Officer, BP
- Ian Weightman, Vice President Technology, IHS Markit, Chair

2:30 - 3:00 PM

Pod 1

Convergence: E&Ps, Cloud, & Machine Learning

- Mike Hogan, CEO, Deep Data

2:30 - 3:00 PM

Pod 2

AI crude flexibility application for reducing refinery equipment failure

- Michael Verkruyse, Director of Customer Delivery, Maana

3:00 - 3:30 PM

Pod 1

Houston Mechatronics, a TPH disruption company

- Matt Ondler, CEO, Houston Mechatronics

3:00 - 3:30 PM

Pod 2

Machine learning-driven asset optimization

- Michael Brooks, Senior Director Asset Performance Management, AspenTech

3:10 - 3:55 PM

Studio 1

Forecasting oil demand: Art or science?

Projecting the demand for oil has been a focus for researchers, oil executives, economists, and policy makers for decades. Price outlooks and investment strategies depend upon those projections. The methodologies for forecasting demand have traditionally been based

Monday 3/5

on forecasts for GDP growth, motorization and population growth. How will the rise of alternative fuels for transport, in particular EVs, impact the outlook for oil demand? Will recent advances in data analytics improve accuracy? What are the underlying reasons for the wide range of forecasts for a peak in oil demand?

- Haitham Al-Ghais, Director Market Research, Kuwait Petroleum Corporation & Kuwait Governor for OPEC
- Neil Atkinson, Head of the Oil Industry and Markets Division, IEA
- Kurt Barrow, VP Oil Markets Midstream and Downstream, IHS Markit
- Helen Curri, Chief Economist, ConocoPhillips
- David Hobbs, Head of Research, Kapsarc
- Atul Arya, SVP and Chief Energy Strategist, IHS Markit, Chair

3:10 - 3:55 PM

Studio 2

Waves of innovation: Oceans, technology & the energy future

Technology is making the once inaccessible planet accessible, transforming our understanding of the ocean. This will have important implications for energy – from deep water oil and gas to offshore wind, shipping and more. Breakthrough advances -- from robotics to communication to analytics -- enable deployment of increasingly sophisticated capabilities in demanding and remote environments to improve our understanding of the ocean environment. Join for an exciting glimpse of the ocean future.

- Anthony Kirincich, Head of Wind Catalyst Program, WHOI
- Borghild Lunde, SVP, Oil Gas Chemicals Norway, ABB
- Dr Jan Odegard, Professor, Rice University
- Dr. Dana Yoerger, Senior Scientist Applied Ocean Physics & Engineering, Woods Hole Oceanographic Institution
- Mark Abbott, Woods Hole Oceanographic Institution, Chair

3:30 - 4:00 PM

Pod 1

Innovation Pioneer Alumni: Atrex

- Cary Bullock, CEO, Atrex

3:30 - 4:00 PM

Pod 2

Digitalizing the energy industry: Open process automation

- Don Bartusiak, Chief Process Controls Engineer, EM Research and Engineering, ExxonMobil

4:00 - 4:30 PM

Pod 1

Saving processing costs and reducing emissions with Methaforming

- Alexei Beltyukov, Founder, NGT Global AG

4:00 - 4:30 PM

Pod 2

Applying artificial intelligence to optimize oil production

- Dr. Christoph Kandzioa, Technology & Innovation, Siemens

4:15 - 5:00 PM

Studio 1

Manufacturing without borders: Agile & additive

Additive manufacturing is combining with agile design to drive fundamental change in global supply chains. How will the new world of distributed manufacturing disrupt traditional borders and supplier relationships? What are the risks and opportunities for the energy industry arising from this technology revolution?

- Charlie Atkins, Ramaco Carbon
- Ric Fulop, Co-Founder & CEO, Desktop Metal
- Jon Hirschtick, Co-Founder & CEO, OnShape
- Tim Holt, CEO, Slemens Power Generation Services
- Bill Morelli, Director IoT, IHS Markit, Chair

4:15 - 5:15 PM

Studio 2

Blockchain rising: What does it mean for upstream and trading?

Blockchain has powerful potential energy applications – and risks. This technology promises to enable “smart” supply chains, e-governance platforms, asset tracking systems and contracts. What does blockchain portend for new and disruptive business models? Gain insight from oil blockchain pioneers on emerging oil industry applications and strategies at this session co-hosted with Global Blockchain Business Council (GBBC).

- Dan Eisner, Co-Founder, OilCoin
- Rodney Malcolm, CFO, Trafigura Americas
- Gert Sylvest, Co-founder, GM, Tradeshift Frontiers
- Morag Watson, Chief Digital Innovation Officer, BP
- Tomicah Tilleman, Chairman, GBBC, Chair

4:30 - 5:00 PM

Pod 1

Date residency: Emerging challenges

- Bill Vass, Vice President of Engineering, Amazon Web Services

4:30 - 5:00 PM

Pod 2

Oceans of Data: Unveiling the hidden planet

- Jim Bellingham, Director Center of Marine Robotics, WHOI

5:00 - 5:30 PM

Pod 2

Hydroswarm, Global Offshore IoT: An introduction

- Sampriti Bhattacharya, CEO, Hydroswarm

5:00 - 5:45 PM

Studio 1

What future for hydrogen?

Is it time to re-evaluate the potential of hydrogen to carry energy efficiently and with low emission across multiple applications? How is technology driving disruptions needed to push hydrogen into reality? How are the changing supply and technology improvements driving hydrogen's role in the clean energy sector?

- Bashir Dabbousi, Director Technology Strategy & Planning, Aramco
- Raymond Eby, VP for Automotive Electrification Program, 3M
- Deborah Mann, Director European Power, Gas & Renewables, IHS Markit
- Shankari Srinivasan, Managing Director Natural Power, Gas and Renewables, IHS Markit, Chair

6:30 - 7:00 PM

Pod 2

Beyond electric: an augmented reality, transportation experience

Brought to the Agora by ABB

6:30 - 7:30 PM

Agora



CERAWeek Conference-wide Reception - SPONSORED BY ABB

6:45 - 7:15 PM

Studio 2

Driving innovation in mobility: ABB Formula E

Formula car racing is all about accelerating the pace of innovation. How is ABB Formula E (E for electric) reinventing both car racing and EVs - especially batteries? Will it lead to new innovations in electric cars just as Formula One transformed the Internal Combustion Engine (ICE)?

- Dr. Sibani Lisa Biswal, Associate Professor, Rice University
- Sabine Busse, SVP, Group Head Marketing & Sales, ABB
- Roger Griffiths, CTO and Co-Principal, Andretti Racing
- Ian Weightman, Vice President Technology, IHS Markit, Chair

7:00 - 7:30 PM

Pod 2

Beyond electric: an augmented reality, transportation experience

Brought to the Agora by ABB

Tuesday 3/6

7:30 - 8:40 AM

Studio 1

**Agora Breakfast - Voices of Innovation with Fatih Birol:
Are we at a tipping point?**

In December 2017, Financial Times named Fatih Birol, Executive Director of IEA, “Energy personality of the year”. Under his leadership, the IEA has become the authoritative voice on all matters energy. When Dr. Birol speaks - people across the world listen. Join a conversation with Dr. Birol about his outlook on the future of the energy: Is it the end of the coal age? Will EVs rule the world? What happened to the golden age of gas? Are we paying too much attention to shale oil? How long will an OPEC/non-OPEC deal survive? Why is climate change such a difficult problem to tackle? And, is peak oil demand round the corner?

- Fatih Birol, Executive Director, International Energy Agency
- Atul Arya, SVP and Chief Energy Strategist, IHS Markit, Chair

7:30 - 8:40 AM

Studio 2

Agora Breakfast - Inclusion and diversity: Faces of the energy future / BP SPONSORED



The traditional image of an “oil man” is changing profoundly – but is it fast enough? Companies increasingly recognize the urgency of inclusion and diversity – and how critical these are to fostering innovation and reducing turnover. Yet women and minorities are highly underrepresented at all levels of the energy industry. What obstacles do these groups face in entering and advancing? How can companies attract and retain a more diverse talent pool? What are the lessons and emerging best practices for developing a diverse workforce?

- Ray Dempsey, Chief Diversity Officer, BP
- Janice Ee-Ping Mah, Global HR Design & Planning Manager, ExxonMobil Corporation
- Marie Lynn Miranda, Provost, Rice University
- Lisa Westlake, EVP and Chief Human Resources Officer, IHS Markit, Chair

9:00 - 9:30 AM

Pod 1

Revolutionizing the onshore seismic industry

- Michael Lambert, President & CEO, Wireless Seismic Inc.

9:00 - 9:30 AM

Pod 2

Beyond electric: an augmented reality, transportation experience

Brought to the Agora by ABB

9:30 - 10:00 AM

Pod 2

Digital 2.0: The refinery of the future

- Rodrigo Barragán, Senior Manager, Accenture Strategy

9:40 - 10:25 AM

Studio 1

Bio Fuel: Fulfilling the promise?

