



# Towards effective science-industry co-creation

Paris, 5 December 2018

## WORKSHOP: TOWARDS EFFECTIVE SCIENCE-INDUSTRY CO-CREATION

Date: 5 December 2018

Location: Paris, OECD Conference Centre



### Introduction

In recent years, we have seen a change in the interaction between science and industry from a primary focus on the transfer of research results from the lab into corporate R&D and product development, i.e. the traditional linear model of technology transfer, to an increased focus on different forms of interaction where industry and scientists work together with the goals of co-creating new knowledge and technologies. Science-industry co-creation that pushes the boundaries of traditional science-industry interaction (such as the well-established formats of contract research or sponsored research) has increasingly become a priority for policy makers as a vehicle for productivity growth and as a way to address various societal challenges.

Recent examples of such science-industry co-creation comprise the [MIT-IBM Watson AI Lab](#), [The TIM Open Labs](#) by Telecom Italia, Portugal's strategic program for collaborative laboratories (CoLab), AstraZeneca's [open innovation platform](#), and the [MindSphere Innovation Network](#) Siemens launched recently with universities, to mention a few.

Civil society is also more involved than ever in science-industry co-creation, particularly when it comes to addressing important societal challenges to find new solutions in the areas of health, sustainable growth and development to name but three areas. A recent example is UNLEASH.org where universities and companies work together to find solutions to UN Sustainable Development Goals.

But such science-industry co-creation is challenging current practices and principles for science-industry interaction in areas such as the management of intellectual property rights and governance. Success also depends on increasing mobility of individuals across organisational boundaries and incentives for different actors of the innovation eco-system.

This workshop, organised jointly by the Working Party on Innovation and Technology Policy (TIP) and the MIT Innovation Initiative, will explore the emerging practices of science-industry co-creation and, against this background explore the question: *what are the policy principles and practices of effective science-industry co-creation?* The workshop is organised in the context of, and contributes to, the TIP [“Assessing the Impacts of Knowledge Transfer and Policy”](#) project and to future planned TIP work on this topic.

### **Objectives of the workshop**

- Collect insights from university, industry, and civil society on the current state of science-industry co-creation and the challenges involved
- Discuss current policy initiatives on how to solve the challenges arising in co-creation between science, industry, and civil society
- Discuss what policy changes or policy adaptation is needed to enable more effective co-creation for productivity growth and to address societal challenges

### **Workshop outcomes**

The workshop will result in a policy paper written and published by the OECD and MIT on the “Practices and Principles for Co-creation between science and industry”.

## AGENDA

### Opening and introduction to the workshop

9h30 – 9h45

- **Dirk Pilat**, Deputy Director, OECD Directorate for Science, Technology and Innovation
- **Fiona Murray**, Associate Dean of Innovation at the MIT Sloan School of Management, and Co-director of MIT's Innovation Initiative.



**Fiona Murray** is the Associate Dean of Innovation at the MIT Sloan School of Management, William Porter (1967) Professor of Entrepreneurship, and an associate of the National Bureau of Economic Research. She is also the co-director of MIT's Innovation Initiative. She serves on the British Prime Minister's Council on Science and Technology. Murray is an international expert on the transformation of investments in scientific and technical innovation into innovation-based entrepreneurship that drives jobs, wealth creation, and regional prosperity. She has a special interest in the commercialization of science from idea to impact and the mechanisms that can be effectively used to link universities with

entrepreneurs, large corporations, and philanthropists in that process.



