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Ministry of Economic Affairs and Climate Policy

WORKSHOP

Digital health innovations

11-13 April 2018

The Hague and Eindhoven,
The Netherlands

WORKSHOP: DIGITAL HEALTH INNOVATIONS

Date: 11-13 April 2018

Location: The Hague and Eindhoven, The Netherlands

Ministry of Economic Affairs and Climate Policy

OECD

Workshop website: https://www.innovationpolicyplatform.org/digitalhealth

Introduction

'Inclusive digital technologies' can be defined as ICT applications with high impact on social wellbeing. When implemented in the health sector, these technologies can become an important driver of general wellbeing. Such digital health innovations can also bring opportunities for economic growth, given the size of the sector in most OECD countries.

The workshop 'Digital health innovations', which will take place in the Netherlands (The Hague and Eindhoven) on 12-13 April 2018, will bring together experts from the research and innovation policy, health policy and digital policy fields, in order to discuss about a topic that stands at the crossroads of these different policy areas. It will focus in particular on three topics:

- **Data sharing for health innovations**. The workshop will investigate challenges that policy makers face in stimulating the development and diffusion of smart health innovations and practices that rely on data-driven technologies. One of the topics of the discussion will be the need of international standards regarding the secure sharing of (patient) data to facilitate AI-diagnostic support.
- **Field labs in the Netherlands**. The Dutch Smart Industry Field Labs are a promising new addition to the toolbox of policy makers wishing to enable and support SMEs to develop ICT-related innovations. These test-facilities are of easy access for SMEs developing products and services in markets with high-speed innovation cycles, and have become an important complement to other more traditional research and innovation instruments.
- **Building the connectivity infrastructure (5G)**. Policy makers face important challenges in stimulating private investment to provide futureproof, secure and competitive connectivity, notably 5G-networks. Increasing use of health (and other) applications world-wide, create a need for international standards and a simple but effective regulatory framework, among others. The workshop aims at identifying those key challenges and exploring the range of possible policy responses.

Participation in the workshop is open to members of all OECD member states who are also members of the relevant OECD committees and working parties: the Health Committee (HEA), the Committee on Digital Economy Policy (CDEP), the Committee for Scientific and Technological Policy (CSTP), and the working parties on Innovation and Technology Policy (TIP), on Communication Infrastructures and Services Policy (CISP), and on Security and Privacy in the Digital Economy (SPDE).

This workshop is organised by the Dutch Ministry of Economic Affairs and Climate Policy, in cooperation with Philips, TNO, IMEC-Netherlands, Holst Center, the OECD and the Dutch Ministry of Health, Welfare and Sport.

Workshop output

Take-away messages from the panel sessions

Session 1: Policies to support data sharing for digital health innovations

- Data is critical for innovation in the digital age, especially in health. Quality of health (prevention, care and cure) depends on information, including treatments for rare diseases, improved diagnosis and precision medicine, as well as remote care. There is much potential benefit from applying machine learning techniques in health services (more even compared to some other sectors) given the strength of those techniques in pattern recognition that help inform diagnostics. There are many cases of applications across developed and developing economies (where applications have made a huge difference to resolve limited access to health care). Benefits also include potential cost reductions, notably in terms of prevention in the face of a global trend of increased population shares suffering from chronic illness.
- Data is like a public good, it can be reused and shared. This already has medical benefits, but also contains risks of security and privacy breaches. OECD work on health data governance shows that many countries collect health data, but lack interlinkages and common standards. Openness of datasets is often restricted and thus prevents application. No trust, no data. And thus, no welfare gain and economic benefits.
- New secure ways of generating and collecting health data that allow access by care providers and researchers while protecting patient privacy, are under development (for example in South Korea and the Netherlands). Other countries, such as the US, allow new entrants to the market to operate more freely using industry best practices for health application data, while access and sharing of other types of data (hospital and research) are governed by law.
- Adoption of digital health innovation is often slow due to strains they impose on the existing regulatory policy environment and national health institutions, such as outdated reimbursement rules and geographical differences in medical application regulation enforcement.

Session 2: Field Labs to support the digital health innovations eco-system

- Digitisation and ‘datafication’ require multi-sectoral cooperation to deliver economic and social benefits, bringing soft- and hardware developers together with potential users in other sectors, including manufacturers of equipment used in the health sector. This cooperation can benefit from a whole-of-government approach to align digitization and innovation policies with specific health policy goals, funding and regulation.
- There is a clear need for public and private investment in digital innovations, especially in facilities and platforms such as regional field labs with low barriers to entry, where firms can co-create new data-driven applications together with users. Fieldlabs (and similar) policy examples presented (in

Belgium, Germany, UK, Netherlands) seem to be working well across countries, not only for health innovations. Public and private funding shares vary per country. Public funding of field labs should be adequate to address coordination issues between stakeholders and other field labs, and to involve research centers for low-TRL problem solving. Public support should also promote diffusion of innovations, for which the UK Digital catapult has set up a scale-up program.