The perfect biofuel - renewable, cost competitive, and low emissions - has been the holy grail of the oil and energy industry for decades. Recent research indicates that the combination of new genetic and deep learning technologies have advanced to a stage that, at a minimum, warrant a re-examination of these underlying trends. Which technologies look promising? Will biofuels make a material contribution to the future energy mix?

- Oliver Fetzer, CEO, Synthetic Genomics
- Lars Peter Lindfors, Senior Vice President, Technology, Neste Corp.
- Vijay Swarup, Vice President of Research and Development, ExxonMobil Research and Engineering Company
- Juan Enriquez, Managing Director, Excel Ventures, Chair

9:40 - 10:25 AM

Studio 2 **The long game: What's next in upstream tech?**

Technology has always been the critical enabler in the upstream industry. 3D seismic (deepwater) and horizontal drilling combined with hydraulic fracturing (unconventionals) are just two examples of game changing technologies that helped unlock new resource types. This session discusses what technical innovations will help the industry reaching a new step change in exploration and production.

- Tim Dove, President and CEO, Pioneer
- John Gibson, Senior Advisor, TPH
- Ahmed Hashmi, Global Head of Upstream Technology, BP
- Oscar Abbink, Director Energy Upstream Research Group, IHS Markit, Chair

10:00 - 10:30 AM

Pod 1 **Pipelines 4.0: Emerging opportunities and challenges**

- Corie Allemand, Director for Pipelines, Siemens

10:25 - 11:20 AM

Studio 2 **EV vs. ICE: Battle of technologies**

Daily headlines announce the planned production of new EV models by auto industry incumbents around the world. At the same time, Internal Combustion Engine (ICE) continues to chug along as a well-oiled machine. Dramatic improvements in the efficiency and emission reduction, as well as the millions of ICE vehicles on the roads of the world, will mean that both technologies will be with us for decades to come. How will these technologies compete in the future? Will autonomous vehicles accelerate take up of EVs? Will China and India leapfrog to EVs? Will policymakers choose winners and losers?

- Chris Borroni-Bird, Founder, Afreecar
- Coleman Jones, Technical Fellow, GM
- Dr SSV Ramakumar, Director R&D, Indian Oil
- Azizi Tucker, Co-Founder and CTO, Xing Mobility
- Felipe Balieiro, Senior Consultant, IHS Markit, Chair

10:30 - 11:00 AM

Pod 1 **How data science will define the future of oil, gas and petrochemicals**

- Nick Revelas, Industry VP, Uptake

10:45 - 11:30 AM

Studio 1 **Voices of Innovation with Diane Greene, CEO, Google Cloud and Ashok Belani, CTO, Schlumberger: Cloud meets energy**

Is the cloud an opportunity or a threat for the energy sector? Data ownership and security long have been paramount concerns. How is the cloud changing this? Join the conversation of a preeminent Silicon Valley innovator with an energy technology leader on what disruptive changes and opportunities lie in store, as the Cloud meets oil and gas.

- Ashok Belani, CTO, Schlumberger
- Diane Greene, CEO, Google Cloud
- Atul Arya, SVP and Chief Energy Strategist, IHS Markit, Chair

11:00 - 11:30 AM

Pod 1 **How to restore capital project confidence**

- Jim Nyquist, Group President Systems & Solutions, Emerson

Tuesday 3/6

11:00 - 11:30 AM

Pod 2

Modumetal: An introduction

- Christina Lomasney, President & CEO, Modumetal

11:30 - 12:00 PM

Pod 2

AI and the workforce of the future

- Moshe Vardi, Director Ken Kennedy Institute for Information Technology, Rice University

11:30 - 12:00 PM

Pod 2

21st Century energy innovation strategies

- Doug Arent, Deputy Associate Laboratory Director, NREL

11:35 - 12:35 PM

Studio 1

Voices of Innovation with Ahmad Al-Khowaiter and Robert Armstrong: R&D Strategies for the Energy Future

As Director of the MIT Energy Initiative, Robert Armstrong leads one of the major hubs of energy research, education and outreach. Chief Technology Officer, Ahmad Khowaiter, directs long range technology research and development at Saudi Aramco, one of the preeminent energy companies in the world. Join a conversation between these two industry leaders on how they think about investing in a developing a portfolio of technologies, what makes innovation successful, which technologies excite them and is this industry far too risk averse?

- Ahmad Al-Khowaiter, Chief Technology Officer, Saudi Aramco
- Robert Armstrong, Director, MIT Energy Initiative

12:00 - 12:30 PM

Pod 1

The future of human-plant collaboration: A case study demo

- Dr. John M. Lervik, CEO, Cognite

12:00 - 12:30 PM

Pod 2

How data liberation is creating and shaping new winners and alliances

- Hakon Berg, Technology Development Manager, ABB

12:45 - 1:15 PM

Studio 2

Voices of Innovation with Juan Enriquez: Evolving Ourselves

Homo sapiens have been the dominant human species for millenia. However, the last few years have seen dramatic change - CRISPR allows us to design our progeny, prosthetics allow us to run and throw with power we never knew, brain interfaces allows the blind to see and the deaf to hear, and robotic enhancements allow us to lift loads that were unimaginable a few years ago. When does this start to affect our definition of being human?

- Juan Enriquez, Managing Director, Excel Ventures
- Susan Klish, Agora Curator, IHS Markit, Chair

1:15 - 1:30 PM

Book Corner

Voices of Innovation with Juan Enriquez: Book Signing

Join author Juan Enriquez in our Agora Book Corner to receive a signed copy of his book - [Evolving Ourselves: Redesigning the Future of Humanity – One Gene at a Time](#)

- Juan Enriquez, Managing Director, Excel Ventures

2:00 - 2:30 PM

Pod 1

Coal to carbon products

- Charlie Atkins, Director of Development, Wyoming Innovation Park

2:00 - 2:30 PM

Pod 2

Beyond electric: an augmented reality, transportation experience

Brought to the Agora by ABB

2:00 - 3:00 PM

Lounge

Blockchain Central

Come meet the people focused on blockchain and the energy system. Experts, analysts, investors, corporate project leads and early stage companies from around the world gather every day at Blockchain Central. Co-hosted with Global Blockchain Business Council (GBBC).

2:30 - 3:00 PM

Pod 1

Innovative energy technology ventures models

- Victor Liu, President, Hunt Energy Enterprises

2:30 - 3:00 PM

Pod 2

Powering digital transformation in the energy industry with predictive digital twins

- Thomas Leurent, Co-Founder and CEO, Akselos

3:00 - 3:30 PM

Pod 1

Innovation Pioneer Alumni: GlassPoint

- John O'Donnell, VP Business Development, GlassPoint

3:00 - 3:30 PM

Pod 2

Digital upstream for optimizing life cycle of wells

- Jeff Dalgliesh, Head of Oil & Gas Digitization, Maana
- Fernando De Mattos, Head of Technology Shale and Conventional Petroleum, BHP

3:30 - 4:00 PM

Pod 1

Tribomechadynamics: Impact on oil and gas production

- Dr. Matthew Brake Professor, Mechanical Engineering, Rice University

3:30 - 4:00 PM

Pod 2

Modern CAD tools for modern design

- Jon Hirschtik, Co-Founder & CEO, On Shape

3:40 - 4:35 PM

Studio 1

The digitalization transformation of Oil & Gas: What's next?

While it's clear from industry announcements that oil and gas is fully embracing a more digitalized approach to its business, it's less clear what this means in practical terms. Which segments of the oil and gas value chain are most ripe for digital disruption? Are digital and automation technologies raising performance and enabling new operating models? What is the role of partnerships in both developing solutions and ensuring organizational uptake? How is digitalization improving the bottom line?

- Vivek Chidambaram, Managing Director Energy, Accenture Strategy
- Jonathan Crane, VP Wells Technology Development, Shell
- Arshad Matin, President, E&P Software, Emerson
- Babur Ozden, CEO, Maana
- Wan Shamilah Saidi, Chief Digital Officer, Petronas
- Jud Jacobs, Executive Director Upstream Energy, IHS Markit, Chair

Tuesday 3/6

4:00 - 4:30 PM

Pod 1

Mineral foundations of the energy transition

- Morgan Bazilian, Executive Director, Payne Institute, Colorado School of Mines

4:00 - 4:30 PM

Pod 2

Machine learning-driven asset optimization

- Michael Brooks, Sr Director Asset Performance Management, AspenTech

4:30 - 5:00 PM

Pod 1

Why blockchain will reshape your industry

- Tomicah Tilleman, Chairman, GBBC

4:30 - 5:00 PM

Pod 2

Is “Net-Zero” a progressive or regressive design policy?