**Dirk Pilat** is Deputy Director of the OECD's Directorate for Science, Technology and Innovation (DSTI). As Deputy Director, he supports the Director of DSTI in pursuing the Directorate's programme of work and contributing to the achievement of the strategic goals of the Organisation as defined by the OECD Secretary-General. He joined the OECD in February 1994 and has worked on many policy issues since then, including the OECD Innovation Strategy and OECD Green Growth Strategy, how to draw greater benefits from information technology for economic growth, how to strengthen growth performance in OECD economies, how to strengthen the performance of the services sector, as well as work on climate change, labour

markets, product market regulation, productivity and entrepreneurship. He was Head of the Science and Technology Policy Division from 2006 to January 2009, with responsibility for the OECD's Committee for Scientific and Technological Policy, and Head of the Structural Policy Division, with responsibility for the OECD's Committee on Industry, Innovation and Entrepreneurship, from February 2009 to December 2012. Before joining the OECD, Mr. Pilat was a researcher at the University of Groningen, in the Netherlands, where he also earned his PhD in Economics. He has published extensively in a range of economics journals, with a strong focus on international comparisons of growth and productivity performance.

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9h45 – 10h15

- **Lars Frølund**, Visiting Fellow at MIT and Research Director of MIT Innovation Initiative
- **Caroline Paunov**, Head of Secretariat for the OECD Working Party on Innovation and Technology Policy, OECD Directorate for Science, Technology and Innovation



**Lars Frølund** is a Visiting Fellow at MIT and the Research Director of MIT Innovation Initiative. His research focuses on the success factors for university-industry partnerships in innovation ecosystem, mission-driven research and innovation, and the role and value of intermediaries. He is the co-editor of the book *Success Factors for University Partnerships* where leading companies describe their excellence in industry-university collaboration. Recently he has worked with prof. Fiona Murray (MIT) and Dr. Max Riedel (Siemens) on the six questions a company must ask itself to develop a systematic approach to university partnerships in innovation ecosystems. The paper “Developing Successful Strategic Partnerships with Universities” is published by *Sloan Management Review*. He was a Fulbright Scholar at MIT in 2016/17.



**Caroline Paunov** is Senior Economist and Head of Secretariat for the OECD Working Party on Innovation and Technology Policy (TIP) at the Directorate for Science, Technology, and Innovation of the OECD. In her current position she oversees the Working Party’s work on digital and open innovation and on assessing the impacts of public research on innovation. She previously conducted work on innovation for inclusive growth and on national intellectual property rights systems in emerging economies. Specialised in applied econometrics, her research work has been published in leading academic journals, including the *Review of Economics and Statistics*, the *Journal of Development Economics*, the *Canadian Journal of Economics*, *Research Policy* and *World Development*. Previously, Caroline worked for the World Bank, the United Nations and cooperated on various projects for the public sectors in Brazil, Spain and Germany. She holds a B.A. and M.A. (Hons) from the University of Oxford, a M.Sc. from the University Pompeu Fabra and a Ph.D. in Economics from the University of London.

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**Keynote address by Fiona Murray on “Co-creation at MIT”**

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10h15 – 10h45

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*Coffee break*

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10h45-11h15

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**Panel 1: Exploring university perspectives on co-creation**

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11h15 – 12h30

The panel will address the following questions:

- In what ways can co-creation be an effective way to produce breakthrough innovations and solve societal challenges?
- What key challenges should be addressed to achieve effective science-industry co-creation?
- How should ownership of co-created knowledge be handled from the perspective of serving public and private interest? How should civil society best be involved in collaborations?
- How can human talent be effectively circulated across organisational boundaries to ensure effective co-creation?

Chair:

- **Göran Marklund**, Deputy Director General and Head of Operational Development at VINNOVA, and Chair of the OECD Working Party on Innovation and Technology Policy.

Speakers:

- **Adriënnne Heijnen**, Senior Research Policy Advisor, Aarhus University [videoconference]
- **Cathie Vix-Guterl**, Vice President R&D Strategic Anticipation Corporate, TOTAL
- **Kazuyuki Motohashi**, Professor, Department of Technology Management for Innovation (TMI) School of Engineering, the University of Tokyo
- **Valeria D'amico**, Head of Joint Open Lab Catania, Telecom Italia



**Göran Marklund** is Deputy Director General and Head of Operational Development at VINNOVA, the Swedish Government Agency for Innovation Systems. He was previously Science and Technology Attaché at the Swedish Embassy in Washington DC, guest researcher at the Center for International Technology Policy at George Washington University and Associate Professor in Economic History at Uppsala University. Mr. Marklund often gives advice to the Government on research, innovation and growth policy issues. As a researcher, he has primarily specialized in globalization, innovation and national competitiveness, with a particular focus on innovation, R&D and indicators on innovation and growth. In this function he has closely followed OECD's and Eurostat's indicator work and often assisted at the meetings of OECD's groups of national experts on science and technology. Mr. Marklund is chairman of the Advisory Board for R&D and Innovation Statistics at Statistics Sweden and Chair of the OECD Working Party on Innovation and Technology Policy.



