**11 earth time-lapse/water 1**

**Earth Time-Lapse: The War on Water**

Embark on a visual exploration that reveals the Arctic, oceans and freshwater crises. The session features high-resolution satellite images from NASA's Landsat Program, which provides the longest continuous global record of the Earth’s surface.

With

- Johan Rockström, Executive Director, Stockholm Resilience Centre, Sweden
- **Randy Sargent**, Senior Systems Scientist, Carnegie Mellon University

**26 Loft/ideaslab nature**

**Building an Intelligent Machine: The Nature IdeasLab**

How are advances in artificial intelligence and robotics bringing us closer to a world in which humans and robots live and work together?

Discover and debate in the IdeasLab

Idea 1: Machines that can read human emotions

Idea 2: The rise of social robots

Idea 3: Moral-making machines

Idea 4: The trouble with super-intelligent machines

Introduced by

- Philip Campbell, Editor-in-Chief, Nature Magazine, United Kingdom; Global Agenda Council on Mental Health

Discussion Leaders

- Vanessa Evers, Professor of Human Media Interaction, University of Twente, Netherlands
- **Andrew Moore**, Dean, School of Computer Science, Carnegie Mellon University
- Maja Pantic, Professor of Affective and Behavioral Computing, Imperial College London, United Kingdom
- Alan Winfield, Hewlett-Packard Professor of Electronic Engineering, University of the West of England, United Kingdom

Facilitated by

- Harry West, Chief Executive Officer, frog, US
Wed 1/20

11.15 - 12.00  
The Loft  
**365 loft/virtual peer 1**  
*The Virtual Peer*  
Experience how virtual robotic systems have the potential to provide a range of social services such as therapy or coaching, or to become a friend and confidant.

The Virtual Peer is designed to help students who struggle in traditional classroom settings. Come test how technologies like language recognition software and digital animation are converging to revolutionize the way we teach and learn.

Introduced by  
- **Justine Cassell**, Associate Dean, Technology, Strategy and Impact, School of Computer Science, Carnegie Mellon University, USA; Global Agenda Council on Artificial Intelligence & Robotics

12.00 - 13.00  
*Congress Centre – Aspen 2*  
**42 arirang/artificial intelligence**  
*The State of Artificial Intelligence*  
How close are technologies to simulating or overtaking human intelligence and what are the implications for industry and society?

This session is televised and webcast live.

- Matthew Grob, Executive Vice-President and Chief Technology Officer, Qualcomm, USA; Global Agenda Council on Artificial Intelligence & Robotics  
- **Andrew Moore**, Dean, School of Computer Science, Carnegie Mellon University  
- Stuart Russell, Professor of Computer Science, University of California, Berkeley, USA; Global Agenda Council on Artificial Intelligence & Robotics

Moderated by  
- Connyoung Jennifer Moon, Moderator and Lead Anchor, Arirang TV & Radio, Republic of Korea

12.45 - 13.15  
*Congress Centre - Earth Space*  
**56 earth time-lapse/resources 1**  
*Earth Time-Lapse: The Race for Resources*  
Embark on a visual exploration that reveals humanity's accelerating use of resources in our lifetime. The session features high-resolution satellite images from NASA's Landsat programme, which provides the longest continuous global record of the Earth’s surface.
With
• William McDonough, Consulting Professor of Civil and Environmental Engineering, Stanford University, USA; Meta-Council on the Circular Economy
• Randy Sargent, Senior Systems Scientist, Carnegie Mellon University

**Wed 1/20**

16.15 - 16.45  
Congress Centre - Earth Space

**90 earth time-lapse/industrialization 1**

**Earth Time-Lapse: The Industrialization Impasse**  
Embark on a visual exploration that reveals unprecedented urbanization and industrialization in our lifetime. The session features high-resolution satellite images from NASA’s Landsat Program, which provides the longest continuous global record of the Earth’s surface.

With
• Ian Morris, Willard Professor of Classics; Professor of History, Stanford University, USA
• Illah Nourbakhsh, Professor, Robotics Institute, Carnegie Mellon University

20.00 - 22.00  
Hotel Sunstar Alpine - Parsenn 1-2-3

**109 women in science**

**Women in Science**  
How will the Fourth Industrial Revolution enable women to take more leadership roles in science and technology?