- Wendell Brase, Associate Chancellor for Sustainability, University of California Irvine

5:00 - 5:30 PM

Pod 1

A Future Energy Leaders conversation: Attracting and retaining great talent

- Steve Sonnenberg, Senior Advisor (Former Chairman), Emerson Automation Solutions

5:50 - 6:30 PM

Studio 1

Data and analytics: The next frontier

New levels of computing power, data lake architecture and analytical techniques are driving dramatic improvements in productivity and costs. How will the next generation of data and analyses drive growth and value in the oil and energy company of the future? How can the industry harness the potential while also aligning with competitive, social and regulatory environments?

- Doug Arent, Deputy Associate Laboratory Director, Scientific Computing and Energy Analysis, NREL
- John Hague, SVP and GM, APM, AspenTech
- Yaakov Mutnikas, Executive Vice President, Financial Market Technologies, IHS Markit
- Manas Satapathy, Managing Director, Accenture Strategy
- Paul Markwell, VP Upstream Oil & Gas Research, IHS Markit, Chair

5:50 - 6:30 PM

Studio 2

New ways to finance energy innovation

Traditional finance of early stage energy related projects are giving way to alternative financing mechanisms. These include industry consortia, foundation funding, venture and private equity, super angels, cypto-currencies and more. How will these new investors and new funding techniques impact innovation and time to market? What will be the future role for traditional funding sources? What are the lessons of the recent cycle on investment models and expectations?

- Barbara Burger, President Chevron Technology Ventures, Chevron Corporation
- John Gibson, Senior Advisor, Tudor, Pickering, Holt & Co.
- Rhea Hamilton, Ventures Director, OGCI Climate Investments
- Johanna Schmidtke, Investment Director, Aramco Ventures
- Carolyn Seto, Director Upstream Research Group, IHS Markit, Chair

7:30 - 8:40 AM

Studio 1

Agora Breakfast - Voices of Innovation with Lord Browne of Madingley: Progress and the energy future

Lord Browne of Madingley, the board member of IHS Markit and Executive Chairman L1 Energy is one of the visionaries of energy. In the late 1990s, he led the transformation of BP into one of the world's largest companies. A prolific author with a keen sense to foretell change, he believes that "as the industry adjusts to a new reality, the outlines of a new cycle are beginning to take shape." What makes companies successful in a cyclical industry? How can the industry tackle the dual challenges of energy demand growth and climate change? What can we expect in the future? Join us in a wide-ranging conversation with Lord Browne.

- Lord Browne of Madingley, Board Member IHS Markit
- Atul Arya, SVP and Chief Energy Strategist, IHS Markit, Chair

7:30 - 8:40 AM

Studio 2

Agora Breakfast - Energy Innovation Pioneers: Opportunities in the new energy landscape

What role can startups play in accelerating critical innovation and driving change in the oil and gas industry? Members of the 2018 Energy Innovation Pioneers share their experiences and introduce exciting, scalable solutions that can transform the energy industry of tomorrow.

- Galina Antova, Chief Business Development Officer and Co-Founder, Claroty
- Keith Cole, CEO, Water Lens
- David King, CEO, FogHorn Systems
- Dan Meyer, CEO, EsXplore
- Carolyn Seto, Director Upstream Research Group, IHS Markit, Chair

8:30 - 9:00 AM

Pod 1

Innovation Pioneer Alumni: Azima Global

- Burt Hurlock, CEO, Azima Global

9:00 - 9:30 AM

Pod 1

Putting Carbon to Work: The future of CCUS

- Sally Benson, Director of the Global Climate & Energy Project, Stanford University
- Nazeer Bhore, Manager of Breakthrough Research, ExxonMobil

9:00 - 9:30 AM

Pod 2

Beyond electric: an augmented reality, transportation experience

Brought to the Agora by ABB

9:30 - 10:00 AM

Pod 1

Meta: What's next in augmented reality?

- John Werner, Vice President, Meta

9:30 - 10:00 AM

Pod 2

How Chevron is using AI-driven knowledge models for piping consolidation

- Javier Canon, Director of Customer Delivery, Maana

Wednesday 3/7

9:30 - 10:15 AM

Studio 1

Voices of Innovation with Adam Jonas - Future of mobility

Adam Jonas is an influential Wall Street analyst covering the rapidly evolving mobility sector. Join this “up close” conversation on what lies ahead for this disrupting and disruptive sector, and what might be the shape of the mobility future. What will be the next surprise?

- Adam Jonas, Managing Director, Morgan Stanley
- Jim Burkhard, Vice President, IHS Markit, Chair

9:30 - 10:15 AM

Studio 2

AI & energy: Revolution or evolution?

Artificial Intelligence (AI) is in fashion and is impacting multiple industries - consuming ever larger sets of information to enable faster, more informed decision making. As techniques such as Reinforcement Learning begin to create so-called “superhuman” capabilities, we ask - what are the implications across the energy sector from upstream production to electricity generation and distribution? Is there a revolution brewing because of the step up of information analytics and decision support?

- Dr. Alec Gruss, Head of Digital Solutions, Siemens
- Sila Kiliccote, Managing Director, Grid Innovations, Stanford
- Nick Revelas, Industry Vice President, Uptake
- Morag Watson, Chief Digital Innovation Officer, BP
- Mike Wynne, Senior Director, IHS Markit, Chair

10:00 - 10:30 AM

Pod 1

Tachyus, a TPH disruption company

- Paul Orland, Co-Founder and CTO, Tachyus

10:00 - 10:30 AM

Pod 2

Innovation Pioneer: Introduction to Water Lens

- Keith Cole, CEO and Founder, Water Lens

10:15- 11:00 AM

Studio 1

Methane: The challenge of zero emissions

Methane emissions across the entire energy value chain from production to transportation to distribution to gas storage is a well-known challenge. What innovative technologies are being developed to trace, measure and eliminate methane emissions? How can detection and monitoring be improved? What are some of the successful partnership models? What will it take to get to zero methane emissions?

- Morgan Bazilian, Executive Director and Research Professor, Payne Institute, Colorado School of Mines
- Mark Brownstein, SVP Energy, Environmental Defense Fund
- Pratima Rangarajan, Chief Executive Officer, OGCI Climate Investments
- Atul Arya, SVP and Chief Energy Strategist, IHS Markit, Chair

10:15- 11:00 AM

Studio 2

Blockchain, electric power and the consumer: Disruption on the horizon?

What is the potential for blockchain across power and utilities, and how might it impact consumers? Building on mechanisms to codify trust, blockchain technology can improve efficiency, security, and accountability across a broad range of power applications. Blockchain may also expand investment in emerging and frontier markets, and play a critical role in expanding renewables in the power mix. Join some of the leading start-ups in a session co-hosted

with Global Blockchain Business Council (GBBC) to explore innovative approaches, governance challenges, and effective business models from this nascent technology.

- Veronica Garcia, CEO and Co-Founder, Bitlumens
- Dave Martin, Co-Founder, Power Ledger
- Hervé Touati, President, EnergyWeb Foundation
- Clark Wiedetz, Director Microgrids, Siemens
- Eduard Sala de Vedruna, Director Energy Power, Gas, Coal & Renewables, IHS Markit, Chair

10:30 - 11:00 AM

Pod 1 5G: Implications for the energy systems

- Bill Morelli, Senior Director Enterprise & IT, IHS Markit

10:30 - 11:00 AM

Pod 2 Innovation Pioneer: Introduction to FogHorn

- David King, CEO, FogHorn System

11:00 - 11:30 AM

Pod 1 Authentix: Fingerprinting petroleum for product authentication & integrity

- Dr. Philip Forshee, Senior Principle Scientist, Authentix

11:00 - 11:30 AM

Pod 2 Innovation Pioneer: Introduction to Claroty

- Galina Antova, Chief Business Development Officer and Co-Founder, Claroty

11:30 - 12:30 PM

Studio 1

Voices of Innovation with David Farr, Chairman and CEO, Emerson: Educating tomorrow's workforce

The energy industry faces the twin challenge of an aging workforce and rapid advancement in disruptive technologies. This is driving a fundamental rethinking of how to build the skills and workforce of the future. How, when and where will we educate the workforce of the future - from workplace to professional, secondary and even primary education levels? At the same time, the education system itself is undergoing fundamental transformation, driven by evolving needs, disruptive technologies and digital learning, and cost structures that are not sustainable. What role can the energy industry play in advancing new models and in demanding, driving and testing change? Hear from a leading business and industry leader as he shares his thoughts on what role the energy industry will play in advancing new workforce models and where innovation will happen.

- David Farr, Chairman and CEO, Emerson
- Susan Kish, Agora Curator, IHS Markit, Chair

11:30 - 12:30 PM

Studio 2

Energy & cyber risk

Cyber risks are growing and the energy industry is in the cross hairs, from oil and gas production through the critical infrastructure that underlies national electricity systems. How will industry manage cyber risks both today and tomorrow? How much will need to be invested in that protection? What new risks, lessons and best practices are emerging from disruptive technologies?