**Adriëne Heijnen** has a PhD in social anthropology and ethnography from Aarhus University, Denmark, and a MA in cultural anthropology from Radboud University Nijmegen, The Netherlands. Currently, she works as Senior Scientific Advisor and Researcher at the newly established Centre for the Digital Transition of Cities and Communities, at Aarhus University. Her research concentrates on human and social aspects of the digital transition of society (specifically in urban contexts), urban activism, citizen-engagement and co-creation processes. She is the author of the book *The Social Life of Dreams* and has published on urban experimentation and co-creation practices. She has been involved in numerous European research and innovation projects primarily in the field of smart cities and IoT. Dr. Heijnen is cofounder and vice-chair of the European network Creative Ring.



**Cathie Vix-Guterl** joined TOTAL in September 2018 as VP Strategic Anticipation R&D. She is graduated in Chemical Engineering from Ecole Européenne d'ingénieurs de Strasbourg and holds a PhD in Material Science. She previously worked as a CNRS senior researcher focused on carbon and ceramic-based materials for automotive, aeronautic, storage energy and environmental application. She has co-authored 125 journal publications, 8 book-chapters, 5 patents and more than 280 communications. She was coordinator and scientific leader for more than 40 international and national research programs with public laboratories and industrial partners. She has supervised the work of 61 graduate students.

During her previous 26 years at CNRS, she held different senior-management positions. She created and directed the Material Science Institute of Mulhouse (CNRS joint unit of 200 persons) and the Institute Carnot MICA which gathers 17 research and technological members to support the industrial partners in designing products and services of the future in the field of functional materials. She was also Vice-President of the Network of Carnot Institute.

She has also been involved in different assessment activities: member of several committees of the National Agency for Education and Research (HCERES) for the evaluation of public research organization, research units and doctoral schools, member of selection committee for the creation of innovative technological enterprises (I-Lab competition), chair and co-chair of evaluation committees of the National Research Agency ( ANR) programs, member of the selection committee for the Herzberg Gold Medal, Polanyi and Brockhouse Prizes of the Natural Sciences and Engineering Research Council of Canada. She is a member of the National Council for the Industry. She was awarded the CNRS Medal of Innovation in 2016 and the Legion of Honor in 2018.



**Kazuyuki Motohashi** is a professor of TMI department and the director of international technology Management Program. He is also served as a faculty fellow at RIETI (Research Institute for Economy, Trade and Industry) and a visiting researcher at NISTEP (National Institute for Science and Technology Policy). Until this year, he had taken various positions at the Ministry of Economy, Trade and Industry of the Japanese Government, economist at OECD and associate professor at Hitotsubashi University. His research interest covers a broad range of issues in economic and statistical analysis of innovation, including economic impacts of information technology, international comparison of productivity, national innovation system focusing on science and industry linkages and SME innovation and

entrepreneurship policy. He has published several papers and books on above issues, including *Productivity in Asia: Economic Growth and Competitiveness* (2007), *Global Business Strategy: Multinational's Venturing Into Emerging Economies* (2014). He is an editor of *Research Policy*.