- Geographical proximity does not limit the impact of innovations co-created in field labs. Proven innovations spread more easily to other regions and countries. However, the examples presented seemed isolated within these countries and in some cases in specific regions.
- The introduction of health related innovations seems to require stronger proof of concept evidence in comparison to other innovations to win people's and care providers (doctors, hospitals, insurers, ministries) acceptance of innovations and allow for scaling-up. Large upfront investments needed for developing data, technology and proof of concept trial studies raise the issue of equitable opportunities for large vs small firms, which fieldlabs can partially fix. Vendor lock-in can also limit market access for new entrants.

Session 3: Policies to promote a digital infrastructure that supports digital health innovations

- Digitisation is driving a 40% annual growth of data usage. Connectivity policy goals are maintaining high quality, for different types of demand, at competitive rates. Policy challenges include: ensuring investment in secure reliable networks, spectrum, rural coverage and international collaboration for standards.
- Investment in connectivity will largely come from the private sector in OECD countries. Governments can accelerate this investment by providing 1) more spectrum resources, 2) open standards for interoperability, including those for cross-border connectivity, and 3) a clear and stable regulatory framework within and across countries, governing issues including personal data protection, free cross-border flow of non-personal data and cybersecurity. The European Commission is working on all these issues.
- Establishing 5G networks seems desirable, but would require increased network density, while providing no quantum leap for most of the more common e-health applications; they already work on existing 3G and 4G networks. Possibly remote surgery would require 5G low-latency and data-flow capacity which is needed for autonomous driving. Since the energy use of 5G applications is much lower than with 4G and 3G, another type of innovations that would benefit from 5G are wearables that continuously monitor a patient's body sensors and medication use. Governments and telecom network firms must weigh costs and benefits of 5G connectivity, distinguishing between urban and rural areas.
- Emerging economies could hugely benefit from e-health applications, but many countries lack strong data protection laws. Connectivity is also limited in those nations, which could increase inequality. Development programs require participation by knowledge and technology institutes and user training. Pilots are often not further developed because technologies are too expensive. The EU could export its FAIR data protocol and include emerging economies in its Open Science Cloud for Health.

Policy themes to address in the OECD Going Digital project

- Potential benefits of digital health innovations are huge: better care at lower costs, plus economic growth. Trust is crucial for obtaining and putting data to use. There need not be a trade-off between privacy and use. Futureproof, enabling regulatory environment and governance is needed, covering:
    - Access to connectivity and patient data
    - Ownership and visiting decentralized patient data
    - Open science cloud and GO FAIR
- Open standards for data interoperability are needed, as well as for cross-border connectivity. Governments can aid the process to establish these standards.
- Transforming complex socio-technological systems like national healthcare systems will require both technology push (R&I programs) and market-pull measures (creating demand for innovation and more certainty for investors). The latter include innovation friendly procurement, technology neutral regulation, responsive insurance reimbursement rules and harmonized enforcement. Incentivizing behavioral change is difficult as resistance from existing structures is likely, not only in the health sector. Change can benefit from public communication on benefits and fieldlabs that develop new services in public private partnerships and co-creation with users and suppliers. A whole-of-government approach can accelerate innovation across sectors and across ministerial responsibilities, not only for health innovation.
- The example of Philips' transformation from a consumer electronics to health care service company illustrates the important changes brought by the digital transformation, requiring re-thinking of business models and where innovation efforts ensure competitiveness in a global world where competition comes from different sectors (e.g. data analytics providers).
- Investment in connectivity is needed, but not all applications require 5G.

Policy issues for further investigation:

- Public vs private investment: what is the right balance when considering connectivity and innovation? How can governments evaluate the effectiveness of different funding models and share learnings?
- Inclusiveness: should policy differentiate between patient groups in different geographical areas?
- Competition: large firms may dominate smaller firms in certain health application and equipment markets due to differences in access to fysical and human capital required for upfront investments. To what extent is this undesirable and avoidable from a policy perspective? (This issue is additional to the barriers to entry issue related to digital platforms).
- International cooperation: digital health innovations can clearly benefit form cross-border cooperation, but this is not only hindered by differences in complex healthcare systems, but also by innovation policies that favour national economic benefits. How can international cooperation on (health) data inter-operability, connectivity standards and research and innovation be strengthened?