- Gary Freburger, President Process Automation Business, Schneider Electric
- Paul K. Kearns, Director, Argonne National Lab
- Leo Simonovich, VP and Global Head, Industrial Cyber and Digital Security, Siemens
- Jeff Zindel, Vice President/General Manager, Honeywell Industrial Cyber Security
- Tate Nurkin, Executive Director Strategic Assessments, IHS Markit, Chair

Wednesday 3/7

11:30 - 12:00 PM

Pod 2 Innovation Pioneer: Introduction to EsXplore

- Dan Meyer, CEO, EsXplore

12:00 - 12:30 PM

Pod 1 Israeli innovative water treatment and desalination technologies

- Bracha Halaf, Chief Scientist, Israel Ministry of Energy and Water Resources

12:00 - 12:30 PM

Pod 2 Urban mobility: GM initiatives

- Alex Keros, Director Urban Mobility, GM

2:00 - 2:30 PM

Pod 1 Blockchain enabled distributed energy markets: Power Ledger

- David Martin, MD, Power Ledger

2:00 - 2:30 PM

Pod 2 Beyond electric: an augmented reality, transportation experience

Brought to the Agora by ABB

2:00 - 3:00 PM

Lounge Blockchain Central

Come meet the people focussed on blockchain and the energy system. Experts, analysts, investors, corporate project leads and early stage companies from around the world gather every day at Blockchain Central. Co-hosted with Global Blockchain Business Council (GBBC).

2:10 - 2:50 PM

Studio 1

Voices of Innovation with Arcandra Tahar, Vice Minister of Energy and Mineral Resources, Republic of Indonesia: Technology & Future of Indonesia Upstream

As countries transition from “easier” to “tougher” producing barrels, the need for greater technology adoption, and tailoring of fiscal terms are seen as some of the necessary elements to bring forth success. How do host governments view the role of technology in unlocking new hydrocarbons? What opportunities and challenges does technology innovation bring for mature producing countries? What additional enablers beyond technology are needed? Join us in a discussion as we look to gain insights on the role of technology with Dr. Arcandra Tahar (Vice Minister of Energy and Mineral Resources for the Republic of Indonesia). Dr. Tahar holds five offshore-related patents and is the co-author of a hydrodynamics and time domain program for the analysis of floating offshore structures.

- Arcandra Tahar, Vice Minister of Energy and Mineral Resources, Republic of Indonesia
- Nick Sharma, MD APAC Head of Upstream Research & Consulting, IHS Markit, Chair

2:10 - 2:50 PM

Studio 2

Voices of Innovation with Professor Vaclav Smil: Energy Transitions

Vaclav Smil does interdisciplinary research in the fields of energy, environmental and population change, food production and nutrition, technical innovation, risk assessment, and public policy. He makes rational and logical arguments on why energy transitions are inherently complex and prolonged affairs, and how ignoring this fact raises unrealistic expectations that global economies can be weaned quickly from a primary dependency on fossil fuels. What does the history of

energy transitions and scaling innovations tells us? Why is it so difficult to change the global energy system? Will the next transition be an evolution or revolution? In this conversation we will separate hype from reality.

- Professor Vaclav Smil, Distinguished Professor Emeritus, University of Manitoba
- Atul Arya, SVP and Chief Energy Strategist, IHS Markit, Chair

2:50 - 3:05 PM

Book Corner **Voices of Innovation with Professor Vaclav Smil: Book Signing**

Join author Vaclav Smil in our Agora Book Corner to receive a signed copy of his book - [Energy and Civilization: A History](#)

- Professor Vaclav Smil, Distinguished Professor Emeritus, University of Manitoba

2:30 - 3:00 PM

Pod 1 **The future of human-plant collaboration: A case study demo**

- Hakon Berg, Technology Development Manager, ABB

2:30 - 3:00 PM

Pod 2 **What's next in battery storage for offshore & marine**

- Stig Settemsdal, Chief Technology Officer, Siemens Offshore Solutions

3:00 - 3:30 PM

Pod 1 **Innovation Pioneer Alumni: Rhediant - Oilfield assets & IoT**

- Murat Ocalan, CEO & Founder, Rhediant

3:00 - 3:30 PM

Pod 2 **The opportunities in superconducting materials: MetOx, a TPH disruption company**

- Jim Jewitt, President, MetOx

3:25 - 4:15 PM

Studio 1 **The Cloud, the edge and the future of connectivity**

The cloud holds the promise of a safe, highly scalable, and powerful means for managing huge amounts of data and computation. But the fundamental cloud assumption - consolidate compute and data in centralized data centers - is in direct contradiction to the typical energy data generation model of large, but distributed, data sets. How can new telecom network models, like 5G with compute moved to the edge, help the energy sector where locations are often off the grid? How will the cloud drive the shape of innovation across energy, with its structural impact of shifting traditional strengths from large incumbents with huge capital budgets to small early stage firms?

- Claudio Fayad, VP Technology, Emerson Automation Solutions
- Guido Jouret, Chief Digital Officer, ABB
- Bill Vass, Vice President of Engineering, Amazon Web Services
- Cliff Grossner, Senior Research Director, IHS Markit, Chair

3:30 - 4:00 PM

Pod 1 **How to restore capital project confidence**

- Jim Nyquist, Group President Systems & Solutions, Emerson

3:30 - 4:00 PM

Pod 2 **Modular immersion cooled battery pack for commercial vehicles**

- Azizi Tucker, CTO and Co-Founder, Xing Mobility

Wednesday 3/7

4:00 - 4:30 PM

Pod 1

BitLumens: An introduction

- Veronica Garcia, CEO/Founder, Bitlumens

4:00 - 4:30 PM

Pod 2

Disruption in lithium ion: Powermers

- Sam Kogan, CEO & Co-Founder, Powermers

6:30 - 9:00 PM

Agora

The Disruptors Dinner

SPONSORED BY TUDOR, PICKERING, HOLT & CO.

Experience an evening of the unexpected as Hilton America's Executive Chef Ruffy Sulaiman and Guest Chef Kaiser Lashkari explore where culinary art intersects with innovation, inspiration and disruption. This unique evening is guaranteed to surprise and delight and provide a special opportunity to connect with leaders across the technology, innovation and investment communities. By invitation only.

- Kaiser Lashkari, Chef, Himalaya Restaurant & Catering
- Ruffy Sulaiman, Executive Chef, Hilton Americas
- Maynard Holt, CEO, Tudor, Pickering, Holt & Co., Chair

TUDORPICKERING
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ENERGY INVESTMENT &
MERCHANT BANKING

Thursday 3/8

7:30 - 8:40 AM

Studio 1

Agora Breakfast - Voices of Innovation with Varun Sivaram: Taming the Sun

Varun Sivaram is the Philip D. Reed fellow for science and technology at the Council on Foreign Relations and author of "Taming the Sun". Solar energy is the world's cheapest and fastest-growing power source, but its rise is in danger of stalling. Sivaram argues that realizing solar's potential will require innovation - creative financing, revolutionary technologies, and flexible energy systems. Is the world equipped to harness solar energy and continue its exponential growth? Will solar PV become dominant as a source of power or will it be a niche player? Join a conversation with Dr. Sivaram on how the world can tame the sun and make money at the same time.

- Varun Sivaram, Philip D. Reed Fellow for Science and Technology, Council of Foreign Relations
- Atul Arya, SVP and Chief Energy Strategist, IHS Markit, Chair

7:30 - 8:40 AM

Studio 2

Agora Breakfast - Energy Innovation Pioneers: Opportunities in the new energy landscape

What role can startups play in accelerating innovation and driving disruptive change in the energy and power business? Members of the 2018 Energy Innovation Pioneers share their experiences and introduce exciting, scalable solutions that may transform the energy industry of tomorrow.

- Kevin Robert, Chairman and CEO, M-TriGen
- Paul Spencer, CEO, Clean Energy Collective
- Frank van Mierlo, CEO and Founder, 1366 Technologies
- Alex Klaessig, Director, Power, Gas, Coal, & Renewables, IHS Markit, Chair

8:30 - 9:00 AM

Pod 1

Innovative pumped storage solution

- Dr Terry Harvill, President Grid Development, ITC

8:40 - 8:55 AM

Book Corner

Voices of Innovation with Varun Sivaram: Book Signing

Join author Varun Sivaram in our Agora Book Corner to receive a signed copy of his book - [Taming the Sun: Innovations to Harness Solar Energy and Power the Planet](#)

- Varun Sivaram, Philip D. Reed Fellow for Science and Technology, Council of Foreign Relations

9:00 - 9:30 AM

Pod 1

Sunnova, Puerto Rico and the emergence of wireless power

- John Berger, Founder and CEO, Sunnova

9:00 - 9:30 AM

Pod 2

Beyond electric: an augmented reality, transportation experience

Brought to the Agora by ABB

9:30 - 10:00 AM

Pod 2

Rural electrification

- Ricky Buch, Commercial Director, Energy Access & Hybrid Distributed Power, GE Power

10:00 - 10:30 AM

Pod 1

Oleo Sponge: A revolution in oil spill cleanup

- Edward Barry, Applications Scientist, Argonne National Lab

10:00 - 10:30 AM

Pod 2

Innovation Pioneer: Introduction to 1366 Technologies

- Frank van Mierlo, CEO & Founder, IP 1366 Technologies

10:30 - 11:00 AM

Pod 1

Feeding the planet: Where energy and agriculture intersect

- Kurt Kelty, COO, Plenty

10:30 - 11:00 AM

Pod 2

Innovation Pioneer: Introduction to Clean Energy Collective

- Paul Spencer, CEO Clean Energy Collective

10:30 - 11:15 AM

Studio 1

Electric power: Disruption, innovation, and new business models

As distributed sources of electricity gain a bigger foothold in the power system, there are many new business models emerging. What are some of the new business models that are disrupting the traditional players? As business models change, what will be the sources of revenue and margin? Will the traditional advantages of being a strong incumbent continue? How critical will it be to have asset ownership in order to have access to customers?