**Valeria D'Amico** joined Telecom Italia in 2001, and has since worked in various corporate functions dealing with Network and Service Innovation, also in support of foreign subsidiaries, European Commission funded projects and International Standardization Bodies. She has been responsible for the Joint Open Lab department, in which she managed the innovation activities of eight TIM laboratories co-located at the most prestigious Italian universities. Since 2013, she is responsible of the Joint Open Lab based in Catania, focused on driving innovation on the Internet of Things with an Open Innovation approach, working in close partnership with the industrial, academic and regional start-up ecosystem. She is author of 8 patents, 40+ papers on international journals and various book contributions and has conceived, in collaboration with Olivetti, the model of innovation "Demo to the Customer" with the aim of generating market value starting from academic research, reducing the "time-to-market of an idea". She has an Electronic Engineering degree from University of Catania and an Executive MBA from SDA Bocconi School of Management in Milano.



#### *Lunch break*

12h30 - 14h00

### **Panel 2: Exploring the private sector and civil society perspective to co-creation**

14h00 – 15h00

The panel will address the following questions:

- In what ways can co-creation be an effective way to produce breakthrough innovations / solve societal challenges?
- What key challenges should be addressed to achieve effective science-industry co-creation?
- How should ownership of co-created knowledge be handled from the perspective of serving public and private interest? How should civil society best be involved in collaborations?
- How can human talent be effectively circulated across organisational boundaries to ensure effective co-creation?

Chair:

- **Göran Marklund**, Deputy Director General and Head of Operational Development at VINNOVA, and Chair of the OECD's TIP Working Party



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Speakers:

- **Michael Sundström**, Scientific Director, Structural Genomics Consortium (SGC), [videoconference]
- **Harley Davis**, Vice President from the France Lab, IBM
- **Oihana Basilio**, Director, Fundación Rafael del Pino
- **Yves Bernaert**, Lead for Accenture Technology in Europe and Intelligent Platform Services Business Performance



**Michael Sundström** received his PhD from Uppsala, followed by PostDoctoral studies at the Karolinska Institutet. From 1993-2000 he was at Pharmacia as Director for structure-based drug design and oncology R&D portfolio management, mainly focused on the development of kinase inhibitors. Between 2001 and 2003 he held senior positions at the Swedish Biotech's Actar and Biovitrum. In 2003, he joined the Structural Genomics Consortium (SGC) at the University of Oxford, as Chief Scientist, where efforts were focused on structure-function relationships for metabolic enzymes, integral membrane proteins and protein kinases. His team at Oxford has since been the largest contributor worldwide of 3D-structures for these protein families. In 2007 he assumed the position as Managing Director for the Novo Nordisk Foundation Center for Protein Research (Copenhagen), with main research areas covered were protein production and characterization, proteomics and systems biology. From end of 2011, he was VP Discovery Research at Karolinska Development in Stockholm, mainly working with in-licensing of pre-clinical research projects. He then re-joined the SGC since mid-2014 as Scientific Director, with primary focus on leading its IMI funded ULTRA-DD project and the SGC Tissue Platforms; focused on target definition and validation in oncology, neurodegenerative and inflammatory diseases. He is since 2007 adjunct Professor at the University of Aalborg (Denmark).



**Harley Davis** is Vice President, responsible for IBM's Operational Decision Management (ODM) business as well as the IBM France Lab, leading a team of 600 architects, developers, technical writers, consultants and QA specialists. ODM is the world's leading decision management platform, with hundreds of clients around the world. IBM France Lab is IBM's R&D center in France, responsible for developing, supporting, and helping clients deploy IBM's software portfolio, focusing on advanced decision engineering and artificial intelligence applied to business problems.

Mr. Davis has spent over 25 years building, selling, supporting, and implementing decision support and business agility technology. He spent seven years in ILOG's Paris-based development center developing next-generation dynamic programming languages and subsequently held several leadership roles for ILOG in North America and Europe in professional services and sales. When IBM acquired ILOG, Mr. Davis was VP of Sales and Services for EMEA for ILOG, responsible for all ILOG software and services delivery in Europe. He has also managed the Optimization software business for IBM, expanding the business considerably through the implementation of a solution-based approach.

In addition, as CIO and EVP of Software Development of BridgeSpan, Inc., a Silicon Valley start-up focused on building a SaaS-based electronic mortgage processing and closing platform, Mr. Davis was responsible for software development of the world's first e-mortgage system, sponsored by Fannie Mae.