Discussion Leaders
• Justine Cassell, Associate Vice-Provost, Technology Strategy and Impact, Carnegie Mellon University, USA; Global Agenda Council on Artificial Intelligence & Robotics
• Jennifer Doudna, Professor of Chemistry and of Molecular and Cell Biology, University of California, Berkeley, USA
• Suzanne Fortier, Principal, McGill University, Canada
• Kathy Hudson, Deputy Director, Science, Outreach and Policy, National Institutes of Health, USA
• Elizabeth O’Day, Founder and Chief Executive Officer, Olaris Therapeutics, USA; Global Shaper
• Suchitra Sebastian, University Lecturer, Department of Physics, Cavendish Laboratory, University of Cambridge, United Kingdom; Young Scientist
**The Promise and Peril of Omnipresent Sensors: The Carnegie Mellon University IdeasLab**

What are the possibilities and the dangers when practically everything can communicate with everything else?

Discover and debate in the IdeasLab

Idea 1: Reimagining everyday devices as information-delivery systems
Idea 2: Cybersecurity in the age of always-connected sensors
Idea 3: Transforming the classroom with ubiquitous sensing
Idea 4: Personal privacy assistants in the age of the Internet of Things

This session will be available online at a later date.

Introduced by
- **Subra Suresh**, President, Carnegie Mellon University, USA

Discussion Leaders
- **Lorrie Cranor**, Professor of Computer Science and of Engineering and Public Policy, Carnegie Mellon University
- **Chris Harrison**, Assistant Professor of Human Computer Interaction, Carnegie Mellon University; Young Scientist
- **Amy Ogan**, Assistant Professor of Human Computer Interaction, Carnegie Mellon University
- **Anthony Rowe**, Associate Professor of Engineering, Carnegie Mellon University

Facilitated by
- Gareth Mitchell, Lecturer, Broadcast Communication, Imperial College London, United Kingdom

**Earth Time-Lapse: The War on Water**

Embark on a visual exploration that reveals the Arctic, oceans and freshwater crises. The session features high-resolution satellite images from NASA's Landsat Program, which provides the longest continuous global record of the Earth’s surface.

With
- Johan Rockström, Executive Director, Stockholm Resilience Centre, Sweden
- **Randy Sargent**, Senior Systems Scientist, Carnegie Mellon University
**Thurs 1/21**

15.15 - 15.45
Congress Centre - Earth Space

170 earth time-lapse/resources 2
**Earth Time-Lapse: The Race for Resources**
Embark on a visual exploration that reveals humanity's accelerating use of resources in our lifetime. The session features high-resolution satellite images from NASA's Landsat programme, which provides the longest continuous global record of the Earth’s surface.

With
- Ellen MacArthur, Founder, Ellen MacArthur Foundation, United Kingdom; Meta-Council on the Circular Economy
- **Randy Sargent**, Senior Systems Scientist, Carnegie Mellon University

16.00 - 16.45
The Loft

366 loft/virtual peer 1
**The Virtual Peer**
Experience how virtual robotic systems have the potential to provide a range of social services such as therapy or coaching, or to become a friend and confidant.

The Virtual Peer is designed to help students who struggle in traditional classroom settings. Come test how technologies like language recognition software and digital animation are converging to revolutionize the way we teach and learn.

Introduced by
- **Justine Cassell**, Associate Dean, Technology, Strategy and Impact, School of Computer Science, Carnegie Mellon University, USA; Global Agenda Council on Artificial Intelligence & Robotics

18.00 - 18.30
Congress Centre - Earth Space

183 earth time-lapse/industrialization 2
**Earth Time-Lapse: The Industrialization Impasse**
Embark on a visual exploration that reveals unprecedented urbanization and industrialization in our lifetime. The session features high-resolution satellite images from NASA's Landsat Program, which provides the longest continuous global record of the Earth’s surface.

With
- Ricardo Hausmann, Director, Center for International Development, Harvard Kennedy School of Government, USA; Global Agenda Council on the Future of Manufacturing
- **Illah Nourbakhsh**, Professor, Robotics Institute, Carnegie Mellon University, USA
Thurs 1/21

20.00 - 22.00
Ameron Swiss Mountain Hotel - Symondpark 2

**193 creative curricula**

**Creative Curricula**
"Every child is an artist, the problem is staying an artist when you grow up."
-Pablo Picasso

What new ways of learning are radically changing the education of our children?