- Thomas Birr, SVP Innovation & Business Transformation, Innogy
- Katherine Hamilton, Chair, 38 North Solutions
- Anuja Ratnayake, Director Emerging Technology Strategy, Duke
- Bob Yeager, President, Automation, Power & Water Solutions, Emerson
- Philippe Frangules, VP and GM Power, Gas, Coal & Renewables, IHS Markit, Chair

Thursday 3/8

11:00 - 11:30 AM

Pod 1

Securing your power with superconductors

- Paul J. Murphy Ph. D., Managing Director and GM Fault Current Limiter products, Applied Materials

11:00 - 11:30 AM

Pod 2

Innovation Pioneer: Introduction to M-TriGen

- Kevin Robert, Chairman and CEO, M-TriGen

11:30 - 12:30 PM

Studio 1

Energy, mobility and the future of the city

A wave of new technologies, from the impact of shared and autonomous vehicles on the future design of streets, through simply capturing new sources of data and deeply understanding energy utilization, are having a dramatic impact on the design and future of the urban environment. How are data analytics, machine learning and advanced imaging being applied to rethink power delivery? How will innovations, ranging from EVs to vertical farming, change the urban experience of the future? How can urban utilities prepare for this rapidly changing world?

- Greg Dobler, Director of the CUSP Urban Observatory, New York University
- Kurt Kelty, SVP Operations and Market Development, Plenty
- Alex Keros, Director Urban Mobility, GM
- Curt Kirkeby, Technology Strategist, Avista
- Roger Kranenburg, Director Global Power, Eversource, Chair

11:30 - 12:30 PM

Studio 2

Building the resilient grid of the future: Microgrids and beyond

What's ahead for microgrids and the resilient grid of the future? What innovation is occurring to enable operators more effectively to address the challenges of intermittent and distributed generation, and leverage new generation and distribution technologies? How will systems be reinforced to withstand the extreme weather and natural disasters seen as "regular" occurrences? Given the necessity to rebuild, should grids be simply replaced? Hear first hand from experiences including Hurricanes Sandy, Maria and Harvey.

- John Berger, Founder and CEO, Sunnova
- Steve Martin, VP & CTO, GE Power
- Dr Reginald Des Roches, Dean of George R. Brown School of Engineering, Rice University
- Gil Quiniones, President and CEO, NY Power Authority
- Blake Eskew, VP Global Consulting, IHS Markit, Chair

11:30 - 12:00 PM

Pod 1

Bitcoin & energy: Best friends?

- Marc Taverner, Head of Business Development, BitFury

11:30 - 12:00 PM

Pod 2

Microfluidic visualization of oil processes:

A Real "Reservoir-on-a-Chip"

- Dr. Sibani Lisa Biswal, Associate Professor, Rice University

12:45 - 1:15 PM

Studio 2

Voices of Innovation with Rich Wilson: Inspiring the Next Generation

As an educator, adventurer and explorer Rich Wilson has impacted hundreds of thousands of young people around the world. He turned his Vendee Globe solo circumnavigation sailing race into a living classroom for students on every continent. Every aspect of his journey was tracked in real time, offering a unique and exciting experiential STEM teaching

opportunity. Learn about his remarkable voyage of discovery, and his ideas for how to engage and inspire future generations of scientists and engineers.

- Rich Wilson, President, sitesALIVE Foundation
- Susan Kish, Agora Curator, IHS Markit, Chair

1:15 - 1:30 PM

Book Corner **Voices of Innovation Book Signing - Rich Wilson**

Join author Rich Wilson in our Agora Book Corner to receive a signed copy of his book - [Race France to France: Leave Antarctica to Starboard](#)

- Rich Wilson, President, sitesALIVE Foundation

2:00 - 2:30 PM

Pod 1 **A new energy system**

- Mirko Molinari, Global Commercial and Marketing Executive for Energy Storage, GE Power

2:00 - 2:30 PM

Pod 2 **Beyond electric: an augmented reality, transportation experience**

Brought to the Agora by ABB

2:00 - 3:00 PM

Lounge **Blockchain Central**

Come meet the people focussed on blockchain and the energy system. Experts, analysts, investors, corporate project leads and early stage companies from around the world gather every day at Blockchain Central. Co-hosted with Global Blockchain Business Council (GBBC).

2:15 - 3:05 PM

Studio 1

Next generation nuclear: Breakthroughs on the horizon?

Interest in new generation nuclear systems is heating up. What is the state of fusion research? Are new breakthroughs on the horizon? What are the challenges facing small modular fission reactors currently under development? Will the burgeoning privately funded nuclear industry accelerate the pace of development and commercialization of next generation nuclear? What is the role of long-term risk capital in moving these efforts forward?

- John Hopkins, Chairman & CEO, NuScale Power
- Bob Mumgaard, Chief Executive Officer, Commonwealth Fusion Systems
- Dennis Whyte, Head, Nuclear Science and Engineering; Director, Plasma Science and Fusion Center, MIT
- Lou Carranza, Associate Director, MIT Energy Initiative, Chair

2:30 - 3:00 PM

Pod 1 **Urbanova, creating the shared energy economy**

- Curt Kirkeby, Fellow Engineer, Avista Utilities

2:30 - 3:00 PM

Pod 2 **ThinkTopic, a TPH disruption company**

- Jeff Rose, CEO, ThinkTopic

3:00 - 3:30 PM

Pod 1 **Imagine: Design through innovation and sequence**

- Jason Ramos, Principal, Synthesisdesign

3:00 - 3:30 PM

Pod 2 **Energy systems that always work: Advanced analytics software**

- Ryan Blitstein, VP Renewable Energy, Uptake
- Mike Donohue, VP Thermal Generation and Utilities, Uptake

Thursday 3/8

3:05 - 3:55 PM

Studio 1

Habitat: Future of the built environment

The built environment is undergoing a transformation driven by the convergence of new technologies. This will have profound implications for energy consumption and power systems. Buildings consume a lion's share of the world's power. How is connectivity, data analytics and machine learning changing the built world of the future? How will advanced lighting, demand control systems for air, and agile design technologies in combination improve human health and energy consumption? What are the barriers to adoption of these technologies? What will be the building habitat of the future?

- Wendell Brase, Associate Chancellor for Sustainability, University of California - Irvine
- Susan Hakkarainen, Chairman and Co-CEO, Lutron
- Mike Lepech, Associate Professor of Civil and Environmental Engineering, Stanford
- Justin Siller, Associate Director, IHS Markit, Chair

3:30 - 4:00 PM

Pod 1

Innovation Pioneer Alumni: Aircuity

- Dan Diehl, CEO, Aircuity

3:30 - 4:00 PM

Pod 2

Electricity rates for the 21st century: The evolving nervous system of the power sector

- Scott Burger, PRIME Technology Investor, MIT

4:00 - 4:30 PM

Pod 1

EnergyWeb Foundation: An Introduction

- Hervé Touati, President, EnergyWeb Foundation

4:10 - 5:00 PM

Studio 1

Electrification of everything: The transformation of energy systems

There is increasing belief that electricity derived from renewable resources will ultimately replace hydrocarbons as the fuel of choice to provide "Energy for Everything": from automobiles, to steel plants, to airplanes. If true, this will be the biggest change in the global energy system in more than a century. What will it take to realize this vision? What will happen to the existing infrastructure if this transformation takes place? What pressures will arise because of the absolute need to be everywhere and all the time? How will intermittent power sources, such as wind & solar, be integrated into the new energy system?

- Claudio Facchin, President Power Grids Division & Member of the Group Executive Committee, ABB
- Jon Jipping, Executive Vice President and Chief Operating Officer, ITC Holdings
- Lee Mazzocchi, SVP Grid Solutions, Duke Energy
- Roger Kranenburg, Director Global Power, Eversource, Chair

4:30 - 5:00 PM

Pod 2

Better cities through imaging

- Greg Dobler, Urban Observatory, NYU

5:00 - 5:30 PM

Pod 1

Inspiring the next-generation workforce

- Donald E. Bossi, President, FIRST

5:00 - 5:30 PM

Pod 2

Efficiency in innovation: What's driving the brain?