AGENDA

Wednesday, 11 April 2018

Maurithuis Museum, The Hague

Welcoming drinks and visit to Maurithuis Museum

16h30-18h30

- **Luuk Klomp**, Deputy Director of Knowledge and Innovation Department, Ministry of Economic Affairs and Climate Policy
- **Dominique Guellec**, Head of Division, Directorate for Science, Technology and Innovation, OECD: Innovation policies in the digital age
- Guided tour through the Maurithuis Museum

18h45-22h00: Dinner

Indonesian restaurant in Garuda, The Hague

Thursday, 12 April 2018

8h45 – 10h45: Bus ride to **Philips Medical Systems**, Veenpluis 6, Best

Meeting point: Ministry of Economic Affairs and Climate, Bezuidenhoutseweg 73, The Hague

10h45- 11h00: Welcome and coffee

- Welcome by **Jan-Willem Scheijgrond**: Philips Strategy & Digital Health Innovations

Tour through Philips Medical Systems

11h00 – 12h15

12h15– 12h45: Bus ride to **High Tech Campus, Eindhoven**

12h45 – 13h20: Lunch
13h20 – 13h30: Welcome by HTC management

Location: Einstein Auditorium, Conference Center The Strip, High Tech Campus 1b, Eindhoven (late arrivals, please park at HTC P0).

- Welcome by **Hilde de Vocht**, HTC Marketing and Communications Director

Panel session 1: Policies to support data sharing for digital health innovations

13h30-15h00

- In light of increased activity by large companies to provide health apps on smart phones using Big Data and AI (Economist, 3 Feb. 2018), is there a trade-off between easy exchange of patient data for better and cheaper diagnoses and cure provision vis-à -vis public values such as patient privacy and well-functioning markets for health insurance?
- How should government policies balance these issues?
- Does patient data require standardisation for ease of exchange and if so, does this require coordination by the government?

Keynote: **Remco Timmer**, Lead at Philips HealthWorks, Founder of MyHealthJourney, Netherlands

Chair: **Brian Huijts**, Senior Policy Advisor, ICT department, Ministry of Economic Affairs and Climate Policy, Netherlands

Presentations:

- **Luke Slawomirski**, Health Economist/Policy Analyst, Health Division, Directorate for Employment, Labour and Social Affairs, OECD
- **Ron Roozendaal**, Chief Information Officer, Ministry of Public Health, Netherlands
- **Myong Hwa Lee**, Head of Office of National R&D Research in Science and Technology Policy Institute (STEPI), South Korea
- **Barend Mons**, Scientific Director of GO FAIR and Professor at Leiden University Medical Center, Netherlands
- **Jerry Sheehan**, Deputy Director at National Library of Medicine - National Institutes of Health, USA (via web-connection)

Panel discussion

15h00 – 15h15: Short walk to **HOLST Centre, High Tech Campus 31, Eindhoven**
(late arrivals, please park at HTC P0)

Panel session 2: Field Labs to support the digital health innovations eco-system

15h15-17h00

- What role can policies such as the Dutch Smart Industry Fieldlabs play in stimulating development of digital health innovations and uptake by businesses and cure/care providers?
- Should these new policies replace or combine with more generic instruments, such as grants and tax credits?
- Is the impact of policies like Fieldlabs, SME 4.0 Competence Centers (Germany) and Digital Catapult (UK) limited by geographical proximity, or is it more widely dispersed? Is the commercial value-added of digital health innovations realised in the same region as the Fieldlabs or transferred to other countries?

Keynote: **John Baekelmans,** Managing director at IMEC Netherlands, Vice-President of IMEC IoT and Connected Health Solutions Group

Chair: **David Legg**, Economics and Performance Team, Innovate UK

Presentations:

- **Caroline Paunov**, Senior Economist, Directorate for Science, Technology and Innovation, OECD
- **Andrew Chapman**, Digital Health Lead, Digital Catapult, UK
- **Tom van der Horst**, Business Director, Strategies for Industry and Innovation, TNO, Netherlands
- **Patrick Veenendaal**, 3D Medical Smart Industry Field lab, Netherlands
- **Jörg Castor**, Head of SME 4.0-Competence Centre Stuttgart, Fraunhofer IAO, Germany

Panel discussion

Demonstration of digital health innovations by HOLST/TNO/IMEC

17h00 – 18h00

- Introduction by **Jaap Lombaers**, Innovation Director of TNO/HOLST Center

18h00– 18h30: Bus ride to dinner location

18h30 - 21h00: Dinner

Radio Royaal, Eindhoven

21h00– 22h30: Bus ride to The Hague

Friday, 13 April 2018

Ministry of Economic Affairs and Climate, The Hague

Registration and coffee

9h00 – 9h30

Opening address

9h30 – 10h00

- **Jos de Groot**, Director Telecom Market Department, Ministry of Economic Affairs and Climate Policy, Netherlands

Panel session 3: Policies to promote a digital infrastructure that supports digital health innovations

10h00 – 10h30

- How should digital infrastructure support digital health innovations? What are the connectivity needs of the healthcare sector, now and in the foreseeable future?
- How can government telecommunications policy support this?
- Can 5G be a catalyst for health innovations? What capabilities should 5G support and how should this be incorporated in international 5G standards? What technology push and market-pull policies are known or likely to result in 5G-supported health innovations?

