

Global Agenda

Annual Meeting of the New Champions 2016 The Fourth Industrial Revolution and Its Transformational Impact

Tianjin, People's Republic of China 26-28 June



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“Innovation will be the force driving us forward and bringing out the potential of everyone.”

Li Keqiang
Premier of the People's Republic of China



“We need to develop regulatory principles and agile frameworks to ensure the best and coordinated use of technology so that all global citizens can thrive in this new era.”

Klaus Schwab
Founder and Executive Chairman, World Economic Forum

World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland
Tel.: +41 (0)22 869 1212
Fax: +41 (0)22 786 2744
Email: contact@weforum.org
www.weforum.org

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Preface



W. Lee Howell
Head of Global Programming
Member of the Managing
Board



David Aikman
Chief Representative Officer,
Greater China
Member of the Executive
Committee

The opportunities and uncertainties that arise from the Fourth Industrial Revolution will require greater collaboration among leaders, policy-makers and experts. And, as we enter an era of exponentially disruptive change, the relevance of convening business leaders, policy-makers and experts for the Annual Meeting of the New Champions has never been greater.

It is clear that our current mental models are unprepared for processing the implications of exponential technological change. This rapid change forces us to not only reassess reality, but also reassert our values, which was captured by the theme, “The Fourth Industrial Revolution and Its Transformational Impact”. The 10th Annual Meeting of the New Champions convened more than 2,000 leaders from over 90 countries to explore and address these complex issues.

To tackle such questions, participants took part in sessions ranging from debates that addressed dilemmas in science, technology and innovation, to collaborative sessions that drew in the next generation of industry, government and academia to create a shared vision of the future.

Participants explored their contextual intelligence through data visualizations, including the Forum’s Transformation Maps, time-lapse high-resolution satellite images from NASA’s Landsat Program, Harvard’s

Atlas of Economic Complexity, and remarkable illustrations of global infrastructure connectivity today and in the future. Others came face-to-face with a humanoid robot to consider the line between human and android.

Between sessions, participants had the opportunity to see some of the newest technologies for themselves, learn how a swarm of robotic bees will soon take on tasks too difficult for humans, or enter a futurist garden. At the various hubs, conversations varied from discussions about the commercial applicability of quantum computers and debates about antibiotic-resistant strains of bacteria, to the implications of the Brexit vote, which sent shockwaves across the world on the eve of the meeting.

The programme this year featured over 200 sessions in a variety of new formats to help participants uncover breakthrough scientific ideas and technological innovations, improve the strategic and operational agility of their organizations, and engage the next generation of research pioneers and business innovators.

The World Economic Forum is grateful to its members and communities for their commitment and dynamic participation in the Annual Meeting of the New Champions. We look forward to welcoming you to next year’s gathering in Dalian.

Co-Chairs



“Innovation boils down to one key element – people. Diversity is so critical.”

Navdeep Bains
Minister of Innovation, Science and Economic Development of Canada

“There is something elegant and smart about blockchain, and we will see many applications in future unrelated to bitcoin.”

Taavet Hinrikus
Chief Executive Officer
TransferWise, United Kingdom



“But of course, the ultimate capital is human capital, and so I always come back to that ... it has to do with the development of those who generate the ideas and by those who would become entrepreneurs.”

Shirley Ann Jackson
President
Rensselaer Polytechnic Institute (RPI), USA



“Innovation that doesn’t bring good to the people never succeeds.”

Travis Kalanick
Chief Executive Officer and
Co-Founder Uber, USA





“There has been a change in China when it comes to entrepreneurship. More innovative companies have been emerging and people sitting at home can do business all over the world.”

Lei Jun
Founder
Chairman and Chief Executive Officer
Xiaomi, People’s Republic of China

“What the internet gives at its best is the ability for geniuses everywhere in the world to spread [their genius] everywhere.”

Matthew Prince
Co-Founder and Chief Executive Officer
CloudFlare, USA



“The fundamentals are very good in China. The middle class is growing, the capital is there, the infrastructure is there, and the technical expertise is there.”

Feike Sijbesma
Chief Executive Officer and Chairman of the Managing Board
Royal DSM, Netherlands

“In 10-20 years you will have as many charging posts as gas stations. Ten years ago, we had to take an extra tank of fuel every time we were out on the road. So you have to give the government some time.”

Wang Chuanfu
Chairman
BYD Company, People’s Republic of China



Tianjin Highlights

Top 10 Emerging Technologies of 2016

The list of Top 10 Emerging Technologies 2016 was compiled by the Forum's Meta-Council on Emerging Technologies and published in collaboration with *Scientific American*. It highlights technological advances its members believe have the power to improve lives, transform industries and safeguard the planet. It also provides an opportunity to debate any human, societal, economic or environmental risks and concerns that the technologies may pose prior to widespread adoption. The top technologies for 2016 are:

- 1 Nanosensors and the Internet of Nanothings** – Once connected, this technology could impact medicine, architecture, agriculture and drug manufacture.
- 2 Next Generation Batteries** – Advanced batteries make mini-grids feasible to provide clean, reliable, round-the-clock energy to entire villages.
- 3 Blockchain** – The distributed electronic ledger will fundamentally change the way markets and governments work.
- 4 2D Materials** – These materials are emerging in applications from air and water filters to new generations of wearables and batteries.
- 5 Autonomous Vehicles** – Their potential for saving lives, cutting pollution, boosting economies and improving lives has led to rapid deployment of forerunners along the way to full autonomy.
- 6 Organs-on-chips** – Miniature models of human organs allow researchers to see biological mechanism behaviours in ways never before possible.
- 7 Perovskite Solar Cells** – This new photovoltaic material can be used virtually anywhere and generates power more efficiently.
- 8 Open AI Ecosystem** – Smart digital assistants will soon help with a vast range of everyday tasks.
- 9 Optogenetics** – Light can be delivered deeper into the brain, leading to better treatment of brain disorders.
- 10 Systems Metabolic Engineering** – Advances mean that the list of building-block chemicals can be manufactured better and more cheaply using plants.