Discussion Leaders
- John Green, Novelist and YouTuber, vlogbrothers, USA
- Beau Lotto, Professor of Neurobiology, University College London (UCL), United Kingdom
- **Illah Nourbakhsh**, Professor, Robotics Institute, Carnegie Mellon University, USA

Facilitated by
- Jonathan Zittrain, Professor of Law and Professor of Computer Science, Harvard University, USA; Young Global Leader; Global Agenda Council on Social Media

Fri 1/22

09.00 - 10.15
Congress Centre - Wisshorn xChange

**206 institutional/digital learning**

**The Digital Path to Learning**
Instilling a lifelong passion for learning and participation is critical for future generations of change-makers. How can ever present digital technology spark learning experiences in our daily lives?

This session is for Forum Members and Partners active or interested in the Media Entertainment and Information industry and Global Challenge Initiative on Employment, Skills & Human Capital.

- Shannon May, Co-Founder and Chief Development Officer, Bridge International Academies, Kenya; Social Entrepreneur
- **Illah Nourbakhsh**, Professor, Robotics Institute, Carnegie Mellon University, USA
- Marcos Souza, Secretary of Innovation of Brazil

Discussion Leaders
- Tim Bozik, President, Global Product, Pearson, USA
- Rosalind L. Hudnell, Vice-President, Corporate Affairs Group; President Intel Foundation, Intel Corporation, USA
- Vikas Pota, Chief Executive, Varkey Foundation, United Kingdom; Young Global Leader
Facilitated by
- James Mwangi, Executive Director, Dalberg, South Africa; Young Global Leader

**Fri 1/22**

10.00 - 10.45
The Loft

367 loft/virtual peer 1
**The Virtual Peer**
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Introduced by
- **Justine Cassell**, Associate Dean, Technology, Strategy and Impact, School of Computer Science, Carnegie Mellon University, USA; Global Agenda Council on Artificial Intelligence & Robotics

15.00 - 15.30
Congress Centre - Earth Space

260 earth time-lapse/industrialization 3
**Earth Time-Lapse: The Industrialization Impasse**
Embark on a visual exploration that reveals unprecedented urbanization and industrialization in our lifetime. The session features high-resolution satellite images from NASA’s Landsat Program, which provides the longest continuous global record of the Earth’s surface.

With
- **Ian Morris**, Willard Professor of Classics; Professor of History, Stanford University, USA
- **Illah Nourbakhsh**, Professor, Robotics Institute, Carnegie Mellon University, USA

15.00 - 15.30
Media Village - Issue Briefing Room

373 briefing/artificial intelligence
**Infusing Emotional Intelligence into AI**
Learn first-hand about how to endow artificial intelligence with emotional intelligence using social-interaction skills that are too often ignored in emerging technologies.

This session is webcast live.
• **Justine Cassell**, Associate Dean, Technology, Strategy and Impact, School of Computer Science, Carnegie Mellon University, USA; Global Agenda Council on Artificial Intelligence & Robotics
• Vanessa Evers, Professor of Human Media Interaction, University of Twente, Netherlands
• Maja Pantic, Professor of Affective and Behavioral Computing, Imperial College London, United Kingdom

Moderated by
• Oliver Cann, Head of Media Content, World Economic Forum

**Fri 1/22**

16.15 - 16.45
**Congress Centre - Earth Space**

269 earth time-lapse/water 3
**Earth Time-Lapse: The War on Water**
Embrace on a visual exploration that reveals the Arctic, oceans and freshwater crises. The session features high-resolution satellite images from NASA’s Landsat Program, which provides the longest continuous global record of the Earth’s surface.

With
• Johan Rockström, Executive Director, Stockholm Resilience Centre, Sweden
• **Randy Sargent**, Senior Systems Scientist, Carnegie Mellon University

16.30 - 17.45
**Congress Centre - Wisshorn xChange**

273 human dignity
**Human Dignity in Global Supply Chains**
As rapid technological change transforms entire systems of production and consumption, how can human dignity be placed at the core?