Keynote: **Jeffrey Dygert**, Executive Director, Public Policy, AT&T

10h30 – 10h50: Coffee break

Panel session 3 (cont.)

10h50 – 12h00

Chair: **Wim Rullens**, Senior Policy Advisor, Telecom Market Department, Ministry of Economic Affairs and Climate Policy, Netherlands

Presentations:

- **Luke Slawomirski**, Health Economist/Policy Analyst, Health Division, Directorate for Employment, Labour and Social Affairs, OECD
- **Peter Rake**, Program Manager 5G at Economic Board Groningen, University of Groningen, Netherlands
- **Silvia Viceconte**, Head of Sector, Multilateral Affairs and Economic Cooperation, European Commission
- **Mirjam van Reisen**, Professor Computing for Society at University of Leiden, Netherlands

Panel discussion

12h00-13h00: Lunch

Final discussion and wrap up

13h00 – 14h00

Chair: **Sander Kes**, Senior Policy Advisor, Directorate for Innovation and Knowledge, Ministry of Economic Affairs and Climate Policy, Netherlands

List of participants

Organisers	**Affiliation**
Sander Kes	Ministerie van EZK-I&K
Brian Huijts	Ministerie van EZK-RICT (moderator session 1)
Wim Rullens	Ministerie van EZK-TCM (moderator session 3)
Gera Merien	Ministerie van EZK-I&K
Dion Wierts	Philips
Jaap Lombaers	TNO/Holst Center
Speakers	(in order of appearance)
Dominique Guellec	OECD
Jan-Willem Scheijgrond	Philips, NL
Hilde de Vocht	High Tech Campus Eindhoven, NL
Remco Timmer	MyHealthJourney, NL
Ron Roozendaal	Ministerie van VWS, NL
Luke Slawomirski	OECD
Barend Mons	Go Fair/UMC Leiden, NL
Myong Hwa Lee	Science and Technology Policy Institute (STEPI), Korea
Jerry Sheehan (via webconnection)	National Library of Medicine, USA
John Baekelmans	IMEC NL /Holst, Belgium
Caroline Paunov	OECD
Tom van der Horst	TNO, NL
Andrew Chapman	Digital Catapult, UK
Patrick Veenendaal	3D Medical Smart Industry Field Lab, NL
Jörg Castor	SME 4.0-Competence Centre Stuttgart/Fraunhofer, Germany
Jeffrey Dygert	AT&T, USA
Jos de Groot	Ministerie van EZK – TCM, NL
Peter Rake	Fieldlab 5G / Economic Board Groningen, NL
Silvia Viceconte	European Commission Head of sector Multilateral Affairs and Economic Cooperation
Mirjam van Reisen	University of Leiden, NL
Participants	(in alphabetical order by affiliation)
Jannie van den Broek	Amgen
Floris Lantzendörffer	City of The Hague
Minoo Abedi	Deutsche Telekom / T-mobile
Daniël Tijink	ECP, Platform voor de informatiesamenleving
Priit Tohver	Estonian Ministry of Social Affairs
Roel van Kessel	Eurofiber
Edward Pleijsier	Huawei
Mike Hes	Huawei
Klára Horváth	Hungarian National Research, Development and Innovation Office

David Legg (moderator session 2)	Innovate UK
Arthur Groenendijk	KPN Consulting
Robert Barker	Ministerie van EZK-ETM
Fokko Bos	Ministerie van EZK-ETM
Najim Ouelaoch	Ministerie van EZK-ETM
Joost van der Vleuten	Ministerie van EZK-ETM
Ashna Raghoebarsing	Ministerie van EZK-I&K
Karen Passier	Ministerie van EZK-I&K
Luuk Klomp	Ministerie van EZK-I&K
Ineke Hoving	Ministerie van EZK-I&K
Piet Donselaar	Ministerie van EZK-I&K
Heleen Uijt de Haag	Ministerie van EZK-TCM
Katja Meijaard	Ministerie van VWS
Reidun-Kristina Malvik	Norwegain ministry of Trade Industry and Fisheries
Elin Marlén Hollfjord	Norwegain ministry of Trade Industry and Fisheries
Maartje Niezen	Rathenau Instituut
Il Young Jung	Science and Technology Policy Institute (STEPI), Korea
Nico van Meeteren	Top Sector Life Sciences and Health
Wenqin Yin	Universiteit van Leiden

Workshop website:
www.innovationpolicyplatform.org/digitalhealth

OECD Digital and Open Innovation project:
www.innovationpolicyplatform.org/TIPdigital

OECD Working Party on Innovation and Technology Policy:
www.innovationpolicyplatform.org/cstp/tip