

# How to improve policy making using open data in Virtual Research Environments? An interactive workshop discussing privacy, security and trust strategies

Yi Yin  
Delft University of Technology  
Delft, The Netherlands  
Y.Yin@tudelft.nl

Keith Jeffery  
ERCIM  
Faringdon, Unted Kingdom  
keith.jeffery@  
keithjefferyconsultants.co.uk

Anneke Zuiderwijk  
Delft University of Technology  
Delft, The Netherlands  
a.m.g.zuiderwijk-vaneijk@tudelft.nl

Ahmad Luthfi  
Delft University of Technology  
Delft, The Netherlands  
a.luthfi@tudelft.nl

Jacco van Ossenbruggen  
Centrum Wiskunde & Informatica  
Amsterdam, The Netherlands  
Jacco.van.Ossenbruggen@cwii.nl

Marijn Janssen  
Delft University of Technology  
Delft, The Netherlands  
M.F.W.H.A.Janssen@tudelft.nl

## ABSTRACT

Governments and publicly-funded research institutions increasingly open up data collected and created through research. One way to share and use data obtained through research is through Virtual Research Environments (VREs). Insights obtained through open data use in VREs can subsequently provide input for policy making. However, this process involves many privacy, security and trust issues both for VRE developers and for end-users. We still know very little about what strategies can be used to handle these security, privacy and trust issues. This 1,5 hour interactive workshop aims to discuss and refine strategies for handling privacy, security and trust issues of VREs and their users as developed in the European VRE4EIC project. The workshop will facilitate open discussions making use of the interactive Mentimeter tool to involve all participants in the sharing of practices and in sharing feedback on the strategies.

## CCS CONCEPTS

• Security and privacy → Privacy protections;

## KEYWORDS

Open data, open research data, policy-making, privacy, security, trust, Virtual Research Environment, VRE, e-government

## ACM Reference Format:

Yi Yin, Anneke Zuiderwijk, Jacco van Ossenbruggen, Keith Jeffery, Ahmad Luthfi, and Marijn Janssen. 2018. How to improve policy making using open data in Virtual Research Environments? An interactive workshop discussing privacy, security and trust strategies. In *Dg.o '18: dg.o 2018: Proceedings of the 19th Annual International Conference on Digital Government Research, May 30-June 1, 2018, Delft, Netherlands*, Anneke Zuiderwijk and Charles C.

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).  
*Dg.o '18, May 30-June 1, 2018, Delft, Netherlands*  
© 2018 Copyright held by the owner/author(s).  
ACM ISBN 978-1-4503-6526-0/18/05.  
<https://doi.org/10.1145/3209281.3209307>

Hinnant (Eds.). ACM, New York, NY, USA, 2 pages. <https://doi.org/10.1145/3209281.3209307>

## 1 INTRODUCTION

Governments and publicly-funded research institutions increasingly open up data collected and created through research [9]. The use of this data has advantages such as the creation of new data combinations leading to new datasets, information and knowledge [3, 6, 10]; the better replication of research and the avoidance of unnecessary repetition of research [1, 4, 7]; and permitting in depth public scrutiny of data [8].

One way to share and use data obtained through research is through Virtual Research Environments (VREs). VREs provide the necessary tools for searching, accessing and integrating data and software for different workflows in research activities [10]. Moreover, VREs provide facilities for collaborations among scientists, and enable the creation of new insights through data analysis and combinations [2, 5, 10].

Insights obtained through the use of open data in VREs may subsequently be used for public policy making to solve societal issues [11]. This is especially true when data from multiple disciplines is combined [2]. However, this process involves many privacy, security and trust issues. For example, it is unclear how trust of policy-makers in the results of open data use through VREs can be enhanced, or which privacy enhancement mechanisms can improve data sharing through VREs, both from a technical and a governance perspective. We still know very little about what strategies can be used to handle these security, privacy and trust issues.

This 1,5 hour interactive workshop aims to discuss and refine strategies for handling privacy, security and trust issues of VREs and their users as developed in the European VRE4EIC project. The VRE4EIC project (A Europe-wide Interoperable Virtual Research Environment to Empower Multidisciplinary Research Communities and Accelerate Innovation and Collaboration - see [www.vre4eic.eu](http://www.vre4eic.eu)) develops a reference architecture and prototypes to be used for future VREs including building blocks that can be used to improve existing VREs.

The workshop is relevant for participants of the Dg.o conference, since it focuses on topics that are key to this conference, including

**Table 1: Workshop Program**

Session	Duration	Theme
Introduction of VRE and Privacy related issues	15 min	- Virtual Research Environments (VREs) as a supporting system for data driven approaches, and subsequently to improve policy making - Privacy issues
Introduction to an innovative VRE project (H2020 VRE4EIC)	15 min	- Objectives - Outcomes - Demonstration
Demonstration of the VRE4EIC system and privacy enhancement mechanisms	15 min	- Accountable and transparent access and use of open research data
Presentation of privacy, security and trust strategies	15 min	- A conceptual model of decision support for weighing the potential risks and Benefits of opening data
Discussion and feedback	25 min	- Open discussions - Sharing of practices and feedback
Closing	5 min	- Highlights of contributions - Follow-up

open data, policy-making, security, trust and privacy. The workshop is aimed at policy makers and at (potential) users and providers of (open) (government) research data. It is oriented towards the next wave of innovative forms of collaboration between researchers and public stakeholders and concrete strategies for scaling up adoption and generating society-scale impact of VREs.