On the agenda
✓ Monitoring and tracking technologies
✓ Innovations in manufacturing and supply
✓ Evolution of rights, norms and standards

• Rob Davies, Minister of Trade and Industry of South Africa
• Gary J. Goldberg, President and Chief Executive Officer, Newmont Mining Corporation, USA
• Michael H. Posner, Co-Director, Center for Business and Human Rights, NYU Stern School of Business, USA; Global Agenda Council on Human Rights
• Kenneth Roth, Executive Director, Human Rights Watch, USA

Discussion Leaders
• Privahini Bradoo, Co-Founder and Chief Executive Officer, BlueOak, USA; Young Global Leader
• **Justine Cassell**, Associate Dean, Technology Strategy and Impact, School of Computer Science, Carnegie Mellon University; Global Agenda Council on Artificial Intelligence & Robotics
• **Peter Platzer**, Founder and Chief Executive Officer, Spire, USA
• **Don Tapscott**, Adjunct Professor of Management, Joseph L. Rotman School of Management, University of Toronto, Canada; Global Agenda Council on the Future of Government

Moderated by
• **Ngaire Woods**, Dean, Blavatnik School of Government, University of Oxford, United Kingdom; Meta-Council on the New Architecture of Governance

**Fri 1/22**

**18.15 - 18.45**  
Congress Centre - Earth Space

288 earth time-lapse/resources 3  
**Earth Time-Lapse: The Race for Resources**  
Embark on a visual exploration that reveals humanity’s accelerating use of resources in our lifetime. The session features high-resolution satellite images from NASA’s Landsat programme, which provides the longest continuous global record of the Earth’s surface.

With
• **Ellen MacArthur**, Founder, Ellen MacArthur Foundation, United Kingdom; Meta-Council on the Circular Economy
• **Randy Sargent**, Senior Systems Scientist, Carnegie Mellon University

**18.30 - 20.00**  
Open Forum - Swiss Alpine High School – Auditorium

290 open forum/revolution  
**Life in 2030: Humankind and the Machine**  
The world is on the brink of a new revolution driven by the convergence of a number of new technologies, including genome editing, artificial intelligence and 3D printing. How will these technologies change the lives of the next generation?

• What are the game-changing technologies?
• What are the moral, ethical and social concerns which they raise?
• How are these technologies going to change the face of business, government and society?
• How can humans work with technology for better outcomes?

The Open Forum series, held in parallel with the official programme, offers the local Swiss community and global public an opportunity to engage and interact with experts on global issues.

*Simultaneous interpretation in English and German*

*This session is webcast live.*
Sat 1/23

09.00 - 09.30
Congress Centre - Earth Space

301 earth time-lapse/industrialization 4
Earth Time-Lapse: The Industrialization Impasse

Embank on a visual exploration that reveals unprecedented urbanization and industrialization in our lifetime. The session features high-resolution satellite images from NASA's Landsat Program, which provides the longest continuous global record of the Earth’s surface.

With
- Ricardo Hausmann, Director, Center for International Development, Harvard Kennedy School of Government, USA; Global Agenda Council on the Future of Manufacturing
- Illah Nourbakhsh, Professor, Robotics Institute, Carnegie Mellon University, USA

09.00 - 10.15
Congress Centre - Flüela IdeasLab

302 ideaslab/nature
Building an Intelligent Machine: The Nature IdeasLab

How are advances in artificial intelligence and robotics bringing us closer to a world in which humans and robots will live and work together?

Discover and debate in the IdeasLab:
Idea 1: Machines that can read human emotions
Idea 2: The rise of social robots
Idea 3: Moral-making machines
Idea 4: Verifying and validating machine intelligence

This session will be available online at a later date.

Introduced by
- Philip Campbell, Editor-in-Chief, Nature Magazine, United Kingdom; Global Agenda Council on Mental Health
Discussion Leaders
- Vanessa Evers, Professor of Human Media Interaction, University of Twente, Netherlands
- **Andrew Moore**, Dean, School of Computer Science, Carnegie Mellon University
- Maja Pantic, Professor of Affective and Behavioral Computing, Imperial College London, United Kingdom
- Alan Winfield, Hewlett-Packard Professor of Electronic Engineering, University of the West of England, United Kingdom

Facilitated by
- Joe Palca, Science Correspondent, NPR, USA

### 10.30 - 11.45
**312 loft/ideaslab cmu**
The Promise and Peril of Omnipresent Sensors: The Carnegie Mellon University IdeasLab
What are the possibilities and the dangers when practically everything can communicate with everything else?