Learn more here: <http://wef.ch/emergingtech16>

For session highlights, blogs, videos and meeting-related documents, plus Forum insights, visit <https://toplink.weforum.org/>

Seeking a Clear Vision

The provision of eyeglasses to the more than 2.5 billion people who suffer from poor vision but lack access to a solution could generate huge returns in terms of educational attainment and economic growth. This is the finding of a new report, *Eyeglasses for Global Development: Bridging the Visual Divide*, published by the World Economic Forum and EYEliance. The report is the first initiative of EYEliance, a new multistakeholder venture co-founded by Jordan Kassalow, a Schwab Foundation Social Entrepreneur. EYEliance will bring together governments, philanthropists, businesses and the eyecare community with a mandate to collaborate to close the gap in access to eyeglasses. Along with new data highlighting the scale of the world's visual divide, and examples of validated, scalable models, the report also includes a set of recommendations for governments and businesses that are interested in contributing to addressing this global challenge.

Read the report here:
<http://wef.ch/eyelliance16>



Young Scientists in Tianjin

Over 40 world-leading experts from the Forum's Young Scientists community participated in the Annual Meeting of the New Champions. They represent some of the most forward-thinking and advanced young scientific minds in the world. They are selected from all regions and a wide range of disciplines, and have a track record of advancing the frontiers of science, technology and environment in areas of high societal impact. In honouring them for their contributions to advancing the frontiers of science, engineering and technology, the Young Scientists benefit from a tailored programme that exposes them to policy leaders, decision-makers and entrepreneurs. They are also offered support from the Forum's academic and expert networks and given the opportunity to contribute to Forum projects and initiatives.

Find out more here:
<https://www.weforum.org/communities/young-scientists>



Relentless Disruptions Drive System-Wide Change

The Fourth Industrial Revolution will alter the status quo, change how people consume products and services, and transform business models and production systems in ways not seen before.

The future has been foretold, in 19 words to be precise: “Once you can deliver a car in five minutes, you can deliver a lot of things in five minutes.” So said Travis Kalanick of Uber’s potential to relentlessly disrupt beyond the taxi industry. Speaking in Tianjin, the chief executive officer and co-founder of Uber added that his company has already launched UberEATS, an app that delivers food at the tap of a button.

Sharing Kalanick’s vision of the future, fellow Annual Meeting of the New Champions Co-Chair Taavet Hinrikus, Chief Executive Officer of TransferWise, United Kingdom, is equally optimistic that technologies

emerging from the Fourth Industrial Revolution will continue to alter the status quo, change how people consume products and services, and transform business models and production systems in ways not seen before.

TransferWise, a London-based fintech unicorn that lets people send money across borders faster and cheaper than banks do, has already diverted more than \$4 billion worth of money transfers from banks and other traditional players since its launch five years ago. Hinrikus, who was at the birth of another disruptor, Skype, predicted that, just as the latter captured 40% of the international

direct dialling business within 10 years, fintechs could account for 40% of international finance within the same time.

Transformative technologies – running the gamut from mobile internet, artificial intelligence, 3D printing and cloud computing to autonomous and driverless vehicles – are making people and businesses more digitally savvy and globally aware, and forcing chief executives and policy-makers to grapple with their promises and perils.

The innovations are flourishing at a frenetic pace fuelled by hyper-scale connectivity made possible



“The greatest danger we face in this world is the deep fear people have of the future.”

R. May Lee
Dean, School of Entrepreneurship and Management, ShanghaiTech, People’s Republic of China

by today's burgeoning computing power. The iPhone, for example, has 1,000 times more processing power than the 1995 Pentium computer. There are over 2 billion active internet users, expected to grow to an estimated 5 billion by 2025; and a staggering 100 trillion "things" could be connected to the net by 2030.

Companies like CloudFlare, in the United States, are bent on rebuilding the 25-year old internet and making it faster, safer and more reliable. Once a "superway" is in place, an untold number of 5G innovations by creative, customer-centric start-ups could emerge to exterminate the entrenched and disrupt the disruptors.

The paradigm shifts brought about by technological breakthroughs are likely to have the greatest impact on industries that are most inefficient, underserved or regulated. One such industry is healthcare. Moore's law in semiconductors has enhanced today's processor with as many as 2.7 billion transistors. In contrast, as one participant in Tianjin lamented, the pharmaceutical industry's "Mule's law" – or "Moore's law backwards" – has doubled the cost of delivering drugs to the market in the last 60 years.

Some of the changes are already evident in healthcare: In developing countries, technology has massively scaled up the delivery of healthcare services to people living in remote regions; in the developed world, the proliferation of social

media platforms has allowed consumers to make more-informed decisions about how they buy medical products and services and from whom they buy.

The smartphone, in the hands of millions of people around the world, may one day be the largest collector of health-related data from both the fit and unfit, solving one of the industry's most protracted problems – the lack of data collected in a structured, easily read and directly comparable manner. And 3D printing may in the future allow people to churn out drugs from the comfort of their own homes.

As the Fourth Industrial Revolution arrives, the impact of its array of new technologies on socio-economic and corporate issues – including consumer safety, privacy, regulations, corporate governance and resilience – is far from clear.

What is certain is that technology gives and technology takes away. It provides access to information, but robs users of privacy; it boosts speed, but undermines safety; it creates new jobs, but destroys old ones.

A difficult question on the transformational role of technology is how to make it work for global equity while billions of people still struggle to gain access to basic education, sanitation and healthcare. Lasting social and global reconfigurations can only take root when new technologies are accessible to everyone.

The disruptions to the employment landscape will be profound. According to the World Economic Forum's *Future of Jobs* report, 65% of children entering primary school today could ultimately end up working in completely new job types that don't yet exist. In particular, with more jobs expected to be created in science, technology, engineering, mathematics (STEM) and IT, the gender gap in the workforce could widen as women traditionally shun STEM jobs and gravitate towards those in office and administration, which are most vulnerable to displacement by robots. Encouraging more girls and women to enrol in STEM studies through education, mentors and lifelong learning will help. Retaining them is as important as recruiting them.

Within the corporation, leadership will be key in redefining the future and securing system-wide buy-in. To build resilience and agility, leaders must be prepared to slay sacred cows and review all assumptions and methodologies. There is no place for corporate dictatorship. Open communication, bottom-up decision-making and diversity will be imperative.

“There is a clear divergence of thought between what happens in Europe in relation to how data is managed and controlled and what happens in the US.”