This system deployed ILOG business rules technology to support mortgage documentation rules in 48 states. Before joining ILOG, Mr. Davis was a researcher at the Xerox PARC research center in Palo Alto, California, applying constraint-based optimization technology to design problems. Mr. Davis has undergraduate and master's degrees from the Massachusetts Institute of Technology (MIT).



**Oihana Basilio** is the Director of Research and Online Programs at the Rafael del Pino Foundation and Professor of economics at the Autonomous University of Madrid, where she teaches in the Master in Economics and Management of Innovation. She holds a PhD. in Economics from the Autonomous University of Madrid, a MSc in Economics and Management of Innovation, a MSc in Society, Science and Technology from the European Inter-University Association and a Bachelor's Degree in Economics from the University of the Basque Country. She has also been the Director of Celera Association, an accelerator of young talents. Her research areas include innovation in services, management of intangibles, and knowledge management.



**Yves Bernaert** is the lead for Accenture Technology in Europe and Intelligent Platform Services (SAP, Oracle, Microsoft, Salesforce and other Cloud Based Solutions) globally. Focused on rotating and scaling our business to the NEW, he is responsible for advancing our integrated Technology strategy and driving innovation for our clients of the public and private sector. This includes new ways of working through our Innovation Architecture approach, ranging from Accenture Research, Ventures, Labs, Innovation Centers, Liquid Studios and Delivery Centers.

He is also a regular conference speaker on industry, technology and innovation topics and an active sponsor of Accenture's Inclusion & Diversity Program, committed to building and fostering a team that respects diversity and achieves gender equality by 2025.

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### Breakout session: Principles for effective science-industry co-creation

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15h00 – 16h30

The four breakout groups will reflect on what are the key principles of effective science-industry co-creation and what are the implications for policy. The four topics of discussion are presented below:

#### Topic 1

How do **policy practices and principles** for science-industry interactions have to be **revisited to promote co-creation** (rather than knowledge transfer)?

- *Discussion lead:* **Lars Frølund**

#### Topic 2

What can be done to **improve match-making**, building effective new collaborations across distances? What **best practice examples** show what policy can do in this regard?

- *Discussion lead:* **José Guimón**

#### Topic 3

What **principles** should apply to the IP rights from joint public-private collaborations? How can **public and private interests** best be reconciled while enabling collaborations?

- *Discussion lead:* **Margaret Chiappetta**

#### Topic 4

What collaborative **spaces and intermediary institutions** are needed to successfully collaborate? Are there **best practice examples** illustrating how policy can help address this challenge?

- *Discussion lead:* **Michael Keenan**

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*Coffee break*

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16h30 – 17h00

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### Policy roundtable: Lessons learnt and next steps

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17h00 - 18h00

The speakers and workshop participants will reflect on take-aways from the workshop, discuss policy lessons, present examples of effective policies implemented in different countries to support co-creation and point to next steps for policy analysis to support more effective co-creation.

Chair:

- **Göran Marklund**, Deputy Director General and Head of Operational Development at VINNOVA, and Chair of the OECD's TIP Working Party.

## Speakers:

- **Mu Rongping**, Director-General and Professor, Center for Innovation and Development, Chinese Academy of Sciences, China
- **Darja Isaksson**, Director General, VINNOVA
- **Richard Johnson**, CEO of Global Helix LLC and member of the Board on Life Sciences at the National Academy of Sciences
- **Joerg Niehoff**, Head of Sector Joint Programming, DG Research and Innovation, European Commission



**Mu Rongping** is Professor and the Director-General of the Center for Innovation and Development of the Chinese Academy of Sciences (CAS). He is also a member of the Expert Committee on National Development Plan of NDRC, editor-in-Chief of the Journal of Science Research Management, and president of the China High-tech Industry Promotion Society and the Chinese Association for Science of Science and S&T Policy Research. Dr. Mu is a member of the Governing Board of International Science, Technology and Innovation Centre for South-South Cooperation under the Auspices of UNESCO (ISTIC), and a member of Advisory Board of Technology and Management Centre for Development (TMCD) at the University of Oxford. He was director-general of Institute of Policy and Management of CAS (2004-2014), a member of the

Economic & Scientific Advisory Board of European Patent Office (2012-2015). Dr. Mu holds a B.S. and M.S. degree from University of Science and Technology of China, and a PhD degree in History of Technology from Technische Universität Berlin.