Discover and debate in the IdeasLab
Idea 1: Reimagining everyday devices as information-delivery systems
Idea 2: Cybersecurity in the age of always-connected sensors
Idea 3: Transforming the classroom with ubiquitous sensing
Idea 4: Personal privacy assistants in the age of the Internet of Things

Introduced by
- **Subra Suresh**, President, Carnegie Mellon University, USA

Discussion Leaders
- **Lorrie Cranor**, Professor of Computer Science and of Engineering and Public Policy, Carnegie Mellon University
- **Chris Harrison**, Assistant Professor of Human Computer Interaction, Carnegie Mellon University; Young Scientist
- **Amy Ogan**, Assistant Professor of Human Computer Interaction, Carnegie Mellon University
- **Anthony Rowe**, Associate Professor of Engineering, Carnegie Mellon University

### 11.45 - 12.15
**368 loft/virtual peer 4**
The Virtual Peer
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Introduced by

- **Justine Cassell**, Associate Dean, Technology, Strategy and Impact, School of Computer Science, Carnegie Mellon University, USA; Global Agenda Council on Artificial Intelligence & Robotics

**Sat 1/23**

13.00 - 14.00
Congress Centre – Sanada

**330 global science outlook**

**Global Science Outlook**
What are the top issues on the global science agenda and how will they be addressed in the year ahead?

On the agenda:

- Incentivizing science for societal impact
- Role of business in science
- Public trust and reliability of research findings

*This session is webcast live.*

- Elizabeth Blackburn, President, Salk institute for Biological Studies, USA
- Suzanne Fortier, Principal, McGill University, Canada
- Carlos Moedas, Commissioner, Research, Science and Innovation, European Commission, Brussels
- **Subra Suresh**, President, Carnegie Mellon University

Moderated by

- Mariette DiChristina, Editor-in-Chief, Scientific American, USA; Meta-Council on Emerging Technologies

**326 davos insights/disruption**

**Mastering the Future: Managing Disruption**
How can we best manage the Fourth Industrial Revolution?
Join a collaborative session to synthesize key insights from the Annual Meeting and explore pathways to impact.

Introduced by

- Mark Spelman, Co-Head, Future of the Internet Initiative, World Economic Forum
Sat 1/23

13.30 - 14.00
Congress Centre
Earth Space

331 earth time-lapse/resources 4
Earth Time-Lapse: The Race for Resources
Embark on a visual exploration that reveals humanity's accelerating use of resources in our lifetime. The session features high-resolution satellite images from NASA's Landsat programme, which provides the longest continuous global record of the Earth’s surface.

With
• William McDonough, Consulting Professor of Civil and Environmental Engineering, Stanford University, USA; Meta-Council on the Circular Economy
• Randy Sargent, Senior Systems Scientist, Carnegie Mellon University

14.45 - 15.45
Congress Centre
– Congress Hall

337 staying human
Staying Human
As emerging technologies open up new prospects for enhancing health and productivity, how can we ensure that our humanity and humanness are not lost?

This session is webcast live.

• Justine Cassell, Associate Vice-Provost, Technology Strategy and Impact, Carnegie Mellon University; Global Agenda Council on Artificial Intelligence & Robotics
• Jennifer Doudna, Professor of Chemistry and of Molecular and Cell Biology, University of California, Berkeley
• Henry T. Greely, Deane F. and Kate Edelman Johnson Professor of Law, Stanford University, USA
• Angela Hobbs, Professor of the Public Understanding of Philosophy, University of Sheffield, United Kingdom
• Amira Yahyaoui, Founder and Chair, AL Bawsala, Tunisia; Co-Chair of the World Economic Forum Annual Meeting 2016; Global Shaper

Chaired by
• Klaus Schwab, Founder and Executive Chairman, World Economic Forum