Rob Leslie
Chief Executive Officer, Sedicii, Ireland





New Rules for a Digital World

At the dawn of the Fourth Industrial Revolution, the rules governing the complexity and behaviour of hyper-scale connectivity are still under development. Innovators say that existing rules tend to favour the incumbents and disadvantage new players, even as mass adoption is proof that consumers are welcoming the value created by the new technologies.

Participants at the Annual Meeting of the New Champions noted that two systems threaten to collide in the new world of digital innovation – the vertical system of government and governance bounded by national borders and regulations, and the horizontal system of the borderless internet. National regulators are expected to make decisions about issues and risks that are barely understood or have not yet materialized, even as the speed and scope of transformation wrought by creative disruption continue apace.

Clashes have already occurred: the recent Apple standoff with the US Government over iPhone privacy in the wake of the San Bernardino shooting; Turkey's closure of YouTube in 2012; Facebook falling afoul of France's data privacy laws for its data-tracking practices; and India's ban on Free Basics' attempts to deliver online access to the poor and rural areas.

But financial regulators are getting their act together. Regulators in the United Kingdom and Singapore are contemplating regulatory "sandboxes" for fintechs to test their innovations without the constraints of normal regulatory requirements.



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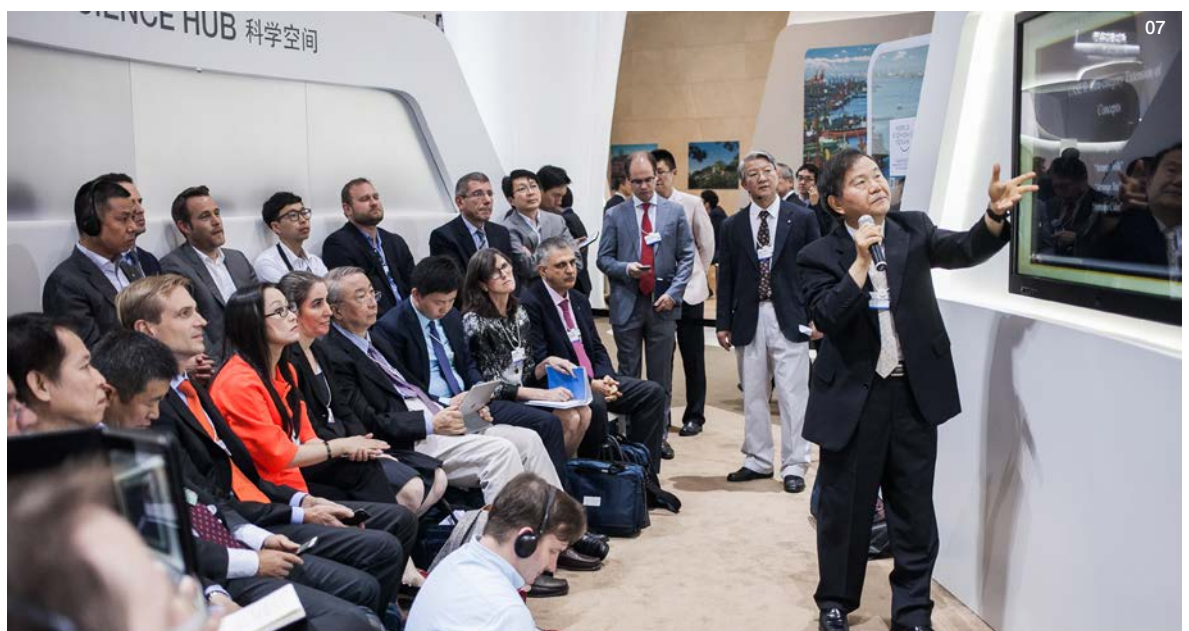
01: Li Keqiang, Premier of the People's Republic of China; Klaus Schwab, Founder and Executive Chairman, World Economic Forum
02: Spotlight on Virtual Reality: Human Body
03: Jing Ulrich, Managing Director and Vice-Chairman, Asia-Pacific, JPMorgan Chase &

Co., Hong Kong SAR; Mehmet Simsek, Deputy Prime Minister of Turkey; Min Zhu, Deputy Managing Director, International Monetary Fund (IMF), Washington DC of China
04: Works in Progress: Robotics



01: Leila Araghian, Co-Founder, Diba Tensile Architecture, Islamic Republic of Iran
02: Works in Progress: Humanoid Robot
03: Ievgeniia Kaskova, Director and Co-Founder, Global English Centre, Ukraine; Global Shaper
04: Thinking Ahead: Accelerating Sustainable Development with Customized Poverty Elimination Plans
05: Amit Narayan, Founder and Chief Executive Officer, AutoGrid Systems, USA
06: Li Daokui, Dean, Schwarzman College, Tsinghua University, People's Republic of China; Lei Jun, Founder, Chairman and Chief Executive Officer, Xiaomi, People's Republic of China; Xu Shaoshi, Chairman, National Development and Reform Commission, People's Republic of China

07: Science in Depth: From Deep Learning to Autonomous Machines with Kim Jong-Hwan, Professor, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

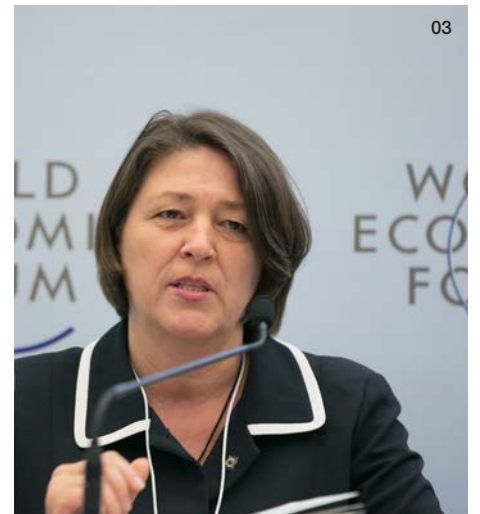




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01: Noah's Garden
02: The Future Company with Han Jian, Associate Professor of Management; Co-Director, Centre on China Innovation, China Europe International Business School (CEIBS), People's Republic of China
03: Violeta Bulc, Commissioner, Transport, European Commission, Brussels