**Darja Isaksson** is the Director General of VINNOVA, Sweden.



**Richard Johnson** is the CEO and founder of Global Helix LLC, a policy strategy and global thought leadership firm, and Senior Partner Emeritus at Arnold & Porter, Washington DC. His work is at the intersection of science, emerging technologies, innovation strategy, and policy/legal issues.

Johnson has been an elected member of the National Academy of Sciences (NAS) Board on Life Sciences, numerous NAS National Committees, and the recent U.S. national strategy review panel for the future of the National Academies and the American research enterprise. He has been a member and co-author for a broad range of NAS reports and U.S. national commission papers, and has played a

leading role as a thought leader in synthetic biology and life sciences, innovation, university-industry collaborations, global science initiatives, and science-security issues.

Rick is the Chair of the OECD/BIAC Technology & Innovation Committee, the Brown Biology & Medicine Council, the recently formed Engineering Biology Research Consortium (EBRC) Policy Committee, and several innovation advisory councils in the United States and internationally. Johnson now serves as a Board Director of: (i) the iGEM Foundation; (ii) the Stanford Biofab and BioBricks Foundation; (iii) the EBRC/UC-Berkeley; (iv) the University-Industry Bioeconomy Task Force; and (v) the Global Biofoundry Alliance. For many years, Rick served on the MIT Corporation Committee, numerous U.S. and international science and innovation task forces, and the NAS Synthetic Biology Forum. He also serves as a Senior Adviser to the Global CEO Initiative Against Alzheimer's ("CEOi").

In addition to receiving his Juris Doctor degree from the Yale Law School where he was Editor of the Yale Law Journal, he received his graduate science degree from the Massachusetts Institute of Technology where he was a National Science Foundation National Fellow, and his undergraduate degree with highest honors from Brown University.



**Joerg Niehoff** is Head of Sector Joint Programming at DG Research and Innovation, European Commission. Mr. Niehoff is responsible for policies and activities related to European Partnerships, and in particular collaboration between Member State programmes. Previously he was Head of Office in Brussels for the Association of German Engineers, managed research programmes in a national funding agency, and worked as a researcher at Fraunhofer ILT. He holds degrees in engineering and economics and a PhD from Aachen University.

### Closing remarks

18h00-18h15

- **Dominique Guellec**, Head of the Science and Technology Policy Division, OECD Directorate for Science, Technology and Innovation



**Dominique Guellec** is Head of the Science and Technology Policy (STP) Division, within the OECD's Directorate for Science, Technology and Innovation (DSTI). This division covers notably: innovation policies, science policies, biotechnology and nanotechnology issues, national innovation studies, innovation for development, the STI Outlook, the Innovation Policy Platform, and the Space Forum. Mr. Guellec joined the OECD in 1995 and has worked in the DSTI on statistics and quantitative economic analysis of science, innovation and growth. From 2004-2005, Mr. Guellec was Chief Economist of the European Patent Office (Munich). Mr. Guellec has authored several books and many articles on patents, innovation and economic growth. His (co-) publications in English include *The Economics of the European Patent System* (Oxford University Press, 2007); and *From R&D to Productivity Growth: the Sources of Knowledge Spillovers and their Interaction* (Oxford Review of Economics and Statistics, 2004). Of French nationality, Mr. Guellec is a graduate from the *École nationale de la statistique et de l'administration économique (ENSAE, Paris)*.

Workshop website:  
[www.innovationpolicyplatform.org/co-creation](http://www.innovationpolicyplatform.org/co-creation)



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