- Ben Jolliffe, Founder, Feed the Fire

5:15 - 6:15 PM

Studio 1

EV's and the grid: Challenges and opportunities

As electric vehicle adoption accelerates and charging infrastructure proliferates, utilities have new opportunities. But these changes also raise issues related to reliability, load management, and investment. What models exist for utilities to capitalize on the opportunities while minimizing the risk, and how are new business models and partnerships changing the landscape.

- Roger Kranenburg, Director Global Power, Eversource
- Sergej Mahnovski, Director of Innovation & Growth, Edison International
- Francis O'Sullivan, Director of Research, MIT Energy Initiative
- Greg Scheu, President, Americas Region, ABB
- Kate Hardin, Senior Director, IHS Markit, Chair

6:00 - 6:30 PM

Studio 2

Voices of Innovation with Walter Isaacson, President, The Aspen Institute and author, interviewed by Maynard Holt, energy banker: Inventive imagination

Join this up-close interview by energy banker, Maynard Holt, with Walter Isaacson, bestselling author of Einstein, Steven Jobs, the Innovators and most recently Leonardo da Vinci. Isaacson is a foremost authority on innovation, genius and the history of science and technology. What can the energy industry learn from the greatest innovators in human history?

- Maynard Holt, CEO, Tudor, Pickering, Holt & Co.
- Walter Isaacson, President, The Aspen Institute

6:30 - 6:45 PM

Book Corner

Voices of Innovation Book Signing - Leonardo da Vinci

Join author Walter Isaacson in our Agora Book Corner to receive a signed copy of his book - Leonardo da Vinci

- Walter Isaacson, President, The Aspen Institute



Experiences



Beyond electric: an augmented reality, transportation experience.

The future of mobility and the city is here. Join us in a Hololens journey through the modular mobility options of the future – and of today. Ride the Hyperloop, jump into a vertical taxi, drive an e-race car, and more. Brought to the Agora by **ABB**.

Scheduled Tuesday - Thursday at 9AM and 2PM in the Agora Pod 2

Digital Ecosystem: The Future of Work

Digitization is transforming business performance, but is also transforming the way people work. Automation and mixed reality technologies are shaking up old models. Visit the Emerson Digital Ecosystem to “follow the molecule” from reservoir to downstream processing, and explore the intersection of IoT technologies and people. Brought to the Agora by **Emerson**.

The ABB Formula E race car

The ABB FIA Formula E Championship unites two pioneers at the forefront of electrification and digital technologies for the world’s first fully electric international motorsport series. The series is more than just motor racing for single seater electric racing cars. It’s a competitive platform to test and develop road-relevant technologies – helping refine the design and functionality of electric vehicle components and speeding up the transition and uptake of clean transportation on a global scale. This car is in between races in Mexico City and Uruguay. Brought to the Agora by **ABB**.

The D2OLab

An interactive environment where executives can test their expertise against industrial machine learning. In this fast-paced simulation, players see how their decisions match up with a digital plant that employs the latest asset performance management technology – from digitalization to optimization.

Covering a year of operation on an offshore oil platform, executives compete head-to-head against the digitally optimized plant. From normal conditions through a number of critical issues, defend the facility against equipment failure, unplanned downtime and loss of production and profits, and see where your skills rank on the AspenTech D2OLab leaderboard. Brought to the Agora by **AspenTech**.

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 and experience their promise to disrupt the energy industry for themselves. This year, we feature technologies facilitating the decentralization and democratization of operational decisions, offering the potential to transform the nature of field operations.

- **FogHorn Systems** an edge computing platform that processes, analyzes, and responds to industrial IoT data, right where devices reside.
- **Water Lens** a fast, accurate and repeatable water testing platform that enables anyone to test water from anywhere in the world – even in the Agora!

Swiss chocolate and Houston coffee roasters

We're proud to bring **Greenway Roasters** back to the Agora to set up our very own Agora Café, and we're even happier to have YuMi bring her robotic talents to wrapping individual Swiss chocolates to go with every cup. Brought to you by the **Agora partners and ABB**.



Speakers



Speakers

Speaker	Title	Company
Oscar Abbink	Director Energy Upstream Research Group	IHS Markit
Mark Abbott	President and Director	Woods Hole Oceanographic Institution
Haitham Al-Ghais	Manager - European Regional Office	KPC
Ahmad Al-Khowaiter	Chief Technology Officer	Saudi Aramco
Corie Allemand	Director for Pipelines	Siemens
Galina Antova	Co-Founder and 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, Energy	IHS Markit
Charlie Atkins	Director of Development	Wyoming Innovation Park
Neil Atkinson	Head of the Oil Industry and Markets Division	IEA
Fellipe Balieiro	Senior Consultant	IHS Markit
Rodrigo Barragan	Senior Manager	Accenture Strategy
Kurt Barrow	VP of the Oil Markets, Midstream and Downstream Energy	IHS Markit
Edward Barry	Applications Scientist	Argonne National Lab
Don Bartusiak	Chief Process Control Engineer, EM Research and Engineering	ExxonMobil
Morgan Bazilian	Executive Director and 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 of the Global Climate & Energy Project	Stanford University
Hakon Berg	Technology Development Manager	ABB
William J. (John) Berger	Founder and Chief Executive Officer	Sunnova Energy Corporation
Sampriti Bhattacharyya	CEO	Hydroswarm
Nazeer Bhore	Manager of Breakthrough Research	ExxonMobil
Fatih Birol	Executive Director	International Energy Agency
Thomas Birr	Senior Vice President Innovation & Business Transformation	innogy SE

Speaker	Title	Company
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, LLC
Donald E. Bossi	President	FIRST
Dr. Matthew Brake	Professor Mechanical Engineering	Rice University
Wendell Brase	Associate Chancellor for Sustainability	University of California - Irvine
Michael Brooks	Sr. Director Asset Performance Management	AspenTech
Lord Browne of Madingley	Board Member	IHS Markit
Mark Brownstein	SVP, Energy	Environmental Defense Fund
Ricky Buch	Commercial Director, Energy Access & Hybrid Distributed Power	GE Power
Cary Bullock	CEO	Atrex
Barbara J. Burger	President, Chevron Technology Ventures	Chevron Corporation
Scott Burger	PRIME Technology Investment Advisor	MIT
Jim Burkhard	Vice President	IHS Markit
Sabine Busse	SVP, Group Head Marketing & Sales	ABB
Javier Canon	Director of Customer Delivery	Maana
Lou Carranza	Associate Director	MIT Energy Initiative
Vivek Chidambaram	Managing Director Energy	Accenture Strategy
Keith Cole	CEO and Founder	Water Lens
Jonathan Crane	VP, Wells Technology Development	Shell
Helen Currie	Chief Economist	ConocoPhillips
Bashir Dabbousi	Director - Technology Strategy & Planning	Saudi Aramco
Jeff Dalglish	Head of Oil & Gas Digitalization	Maana
Fernando De Mattos	Head of Technology Shale and Conventional Petroleum	BHP
Ray Dempsey	Chief Diversity Officer	BP
Dr. Reginald DesRoches	Dean of George R. Brown School of Engineering	Rice University
Dan Diehl	CEO	Aircuity
Greg Dobler	Director of the CUSP Urban Observatory	NYU
Mike Donohue	VP Thermal Generation and Utilities	Uptake
Timothy L. Dove	President and CEO	Pioneer Natural Resources

Speaker	Title	Company
Raymond Eby	VP for Automotive Electrification Program	3M
Janice Ee-Ping Mah	Global HR Design and Planning Manager	ExxonMobil Corporation
Dan Eisner	Co-Founder	OilCoin Digital Reserve
Daniel R. Ennis	Global Head of Advanced Threat Intelligence	Blue Voyant
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
Oliver Fetzter	CEO	Synthetic Genomics, Inc.
Dr. Philip Forshee	Senior Principle Scientist	Authentix
Philippe Frangules	VP and GM Power, Gas, Coal & Renewables	IHS Markit
Gary Freburger	President Process Automation Business	Schneider Electric
Ric Fulop	CoFounder & CEO	Desktop Metal
Veronica Garcia	CEO/Founder	Bitlumens
John Gibson	Senior Advisor	Tudor Pickering Holt & Company
Paul Goodfellow	EVP Wells	Shell
Diane Greene	CEO	Google Cloud
Roger Griffiths	Team Principle and Chief Technology Officer	Andretti Autosport
Cliff Grossner	Senior Research Director	IHS Markit
Dr. Alec Gruss	Head of Digital Solutions	Siemens
John Hague	SVP and GM, APM Business Unit	Aspen Tech
Susan Hakkarainen	Co-Chairman and Co-CEO	Lutron Electronics
Bracha Halaf	Chief Scientist	Israel Ministry of Energy and Water Resources
Katherine Hamilton	Chair	38 North Solutions
Rhea Hamilton	Venture Director	OGCI
Kate Hardin	Senior Director	IHS Markit
Dr. Terry Harvill	President Grid Development	ITC Holdings Corp
Ahmed Hashmi	VP Strategy and Technology Management	BP
Jon Hirschtick	Co-Founder & CEO	OnShape
David Hobbs	Head of Research	Kapsarc
Mike Hogan	CEO	Deep Data
Maynard Holt	CEO	Tudor Pickering Holt & Company
Tim Holt	CEO	Siemens Power Generation Services