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01: Xiaobo Wu, Presenter, Lan Shizi, People's Republic of China; Lei Jun, Founder, Chairman and Chief Executive Officer, Xiaomi, People's Republic of China
02: Shaping the Future of Global Production Systems session
03: Carlo Ratti, Director, SENSEable City Laboratory, MIT - Department of Urban Studies and Planning, USA
04: Shaping the Future of Global Production Systems session
05: Valerie Feldmann, Vice-President, Product Innovation and Strategy, Ogin, USA; Eric Xin Luo, Chief Executive Officer, Shunfeng International Clean Energy, People's Republic of China; Amit Narayan, Founder and Chief Executive Officer, AutoGrid Systems, USA;

Wang Chunguang, Chief Executive Officer and Co-Founder, Equota Energy, People's Republic of China; Zhang Yi, Director, Joint Lab of Intelligent Transportation Systems, Tsinghua University, People's Republic of China; Ted Chu, Chief Economist, International Finance Corporation, Washington DC



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01: Science in Depth: Human Microbiome with Rob Knight, Professor, University of California, San Diego (UCSD), USA
02: Catherine Wood, Chief Executive Officer, ARK Investment Management, USA; Tang Ning, Founder and Chief Executive Officer, CreditEase, People's Republic of China

03: The Reality of Everything-as-a-Service session



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01: Daisy Guo Xiaoqian, Vice-Mayor of Dalian, Co-Founder and Chief Operations Officer, Tezign (Shanghai) Information & Technology Co., People's Republic of China
02: Nouriel Roubini, Professor of Economics and International Business, Leonard N. Stern School of Business, New York University, USA
03: Philipp Rösler, Head of the Centre for Regional Strategies, Member of the Managing Board, World Economic Forum; Cao Aihua, Executive
04: Han Jian, Associate Professor of Management; Co-Director, Centre on China Innovation, China Europe International Business School (CEIBS), People's Republic of China
05: Cities by Design, not Demand session



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Three Dares: Lessons from China's Transformation

Buffeted by the winds of the Fourth Industrial Revolution and the lingering effects of the global crisis, economies are redesigning their development strategies to find fresh drivers of growth and productivity and, at the same time, address the challenges of inequality and sustainability. China offers a test case and model.

Because of its importance in the global economy – it accounts for one-quarter of world growth – and its status as a rising medium-income nation, China is the most prominent case study of transformation. Yet, while its size and impact make it unique, China is not alone among economies confounded by slower growth, a diminishing labour-cost advantage or ageing demographics and the prospect of a shrinking workforce. There are valuable lessons to be drawn from China's struggle to reshape its future, especially in the context of rapid technological change, the international movement to reduce global warming, and the increase in volatility and uncertainty as a result of globalization.

In the closing plenary, meeting Co-Chair Feike Sijbesma, Chief Executive Officer and Chairman of the Managing Board of Royal DSM in the Netherlands, offered advice for young people to secure their future: “Dare to lift anchors, dare to focus on the long term, dare to share with other people.” This neatly summarizes China's approach to redesigning growth.

China has lifted anchors – abandoning its old focus on manufacturing for export and fixed-asset investment in favour of a new model of consumption-driven, innovation-led sustainable growth. This deliberate transition – outlined in the country's 13th Five-Year Plan – is a work in progress. And while it

has not been without troubles and setbacks (the crisis, for one thing), China's efforts are yielding results. “In the face of mounting downward economic pressure, we did not resort to indiscriminate measures,” said Chinese Premier Li Keqiang in his opening address, noting that, in the first quarter of this year, the economy grew by 6.7% – within the forecast range.

Li also observed that the number of new enterprises is growing faster than in the past two years, that the surge in domestic consumption (now exceeding investment) is compensating for the downturn in exports, and that services are now the largest sector of the economy. “The Chinese economy will not be



“With emerging business models and new industries, everybody is engaged in innovation and the new drivers are enjoying very good growth.”

Xu Shaoshi
Chairman, National Development and Reform Commission, People's Republic of China

heading for a hard landing and we are capable of meeting our targets this year,” he declared.

At the same time that China has had to react to short- and medium-term turbulence, it is daring to think long term. Consider the government’s “Made in China 2025” initiative to upgrade the manufacturing sector and its “Internet Plus” plan to harness Fourth Industrial Revolution technologies from big data and the Internet of Things to cloud computing and the mobile internet. Take China’s resolute shift from fossil fuels to renewable energy sources, from centralized to distributed energy.

“The Chinese economy is at a crucial stage of transition from old to new growth drivers and a stage of economic transformation and upgrading,” Li explained. “We need to transform and upgrade traditional drivers of growth at a faster pace. Innovation is not only about developing the new economy. It is also about transforming and upgrading traditional industries to give them new vitality.”

There are also persistent problems to solve including overcapacity, the lack of efficient governance and lumbering unprofitable state-owned enterprises, the so-called zombie companies that keep walking dead thanks to bank lifelines. Rising debt, both in the public and corporate sectors, has raised investor concerns. The government insists that public debt is manageable, but is considering measures to reduce corporate

leverage. “The fact that we have faced up to and admitted to these difficulties shows that we are determined to prevail over them,” Li maintained.

China is engaged in an enormously treacherous transition, Sijbesma reckoned. It is attempting to change nothing less than the entire culture of its society to support innovation and the development of services and global brands, he said. The ingredients for success are there. “The fundamentals are very good in China,” Sijbesma remarked. “The middle class is growing, the capital is there, the infrastructure is there, and the technical expertise is there.”

What is likely to seal success for China in the long term is the determination and optimism of its leaders. This is a fear-is-the-only-thing-to-fear moment. The Brexit vote – the decision by United Kingdom voters to leave the EU – illustrates how the times require more robust leadership, argued Marc R. Benioff, Chairman and Chief Executive Officer of Salesforce in the US, in the closing session. “Leaders must be much clearer, stronger and more articulate in explaining how they look at the future,” he stressed. “There is a crisis of trust in the world today. That can only be answered by direct leadership.”

It also requires agile leadership – decision-making that is nimble, resourceful and responsive, in tune with the need in today’s open-source world for diversity, inclusion and collaboration. “The challenge

is not that the Fourth Industrial Revolution is taking place, but that the benefits should help the many and not just the few,” said meeting Co-Chair Navdeep Bains, Minister of Innovation, Science and Economic Development of Canada. “Innovation boils down to one key element – people. Diversity is so critical.”