## 2 PROGRAM OVERVIEW

The workshop will consist of presentations, demonstrations and discussions, supported by the interactive discussion tool called 'Mentimeter' (<https://www.mentimeter.com/>). The detailed program is described in Table 1.

## 3 WORKSHOP ORGANIZERS

The workshop organizers and presenters are related to open data and VREs for policy making in different ways.

### Yi Yin

Yi Yin is a researcher at the Faculty of Technology, Policy and Management at Delft University of Technology. His research focuses on data-driven security, privacy and trust enhancement mechanisms.

### Anneke Zuiderwijk

Dr. Anneke Zuiderwijk is a researcher at the Faculty of Technology, Policy and Management at Delft University of Technology. Her research focuses on open research data. More information: <http://www.tbm.tudelft.nl/AZuiderwijkvanEijk>.

### Jacco van Ossenbruggen

Jacco van Ossenbruggen is leading the Information Access group at Centrum Wiskunde Informatica (CWI), and affiliated as an associate professor with the Web and Media research group at VU University in Amsterdam. His research interests include assessment of data quality in large, heterogeneous research datasets in the digital humanities, large scale web data integration.

### Keith Jeffery

Keith Jeffery is now retired from the Civil Service and working as a consultant. He holds 3 honorary visiting professorships, is a Fellow of the Geological Society of London and the British Computer Society, is a Chartered Engineer and Chartered IT Professional and an Honorary Fellow of the Irish Computer Society. Keith is past president of ERCIM and euroCRIS, and serves on international expert groups, conference boards / committees and research assessment panels.

### Ahmad Luthfi

Ahmad Luthfi is a PhD candidate at the Faculty of Technology, Policy and Management at Delft University of Technology. His research focuses on Decision Support System for Weighing the Potential Risks and Benefits of Opening Data.

### Marijn Janssen

Prof.dr.ir. Marijn Janssen is full professor in ICT and Governance and head of the Information and Communication Technology section of the Technology, Policy, and Management Faculty of Delft University of Technology. His research interests are in the field of orchestration, (shared) services, intermediaries, open data and infrastructures within constellations of public and private organizations.

## REFERENCES

- [1] James Campbell. 2015. Access to scientific data in the 21st century: Rationale and illustrative usage rights review. *Data Science Journal* 13 (2015), 203–230. <https://doi.org/10.2481/dsj.14-043>
- [2] Keith G. Jeffery, Carlo Meghini, Cesare Concordia, Theodore Patkos, Valerie Brasse, Jacco von Ossenbruggen, Yannis Marketakis, Nikos Minadakis, and Eda Marchetti. 2017. A Reference Architecture for Virtual Research Environments. In *15th International Symposium of Information Science*. Humboldt-Universität zu Berlin. <http://isi2017.ib.hu-berlin.de/proceedings.html>
- [3] Aleksandra K Krotoski. 2012. Data-driven research: open data opportunities for growing knowledge, and ethical issues that arise. *Insights* 25, 1 (2012).
- [4] Jeffrey N. Rouder. 2016. The what, why, and how of born-open data. *Behavior Research Methods* 48, 3 (2016), 1062–1069. <https://link.springer.com/article/10.3758/s13428-015-0630-z>
- [5] Melissa Terras, Claire Warwick, and Claire Ross. 2016. *Building Useful Virtual Research Environments: The Need for User-led Design*. Routledge, London, 151.
- [6] Paul F. Uhlir and Peter Schroder. 2007. Open data for global science. *Data Science Journal* 6 (2007), 36–53.
- [7] Benedikt von St Vieth, Jędrzej Rybicki, and Maciej Brzeźniak. 2017. Towards flexible Open Data management solutions. In *Information and Communication Technology, Electronics and Microelectronics (MIPRO), 2017 40th International Convention on*. IEEE, 233–237.
- [8] Harlan Yu and David G. Robinson. 2012. The new ambiguity of "Open Government". *UCLA Law Review Discourse* 59 (2012), 178–208.
- [9] Anneke Zuiderwijk. 2015. *Open data infrastructures: The design of an infrastructure to enhance the coordination of open data use*. Uitgeverij BOXPress, 's-Hertogenbosch.
- [10] Anneke Zuiderwijk. 2018. Analysing open data in virtual research environments: New collaboration opportunities to improve policy making. *The International Journal of Electronic Government Research* 13, 4 (2018).
- [11] Anneke Zuiderwijk, Keith Jeffery, Daniele Bailo, and Yi Yin. 2016. Using open research data for public policy making: Opportunities of Virtual Research Environments. In *2016 Conference for E-Democracy and Open Government (CeDEM)*. IEEE, 180–187.