Speaker	Title	Company
Burt Hurlock	CEO	Azima Global
Walter Isaacson	President	The Aspen Institute
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
Coleman Jones	Technical Fellow	General Motors
Guido Jouret	Chief Digital Officer	ABB
Dr. Christoph Kandziora	Technology & Innovation	Siemens
Dr. Lydia Kavraki	Professor, Computer Science, Bioengineering, Electrical & Computer Engineering, and Mechanical Engineering	Rice University
Paul Kearns	Director	Argonne National Lab
Kurt Kelty	Senior Vice President Operations and Market Development	Plenty
Alex Keros	Director Urban Mobility	GM
David King	CEO	FogHorn Systems
Anthony Kirincich	Head of 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	Biota
Michael Lambert	President & CEO	Wireless Seismic Inc.
Dr. John M. Lervik	CEO	Cognite
Thomas Leurent	Co-Founder and CEO	Akselos
Lars Peter Lindfors	SVP, Technology	Neste Corporation
Victor Liu	President	Hunt Energy Enterprises
Christina Lomasney	President & CEO	Modumetal
Borghild Lunde	SVP, Oil Gas & Chemicals Norway	ABB
Sergej Mahnovski	Director of 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	Power Ledger
Steve Martin	VP & CTO	GE Power
Arshad Matin	President, E&P Software	Emerson
Lee Mazzocchi	SVP Grid Solutions	Duke Energy

Speaker	Title	Company
Dan Meyer	CEO	EsXplore
Marie Lynn Miranda	Provost	Rice University
Esteban Montero	Systems Engineer	Chevron
Bill Morelli	Senior Director Enterprise & IT	IHS Markit
Bob Mumgaard	CEO	Commonwealth Fusion Systems
Paul J. Murphy Ph.D.	Managing Director and GM Fault Current Limiter products	Applied Materials
Yaakov Mutnikas	EVP	IHS Markit
Michael Newell	CEO	Ener-g-rotors
Shaw Nguyen	Principal Technology Business Partner – Petroleum	BHP
Tate Nurkin	Executive Director Strategic Assessments	IHS Markit
Jim Nyquist	Group President Systems and Solutions	Emerson Automation Solutions
John O'Donnell	VP of Business Development	GlassPoint
Francis O'Sullivan	Director of Research	MIT Energy Initiative
Dr. Jan Odegard	Professor	Rice University
Matt Oндler	CEO	Houston Mechatronics
Paul Orland	Co-Founder and CTO	Tachyus
Babur Ozden	Founder & CEO	Maana
Antonio Pietri	President & CEO	AspenTech
Dave Pursell	Managing Director	Tudor Pickering Holt & Company
Gil Quiniones	President and Chief Executive Officer	New York Power Authority
SSV Ramakumar	Director R&D	IndianOil Corporation Ltd.
Jason Ramos	Principal	Synthesisdesign
Pratima Rangarajan	CEO	OGCI
Anuja Ratnayake	Director, Emerging Technology Strategy	Duke
Nick Revelas	Industry Vice President	Uptake
Jeff Rose	CEO	ThinkTopic
Wan Shamilah Saidi	Chief Digital Officer	Petronas
Manas Satapathy	Managing Director	Accenture Strategy
Greg Scheu	President, Americas Region	ABB
Johanna Schmidtke	Investment Director	Aramco Ventures
Carolyn Seto	Director Upstream Research Group	IHS Markit
Stig Settemsdal	Chief Technology Officer	Siemens Offshore Solutions
Nick Sharma	MD APAC Head of Upstream Research & Consulting	IHS Markit
Justin Siller	Associate Director	IHS Markit
Leo Simonovich	VP and Global Head Industrial Cyber and Digital Security	Siemens

Speaker	Title	Company
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 (Former Chairman)	Emerson Automation Solutions
Paul Spencer	CEO	Clean Energy Collective
Ulrich Spiesshofer	President & Chief Executive Officer	ABB
Shankari Srinivasan	Managing Director	IHS Markit
Bob Stojanovic	Manager, EV Charging	ABB
Vijay Swarup	Vice President of R&D	ExxonMobil Research & Engineering
Gert Sylvest	Co-founder and CTO	Tradeshift
Arcandra Tahar	Vice Minister of Energy Minister and Mineral Resources	Republic of Indonesia
Marc Taverner	Head of Business Development	BitFury
Tomicah Tillemann	Chairman	Global Blockchain Business Council
Hervé Touati	President	EnergyWeb 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 of Customer Solutions	Maana
Morag Watson	Chief Digital Innovation Officer	BP
Ian Weightman	Vice President Technology	IHS Markit
John Werner	Vice President	Meta
Tom Werner	President & CEO	SunPower
Lisa Westlake	EVP and Chief Human Resources Officer	IHS Markit
Dennis Whyte	Professor Nuclear Science & Engineering	MIT
Clark Wiedetz	Director Microgrids	Siemens
Scott Williams	VP of Global Sales	Wireless Seismic
Richard Wilson	President	sitesALIVE Foundation
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



Agora Partners



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ABB is a pioneering technology leader in electrification products, robotics and motion, industrial automation and power grids, serving customers in utilities, industry and transport & infrastructure globally. Continuing a more than 125-year history of innovation, ABB today is writing the future of industrial digitalization and driving the Energy and Fourth Industrial Revolutions. ABB operates in more than 100 countries with about 136,000 employees.

Take command of your business with ABB Ability™ to deliver actionable intelligence that improves margins and allows you to focus on profitable growth. ABB's deep domain expertise in connectivity and unmatched experience helps you leverage the power of today's digital revolution.

At a time when oil and gas producers are facing fluctuating prices and intense competition, digital technologies offer new opportunities to improve economies of scale and optimize production. From wellhead to refinery, ABB specializes in mastering the control loop and transforming client operations through actionable insights that optimize performance in real time. ABB's intelligent, integrated solutions help you minimize cost, schedule and risk across the full hydrocarbon value chain.

As the market and technology leader in power transmission and distribution, ABB is the partner of choice for a stronger, smarter and greener grid. With unmatched application know-how and the broadest offering of products, systems, services and software, ABB is ideally positioned to help utility customers manage increasing grid complexity, integrate renewables and expand the grid to accommodate growing demand from rail, data centers, electric vehicles and industry.

Success in a challenging market demands innovation. Transform your operations with ABB's pioneering technologies to improve efficiencies, enhance reliability, reduce risk and optimize resources. Let's write the future. Together.

TUDOR PICKERING HOLT & CO | ENERGY INVESTMENT & MERCHANT BANKING

Tudor, Pickering, Holt & Co. is an integrated investment and merchant bank providing high quality advice and services to the energy industry. The company offers sales and trading, and research coverage on approximately 140 issuers worldwide. The firm's investment management complex has more than \$1.9 billion AUM dedicated to the energy space. Headquartered in Houston, Texas, TPH also has offices in Calgary, Denver, London and New York.



About Accenture

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world’s largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With more than 435,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

About Accenture Strategy

Accenture Strategy operates at the intersection of business and technology. We bring together our capabilities in business, technology, operations and function strategy to help our clients envision and execute industry-specific strategies that support enterprise-wide transformation. Our focus on issues related to digital disruption, competitiveness, global operating models, talent and leadership helps drive both efficiencies and growth. For more information, follow @AccentureStrat or visit www.accenture.com/strategy.

aramco



energy ventures

Saudi Aramco Energy Ventures (SAEV) is the corporate venturing subsidiary of the Saudi Aramco, the world's leading fully integrated energy and petrochemical enterprise. Headquartered in Dhahran with offices in North America and Europe, SAEV's mission is to invest globally in start-ups and high growth companies with technologies of strategic importance to its parent, Saudi Aramco. We invest in upstream and downstream oil and gas, petrochemicals, renewables, energy efficiency and water sectors. Our objective is to deploy technologies that enhance the identification and management of reserves, enhance primary energy production, improve operational efficiency, increase value capture in downstream processing, and support optimization of energy and water consumption. For more information about SAEV, visit www.saev.com



Technology That Loves Complexity

We're obsessed with innovation and continuous improvement — from our MIT roots to our scores of product industry firsts to our extraordinarily talented employees who ask “what if” questions every day... stretching the boundaries of what's possible is part of our DNA.