China’s rise has been predicated on its openness to collaboration and partnerships, pointed out Hugh Martin, Chief Executive Officer of Sensity Systems in the US, which provides sensor-based lighting solutions for cities. His company has announced a partnership with the Chinese Academy of Sciences for a joint venture in Guangzhou that would create world-class systems developed specifically for Chinese urban areas using both partners’ technology.

China is daring to share. The government’s “One Belt, One Road” (OBOR) concept for regional cooperation and its launching of the Asian Infrastructure Investment Bank (AIIB) to fund infrastructure across the OBOR region and beyond underscore that commitment, although they have been greeted with some scepticism and even suspicion from certain quarters. China is aiming for mutual benefits and greater transparency, insisted Jin Liqun, President of the Beijing-based AIIB. “China is the proponent, initiator and promoter. But China itself cannot do all this. China proposes but does not impose.” Another lesson in leadership in the Fourth Industrial Revolution.

“China’s leaders proposed ‘One Belt, One Road’ after analysis of the Chinese and world economies and with an understanding of the complementarity of countries in the region.”

Zhang Bingjun
Corporate Chairman, Tianjin TEDA Construction Group,
People’s Republic of China





Yin Chang, Anchor, Tianjin Radio and Television Station, People's Republic of China; Zhang Bingjun, Corporate Chairman, Tianjin TEDA Construction Group, People's Republic of China; Ian Bremmer, President, Eurasia Group, USA; Jin Liqun, President, Asian Infrastructure Investment Bank, Beijing; Li Daokui, Dean, Schwarzman College, Tsinghua University, People's Republic of China; Benedikt Sobotka, Chief Executive Officer, Eurasian Resources Group, Luxembourg

One Belt, One Road: Beyond Economics

China's pursuit of its "One Belt, One Road" (OBOR) concept of regional cooperation, which encompasses 65 countries along the land and maritime Silk Road routes, demonstrates its geo-economic objectives as its economy faces slower growth and diminished labour-cost advantages. "This goes beyond economics," explained Jin Liqun, President of the Beijing-based Asian Infrastructure Investment Bank (AIIB), a parallel China-led initiative that he said will focus on funding projects in the region that are financially sustainable, environmentally friendly and socially acceptable. "This is more strategic and geopolitical. It boils down to one single objective: peace and prosperity for people."

Yet there are clear commercial goals. Zhang Bingjun, Corporate Chairman of the Tianjin TEDA Construction Group in China, cited his company's partnership with the Egyptian government on an industrial development zone near the Suez Canal as an example of OBOR cooperation. "The launching of this strategy is driven by the demand of Chinese companies," he explained.

By investing in infrastructure development in OBOR countries, China is promoting the flow of capital, goods and commodities across the region, added Li Daokui, Dean of Schwarzman College at Tsinghua University in Beijing. If the plan is successful, over the coming decades the countries in the region "will form a highly effective, efficient and socially developed region like the EU," Li predicted. "The region will become highly converged economically rather than be in conflict."

That strategic element is important. "One of the main reasons 'One Belt, One Road' was created is to do something about [China's] overcapacity domestically," political scientist Ian Bremmer, President of Eurasia Group in the US, accepted. But "China is going out and creating supply chains that it will be eager to protect. It won't be 'not my problem' anymore. The Chinese leadership will be much more [engaged] in support of stability. The world absolutely welcomes this and needs it."



Broken Up over Brexit

With the UK's Brexit vote just two days before the start of the Annual Meeting of the New Champions 2016, participants in Tianjin debated the decision of the people of the United Kingdom to leave the EU and its consequences.

"It could be – I'm not saying it is going to be – the beginning of the disintegration of the European Union or the Eurozone," posited Nouriel Roubini, Professor of Economics and International Business at the Stern School of Business of New York University. "I don't expect a global recession or another financial crisis. But it is a significant shock. It creates a whole bunch of economic, financial, political and also geopolitical uncertainties," he said. Argued Catherine Wood, Chief Executive Officer of ARK Investment Management in the US: "What Britain has done is unshackle itself from the suffocating bureaucracy of the EU."

Brexit was a result of fear overcoming hope in a divided society. "What we saw in the referendum was a division between rich and less rich, young and old, skilled and less skilled," Roubini reckoned. "This kind of pressure is becoming severe." The presidential election campaign has brought these tensions to the fore in the US, he noted.

"The greatest danger we face in this world is the deep, deep fear that people feel about the future," R. May Lee, Dean of the School of Entrepreneurship and Management at ShanghaiTech, told participants in the closing plenary. For this reason, strategies for growth must at the same time aim for diversity and inclusion. Concluded Lee: "We have to teach that skill to identify issues and ask questions at every level. The danger is that we fall into narrow universes and talk only to people who agree with us."



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01: Michael Falcon, Chief Executive Officer, Asia-Pacific, Global Investment Management, JPMorgan Chase & Co., Hong Kong SAR; Larry Stone, President, Group Public and Government Affairs, BT, United Kingdom; Ian Bremmer, President, Eurasia Group, USA; Adrian Monck, Head of Foundations and Public Engagement, Member of the Executive Committee, World Economic Forum

02: Klaus Kleinfeld, Chairman and Chief Executive Officer, Alcoa, USA
03: N. Chandrababu Naidu, Chief Minister of Andhra Pradesh, India
04: Tony Juniper, Fellow, University of Cambridge Institute for Sustainability Leadership, United Kingdom
05: Arthur Huang, Founder and Chief Executive Officer, Miniwiz, Chinese Taipei





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01: Ashifi Gogo, Chief Executive Officer, Sproxil, USA
02: Benjamin Waber, Chief Executive Officer, Humanyze, USA

03: Toshiyuki Inoko, Founder, Team Lab, Japan
04: Philip Campbell, Editor-in-Chief, Nature, United Kingdom

05: Matt Vella, Business Editor, Time Magazine, USA, Justine Cassell, Associate Dean, Technology, Strategy and Impact, School of Computer Science, Carnegie Mellon University, USA; Junichi Rekimoto, Professor, Interfaculty Initiative in Information Studies, University of Tokyo, Japan; Yobie Benjamin,