Our software tackles the most complex process manufacturing challenges, creating value and improving profitability for our customers. The industries that drive our economies and touch our lives are optimized by aspenONE software every day. The world's leading oil & gas, chemical, engineering & construction, pharmaceutical, food, beverage, and consumer packaged goods companies all rely on AspenTech to run their business.

With integrated aspenONE software, our customers can better design, operate and maintain their complex manufacturing environments. AspenTech customers use our solutions to improve their competitiveness and profitability by increasing throughput and productivity, reducing operating costs and unplanned downtime, enhancing capital efficiency, and decreasing working capital requirements.

Our products represent the industry standard in asset optimization, helping hundreds of thousands of users at over 2,100 companies drive profitability faster and more efficiently than ever before.



Emerson is a global automation engineering and technology leader, propelling the world's premier industrial companies into benchmark setting performance throughout the lifecycle of their investments. At Emerson, we call it Top Quartile.

For decades, leaders in oil & gas, refining, power, chemical, mining and other process industries have turned to Emerson's expertise and innovations to deliver predictable project success. Emerson has been called upon to provide services and technologies to the world's largest and most complex projects, helping customers eliminate unnecessary capital construction costs, reduce project complexity and restore schedule certainty. Once an asset is up and running, our clients leverage Emerson's unparalleled automation technology portfolio to achieve Top Quartile operational performance through maximum production availability and throughput, lower energy costs and reduced safety risk.

Emerson's leadership extends from pervasive sensing technologies and the most reliable control elements to the industry's most advanced software platforms for operations management and asset health. Emerson's employees around the world wake up each day ready to take on our customers' toughest challenges, turning "never been done before" into "consider it solved".



GE brings our customers efficiency and cost effectiveness across the entire energy value chain. From greater oil and gas recovery, to wind farms that adjust to weather changes, to vessels that predict potential failure, to power plants that use analytics to increase their efficiency – GE marries the digital and physical solutions needed to bring energy to people in an increasingly complex world.

GE is the world's Digital Industrial Company, transforming industry with software-defined machines and solutions that are connected, responsive and predictive. GE is organized around a global exchange of knowledge, the “GE Store,” through which each business shares and accesses the same technology, markets, structure and intellect. Each invention further fuels services, technology and scale, GE delivers better outcomes for customers by speaking the language of industry.



Hunt Consolidated, Inc. is a diversified holding company for a privately owned group of entities based in Dallas, Texas. The areas of activity of the different Hunt companies include oil and gas exploration and production, refining, LNG, power, real estate, investments, ranching and infrastructure. From the company's initial focus on energy in the earliest days of the American oil and gas industry, the success of the Hunt family of companies has allowed for growth in a variety of industries.



Maana was recognized by CERAWEEK as a 2017 Energy Innovation Pioneer. Maana has invented a new way to represent industrial knowledge mathematically, using the Maana Patented Computational Knowledge Graph™. This unique technology enables industrial companies to encode human expertise and data from across silos into digital knowledge to help employees make better and faster decisions. Using the Maana Knowledge Platform™, Fortune 500 industrial companies accelerate digitizing operations by increasing the speed at which they build AI-Driven Knowledge Applications. These Knowledge Applications are powered by models that provide recommendations into specific decision flows, delivering hundreds of millions of dollars in value to their business.

Maana's strategic investors are comprised of Frost Data Capital, GE Ventures, Intel Capital, Chevron Technology Ventures, Saudi Aramco Energy Ventures, Shell Technology Ventures, Accenture Ventures, CICC, Eight Square Capital, and Sino Capital. Customers include Fortune Global 500 companies such as Airbus, BHP, Chevron, GE, Maersk and Shell.



RICE

Energy and Environment Initiative

Rice University is consistently ranked among the nation's top 20 universities by U.S. News & World Report. With an undergraduate student-to-faculty ratio of approximately 6-to-1 and residential college system, there are many reasons why Rice is highly ranked for best quality of life by the Princeton Review and for best value among private universities by Kiplinger's Personal Finance.

Set in the heart of Houston, Texas, the nation's fourth-largest city, Rice is a comprehensive, leading research university that fosters diversity and an intellectual environment that produces the next generation of leaders and advances tomorrow's thinking.



Salesforce is the global leader in customer relationship management (CRM), helping companies connect with their customers in a whole new way. Founded in 1999, Salesforce enables companies of every size and industry to take advantage of powerful Fourth Industrial Revolution technologies—cloud, mobile, social, internet of things, and artificial intelligence—to get closer to their customers. The Salesforce Customer Success Platform includes industry-leading services spanning sales, service, marketing, commerce, communities, collaboration and industries, all on a single trusted cloud platform.

Salesforce will power 2 trillion B2B and B2C transactions this year for more than 150,000 companies and millions of Trailblazers—the individuals and their organizations who are using Salesforce to drive innovation, grow their careers and transform their businesses. They are customer innovators, technology disruptors and global shapers.

Salesforce is committed to a set of core values — trust, growth, innovation, and equality of every human being. The company is ranked #1 on Fortune’s World’s Best Workplaces list, and Forbes has named Salesforce “Innovator of the Decade.” Salesforce is currently #326 out of the Fortune 500. Salesforce is headquartered in San Francisco with 30,000 employees, and is publicly listed on the New York Stock Exchange as CRM (2004).

SIEMENS

Ingenuity for life

Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for 170 years. The company is active around the globe, focusing on the areas of electrification, automation and digitalization.

One of the world's largest producers of energy-efficient, resource-saving technologies, Siemens is a leading supplier of efficient power generation and power transmission solutions and a pioneer in infrastructure solutions as well as automation, drive and software solutions for industry. The company is also a leading provider of medical imaging equipment – such as computed tomography and magnetic resonance imaging systems – and a leader in laboratory diagnostics as well as clinical IT.

In fiscal 2017, which ended on September 30, 2017, Siemens generated revenue of €83.0 billion and net income of €6.2 billion. At the end of September 2017, the company had around 377,000 employees worldwide.

Further information is available on the Internet at www.siemens.com.

Stanford | Precourt Institute for Energy

Stanford University's Precourt Institute for Energy concentrates the full talents of the university on energy research and education, from basic science and technology, to policy and business. Additionally, the institute helps the university develop energy-literate leaders through educational programs and disseminating research results.

Research

The Precourt Institute draws on experts and resources across the university to help accelerate the transition to an affordable, low-carbon energy system for the world. More than 200 Stanford faculty members and staff scientists in dozens of academic departments, independent labs and research programs work on energy-related problems. The Precourt Institute is the focal point at Stanford for scholars, business leaders, policymakers and others seeking solutions to the world's most difficult energy challenges.

The institute's seed grant program funds early-stage research with potential for high impact on energy supply and use. These "proof of concept" awards, which encourage interdisciplinary research, bridge theory to early experiments and analysis. Positive results often proceed to large-scale studies. In addition, the institute's senior fellows help coordinate similar efforts among other Stanford energy research programs.

More than 15 centers, programs and projects – including the Global Climate & Energy Project, Stanford Center for Carbon Storage, and Bits & Watts Initiative – enhance the fabric of interdisciplinary energy research at Stanford.

Education & Outreach

The Precourt Institute works with Stanford schools and departments to identify promising energy scholars and areas of scholarship, and to make new faculty appointments to augment the university's energy network. We disseminate the results of Stanford energy research to other institutions, the business community and the media.

For more information, please visit energy.stanford.edu



TOTAL
COMMITTED TO BETTER ENERGY

Total is a global integrated energy producer and provider, a leading international oil and gas company, and a major player in low-carbon energies. Our 98,000 employees are committed to better energy that is safer, cleaner, more efficient, more innovative and accessible to as many people as possible. As a responsible corporate citizen, we focus on ensuring that our operations in more than 130 countries worldwide consistently deliver economic, social and environmental benefits.

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UPTAKE™

Uptake is a leading independent advanced analytics software company creating a world that works. We challenge what's possible with the energy that powers our world and chemicals that create modern-day life.

Industry giants like Berkshire Hathaway Energy, multinational petrochemical companies, and others across the globe use Uptake's software to identify problems before they occur. Together, we are setting new standards for productive, secure, safe and reliable operations.

GBBC Global Blockchain Business Council

The Global Blockchain Business Council (GBBC) brings together founding members from over 40 countries to advance global understanding of Blockchain technology. Conceived on Sir Richard Branson's Necker Island by a group of innovators, the GBBC launched formally during the 2017 Annual World Economic Forum Meeting in Davos, Switzerland. Just as the internet enabled the frictionless peer-to-peer exchange of information, blockchain has the potential to usher in the frictionless exchange of assets. The organization is dedicated to furthering adoption of Blockchain technology through engaging and educating business leaders, regulators, and global change makers on how to harness this groundbreaking tool to create more secure, equitable, and functional societies.

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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.

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