Co-Founder, Avegant Corporation, USA
06: Works in Progress Exhibition: Humanoid Robot
07: Andrew Fursman, Chief Executive Officer, 1QB Information Technologies (1QBit), Canada



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01: Nina Tandon, President and Chief Executive Officer, EpiBone, USA
02: Ashifi Gogo, Chief Executive Officer, Sproxil, USA
03: Charles Hayes, Partner, IDEO; Managing Director, China, IDEO Shanghai, People's Republic of China
04: Lynette Wallworth, Artist, Studio Wallworth, Australia; Curtis Taylor, Filmmaker, Australia
05: Works in Progress: Robotics





01: Future Hub

02: Dong Xiaoying, Associate Professor, Department of Management Science and Information Systems, Guanghua School of Management, Peking University, People's Republic of China

03: James Zhou, Chief Executive Officer, China, Louis Dreyfus Company, People's Republic of China

04: Shaping the Future of Information and Entertainment



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01: Science in Depth:
Turbocharging the
Immune System
02: A Conversation with
Premier Li Keqiang



01: Charlotte Haug, International Correspondent, New England Journal of Medicine, USA; Mark Brooks, Chief Information Officer, Centene Corporation, USA; Tim Fell, Chief Executive Officer, Synthace, United Kingdom; Ilse Treurnicht, Chief Executive Officer, MaRS Discovery District, Canada; Kellie Charles, Senior Lecturer and Research Group Leader, Cancer Therapeutics Research Group, University of Sydney, Australia; Andrew Thompson, Co-Founder and Chief Executive Officer, Proteus Digital Health, USA

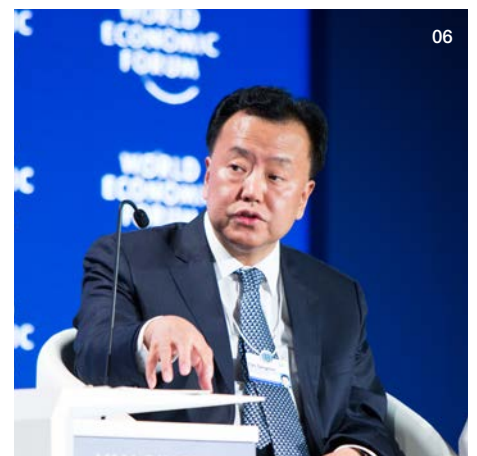
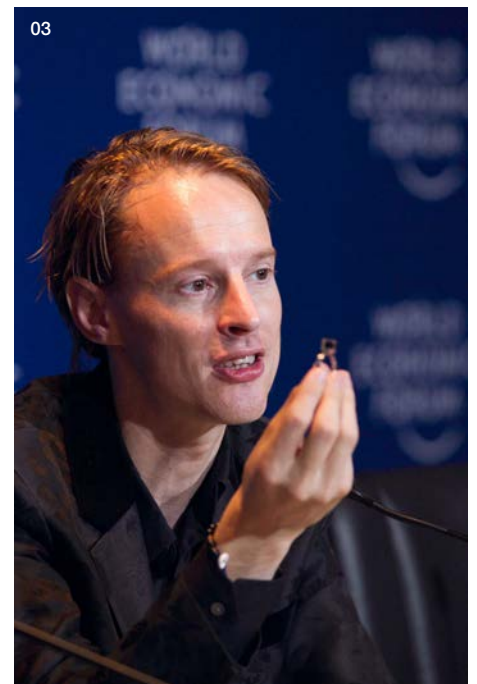
02: Zhang Yuxuan, Principal, Beijing Milun Traditional Kungfu, People's Republic of China

03: Daan Roosegaarde, Artist, Studio Roosegaarde, Netherlands

04: Jamie Morin, Director, Cost Assessment and Program Evaluation, US Department of Defense, USA

05: The Digital State

06: Yan Qingmin, Vice-Mayor of Tianjin, People's Republic of China



A Brave New World of Technology Transformation

In perpetual motion, constant metamorphosis and evolution, the confluence of imagination and possibility in the technology sphere is set to transform the future. Yet, as these innovations emerge, we are only just starting to understand how these new technologies will influence our behaviours, interactions and the way we live.

There is no doubt that we find ourselves at a poignant inflection time, when the trajectories of the latest technologies – from artificial intelligence, virtual reality, 3D printing and self-driving cars – are yet to be set in stone.

As the brave new world comes into sharper focus on our horizons, it is pertinent to consider what role we want to play in its evolution – is technology happening to us, for us or with us?

In the mind of Wendell Wallach, a bioethics professor at Yale University, one recent innovation, the self-driving car, is an encapsulating metaphor.

“Technology is moving into the driving seat as a primary determinant,” he noted at the meeting in Tianjin. “To what extent do we want that to happen? How will we let technology predetermine what will happen? There will be windows of opportunity to shape what we want to see.”

As each window of opportunity opens, it will be vital to consider what consequences these new technologies will have. Take the conceptual frontiers of artificial intelligence, for example. Computer scientists believe that, in our lifetimes, it will be possible to seamlessly fuse computing with thought.

Instead of using search engines to find an answer to a specific question, a process that takes about six seconds today, scientists say that it will be possible to conduct the same process effortlessly mid-sentence, with our computer-assisted minds.

Convenient, definitely, but it does raise some serious philosophical concerns. How comfortable are we, really, with imbuing computers with the ability to read our minds? And that’s before we get to the existential quandary of what we define as innately human traits – perhaps empathy, creativity or even a commitment to democracy



“China will create new industries; others may fall, but technologies will help them redevelop. We have to identify the important technologies of the future.”

Long Guoqiang

Vice-President, Development Research Center of the State Council (DRC), People's Republic of China

– when computers can decipher our innermost thoughts.

Neurobiologists share similar concerns when it comes to virtual reality. The immersive, experiential technology could play a significant role in fostering brain development, even recovery, but it also has the potential to be exploited.

The rise of technological innovations also raises interesting regulatory challenges. In Luxembourg, Finance Minister Pierre Gramegna is grappling with how to respond to blockchain, an innovation he believes will revolutionize banking and financial services, and even supersede the internet.

“I think it is possible that ‘blockchain’ will replace the word ‘internet’. By the time our children have children, the only time they will see the word ‘internet’ is in science and history books,” Gramegna told participants in Tianjin.

Blockchain, a decentralized digital ledger and the main technical innovation of the cryptocurrency bitcoin, allows for faster processing and lower costs, as well as increased transparency and compliance. Some believe that blockchain will do for business transactions what the internet did for information.

The view from the financial hub of Luxembourg, said Gramegna, is to foster agile governance and conducive frameworks. Luxembourg was among the first countries to legalize virtual currencies, allowing the

government to apply the same regulations to virtual and non-virtual currencies. “You need a regulator that is keen,” he asserted. “The regulator is there to apply the rules, fully and in an equal manner; but, at the same time, the regulator can be innovative.”

The platform economy – think user-based networks such as Airbnb and Uber – is also challenging governments to respond in new ways when it comes to regulation and taxation. How can you charge start-up style entities that operate between the gaps yet utilize public goods?

On the flipside in this fast-evolving space, futurists are putting their minds not only to how the platform economy can deliver services in new ways, but also to how it could accelerate social equity. Could, for example, healthcare services be “Uberized” or homelessness curbed through an innovative adoption of Airbnb?

Looking ahead, the future is uncertain. Can this new breed of companies deliver what we need or will the scaling-up of the platform economy ultimately undermine user trust and labour protection? Some say the headlines of 2020 could go either way: “Platforms Succeed Where Governments Fail” or “Platforms Disappoint, the Bubble Bursts.”

Of course, with millions still living without electricity, it’s vital to remember that many remain shut out from the technology revolution occurring around them. Encouraging a more equitable access to resources will be a huge

challenge in the future. So too, will be managing a volatile climate happening alongside it.

The climate agreement in Paris that saw the world’s two largest economies, China and the United States, commit to significant reductions in greenhouse gases is a great first step, but it won’t be enough. Following the lead of governments, private firms also need to shape up to stay relevant.

“The companies that are not preparing right now, not running on the premise their emissions are not unlimited, not recognizing there are new forms of energy – those companies will not be future-proof, and they run the risk the going out of business,” noted Feike Sijbesma, Chief Executive Officer and Chairman of the Managing Board, Royal DSM, Netherlands, and a Co-Chair of the Annual Meeting of the New Champions 2016.

Just as with technology, agile thinking and governance are required to mitigate climate change, from creative financing solutions such as green bonds to a full commitment to a carbon market.

Indeed, the brave new world of technological innovation and change is upon us and it will bring a multitude of both intended and unintended consequences. It’s up to us – individuals, societies, scientists, entrepreneurs, companies and governments – to take a seat at the table to debate and discuss which way we want our future to go.

“I would like to see blockchain being applied to big problems – the proliferation of counterfeit goods and financial inclusion. We should be thinking about where we can apply this technology.”

Leanne Kemp
Chief Executive Officer and Founder, Everledger, United Kingdom





Understanding Blockchain

Blockchain – an innovative digital ledger and the epitome of decentralized technology – is set to be a game-changer. Best known as the main innovation behind the crypto-currency bitcoin, blockchain is being touted as the new internet of the financial world.

Essentially a secure ledger database made up of data blocks and time codes shared by all users in an established, continually evolving platform, blockchain allows for faster processing time, lower costs, fewer intermediaries and increased transparency and compliance.

Blockchain has much wider applications beyond the world of finance in terms of fostering increased transparency and accountability in everything from voting lists and government contracts to the illicit trade of “blood” diamonds.

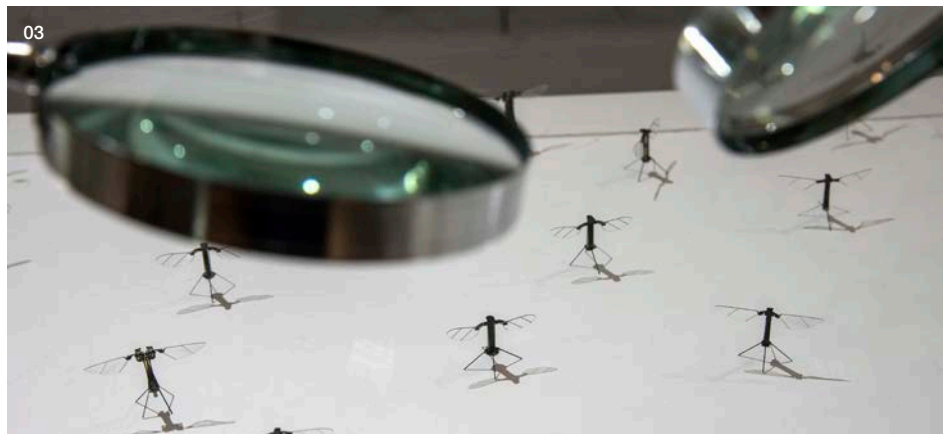
As data on blockchain is immutable once entered, the implications for cracking down on corruption, and tackling big global issues, is huge. Leanne Kemp, founder of the start-up company Everledger, is leading the way by using blockchain to trace synthetic diamonds that have started to pepper the supply chain.



01: Tian Wei, Moderator and Host, CCTV News, China Central Television, People's Republic of China; Feng Fei, Vice-Minister of Industry and Information Technology of the People's Republic of China; Sun Pishu, Chairman and Chief Executive Officer, Inspur Group, People's Republic of China; Tina Tao, Chief Operating Officer and Partner, Innovation Works, People's Republic of China; Zhang Xiaogang, President, International Organization for Standardization (ISO), Anshan
02: Earth Time-Lapse Hub
03: Li Sixuan, Anchor, China Central Television (CCTV), People's Republic of China; Zhang Ruimin, Chairman and

Chief Executive Officer, Haier Group, People's Republic of China; Yossi Vardi, Chairman, International Technologies Ventures, Israel; Zhang Xiaogang, Vice-Chairman, China Center for International Economic Exchanges (CCIEE), People's Republic of China; Mah Siew Keong, Minister, Office of the Prime Minister of Malaysia; Catherine Wood, Chief Executive Officer, ARK Investment Management, USA





01: Ask About: The Adolescent Brain
02: Stamatia Giannarou, Royal Society University Research Fellow, Hamlyn Centre for Robotic Surgery, Imperial College London, United Kingdom

03: Works in Progress: RoboBee
04: Works in Progress



01: Sarah Kenderdine, Professor and Director, Expanded Perception and Interaction Centre, University of New South Wales, Australia
02: Lee Xiaodong, President and Chief Executive Officer, China Internet Network Information Center, People's Republic of China
03: From Waste to Value
04: Works in Progress: Collisions





01



02



04



03

01: Navdeep Bains, Minister of Innovation, Science and Economic Development of Canada; Adrian Monck, Head of Foundations and Public Engagement, Member of the Executive Committee, World Economic Forum
02: Daljit Singh, President, Fortis Healthcare, India
03: Mu-Ming Poo, Director, Institute of

Neuroscience, Chinese Academy of Sciences, People's Republic of China
04: Nina Tandon, President and Chief Executive Officer, EpiBone, USA
05: Leslea Hlusko, Associate Professor, University of California, Berkeley, USA



05



01: Spotlight on Virtual Reality: Human Body
02: Stephan Sieber, Chair of Organic Chemistry II, Technical University of Munich, Germany
03: Feike Sijbesma, Chief Executive Officer and Chairman of the Managing Board, Royal DSM, Netherlands; Qi Ye, Director, Brookings-Tsinghua Center for Public Policy, People's Republic of China
04: Nergis Mavalvala, Curtis and Kathleen Marble Professor of Astrophysics, Massachusetts Institute of Technology (MIT), USA
05: Lee Bowei, Chairman of the Board, LCY Chemical Corp., Chinese Taipei

01

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02



03



01: Yang Yanqing, Deputy Editor-in-Chief, China Business News, People's Republic of China; Zhang Yuyan, Director, Institute of World Economics and Politics (IWEP), People's Republic of China; Li Baodong, Vice-Minister of Foreign Affairs of the People's Republic of China; Ayse Sinirlioglu, Deputy Undersecretary of Economic Affairs of Turkey; Li Daokui, Dean, Schwarzman College, Tsinghua University, People's Republic of China
02: Vijay Eswaran, Executive Chairman, QI Group, Malaysia
03: Making Innovation More Inclusive session
04: Wu Tong, Musician, People's Republic of China



Developments from the Meeting

The meeting in Tianjin saw a number of new partnerships and initiatives launched, including:

- The Forum launched the *Human Capital Report*, an analysis of 130 countries' progress in developing and deploying the talents of their people. The report's key finding is that the world currently only harnesses 65% of its people's potential.
- A new cohort of Technology Pioneers was announced. This community, which has in the past recognized companies including Google, Airbnb and TransferWise, this year saw a focus on disruptors in the health, financial and agriculture industries with the likes of Blockchain, Collectis and Farmer's Edge.
- The Top 10 Emerging Technologies of 2016 were announced, with self-driving cars, social artificial intelligence and batteries capable of powering whole villages among those expected to see a tipping point in 2016.
- A one-day workshop was organized by the Forum, the Chinese Ministry of Environmental Protection and the China Centre for International Collaboration on Environment and Development. The workshop kicked off a partnership to explore the implications of the sharing economy for jobs, growth and the environment.
- The Forum's System Initiative on Shaping the Future of Health and Healthcare launched a new project, Value in Healthcare, which aims to improve performance measurement and adapted payment models to support better access to care and financial sustainability among healthcare providers.
- EYElliance, a multistakeholder initiative supported by the Schwab Foundation for Social Entrepreneurship, launched a scheme to help the 2.5 billion people in the world who need but do not have eyeglasses.
- A meeting of high-level officials from China and the European Union met in advance of July's EU-China Summit to discuss how technological innovation could reinforce bilateral ties.
- Maninder Singh Bajwa, a Global Shaper from Chandigarh Hub, was invited by the Chief Minister of Andhra Pradesh, India, to pilot an educational project he has developed in the Indian state of Andhra Pradesh.
- Australian artist Lynette Wallworth had the Chinese premiere of her virtual-reality film, *Collisions*, on the theme of climate change and indigenous tradition.
- An agreement was announced between the Government of the City of Beijing and Dutch artist Dan Roosegaarde to bring his "Smog Free Project", a tower that cleans air at a nano-level, to China to raise awareness to the challenge of air pollution.

Facts & Figures



Acknowledgements

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Further Information



The event page of the Annual Meeting of the New Champions 2016 provides more information from the meeting, including photographs, press releases, social media and webcasts of selected sessions.



This report is also available to download:
<http://wef.ch/amnc16report>

Contributors

W. Lee Howell, Head of Global Programming; Member of the Managing Board, World Economic Forum

David Aikman, Chief Representative Officer, China, Member of the Executive Committee, World Economic Forum

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Janet Hill, Editor
Kamal Kamaoui, Head of Production and Design

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Upcoming Meetings

India Economic Summit

New Delhi, India 6-7 October 2016

With a strong demographic dividend, growing entrepreneurial ecosystem and large domestic market, the time is right for India's economy to soar. If the economic liberalization of 1991 was a watershed moment for India, 25 years later the country again stands at the brink of another historic moment. The World Bank and International Monetary Fund both project a robust 7.5% growth for the country in 2016 and 2017. Yet India faces challenges such as shrinking exports, an infrastructure deficit, barriers to business and stalled reforms. With India taking on the G20 presidency in 2018, progress made now will define India's G20 leadership. The summit will explore some of these issues while engaging the global multistakeholder community of the World Economic Forum for action and impact. For more information, email: India@weforum.org



World Economic Forum Annual Meeting 2017

Davos-Klosters, Switzerland 17-20 January

We live in a fast-paced and interconnected world where breakthrough technologies, demographic shifts and political transformations have far-reaching societal and economic consequences. More than ever, leaders need to share insights and innovations on how to best navigate the future. The World Economic Forum Annual Meeting in Davos-Klosters remains the foremost creative force for engaging the world's top leaders in collaborative activities to shape the global, regional and industry agendas at the beginning of each year. For over four decades, the World Economic Forum's mission – improving the state of the world – has driven the design and development of the Annual Meeting programme. For more information, email: AnnualMeeting@weforum.org



For a full list of upcoming meetings, visit the World Economic Forum's website: www.weforum.org







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World Economic Forum
91–93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland

Tel.: +41 (0) 22 869 1212
Fax: +41 (0) 22 786 2744

contact@weforum.org
www.weforum.org