

Paul Groth

Professor of Algorithmic Data Science
Informatics Institute
University of Amsterdam

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Experience

2018 - present Full Professor - Algorithmic Data Science
Informatics Institute, University of Amsterdam

- I lead the Intelligent Data Engineering Lab - <http://indelab.org>
- The lab focuses on intelligent systems that support people in their work with data and information from diverse sources.

2015 - 2018 Disruptive Technology Director
Elsevier Labs

- Performed research on knowledge graph construction, intelligent systems in science, and data provenance.
- Established new research relationships with academic collaborators.
- Led creation of a company-wide internal best practices for dataset metadata.
- Co-author of company-wide internal architectural principles for knowledge graphs.
- Delivered multiple in-depth technology reports for C-level executives.
- Led technology input during development of Elsevier-wide precision medicine strategy.

2011 - 2015 Assistant Professor
Department of Computer Science, Vrije Universiteit Amsterdam

- Lead architect for the Open PHACTS (<http://www.openphacts.org>) semantic data integration platform for pharmacology. The €16 million project involves working with major pharmaceutical companies and leading academics.
- Co-chair W3C Provenance Working Group that created a standard for provenance on the Web used in organizations ranging from Oracle to NASA.
- I acted as Associate Director of Amsterdam Data Science from Fall 2013 until the end of 2014.

- 2009 - 2011 **Postdoctoral Researcher**
Knowledge Representation and Reasoning Group, Department of Computer Science,
Vrije Universiteit Amsterdam
- Led the interdisciplinary Semantically Mapping Science project where I developed novel network analysis based methods applied to knowledge about scientific activity extracted from the Web.
 - I developed the technical underpinning for nanopublications - a way of representing fine-grained provenance.
 - Initiated the altmetrics research area (<http://altmetrics.org>) with social scientists to promote the study of alternative measures of science. Altmetrics has been covered by Nature, Wired Science and The Guardian.
- 2007 - 2009 **Postdoctoral Research Associate**
Intelligent Systems Division, Information Sciences Institute, University of Southern California
- As part of the DARPA Bootstrap Learning project, I developed algorithms to learn procedures from human instruction. (<http://www.sri.com/work/projects/bootstrap-learning>)
 - Designed and helped develop the provenance framework for the Windward: Scalable Knowledge Discovery Through Grid Workflows project. (<http://www.wings-workflows.org>)
 - Led the integration of the Wings Workflow System with MIT/Harvard Broad Institute's GenePattern workflow system
- 2004-2007 **PHD Computer Science**
University of Southampton
- During my PhD, I was a member of the UK e-Science Provenance Aware Service Oriented Architecture (PASOA) Project (<http://www.pasoa.org>) and the EU Provenance Project ([http:// http://www.gridprovenance.org](http://http://www.gridprovenance.org)).
 - Co-developed PReServ, an open source web service that allows for the storage and retrieval of provenance information, which used by other research groups including at The University of Leeds and the China Research and Development environment Over Wide-area Network project.
 - Heavily participated in the design and specification of the architecture used by the EU Provenance Project.
- 2003 - 2004 **Internship**
Fraunhofer-Institut für Produktionstechnik und Automatisierung
- Co-developed a prototype multi-agent system to control semiconductor factories, which successfully integrated with a commercial simulator.

2001 - 2002 Internship
University of Ulm, Distributed Systems Department

- Designed and implemented a directory service for the Mobility And Service Adaptation in Heterogeneous Mobile Networks (MASA) project. Project partners were the University of Ulm, NEC Europe Ltd. and Siemens AG.

1998 - 2003 Student Research Assistant
Florida Institute for Human & Machine Cognition

- Developer on NOMADS (<http://www.ihmc.us/research/projects/Nomads>) a Java-based mobile agent distributed system based on a clean room implementation of the Java virtual machine.
- Developer on CMapTools (<http://cmap.ihmc.us/>). The software empowers users to easily construct, navigate, share, and criticize knowledge models through concept maps.

External Appointments

- Board of Directors - FORCE11
- Faculty of the Netherlands Bioinformatics Center
- Senior Research Fellow - Netherlands School for Information and Knowledge Systems (SIKS)
- Guest - Vrije Universiteit Amsterdam

Education

2004-2007 PhD Computer Science, University of Southampton

- Thesis title: "The Origin of Data: Enabling the Determination of Provenance in Multi-institutional Scientific Systems through the Documentation of Processes"
- My research focused on provenance in e-Science applications. It develops novel concepts for creating, recording, and organizing provenance information. These concepts were applied to a large scale bioinformatics application.

1999-2002 B.S. Computer Science, University of West Florida

- Magna Cum Laude and John C Pace Jr. Scholar
- Study Abroad - University of Ulm, Germany (Fall 2011 – Spring 2012)
Baden-Württemberg-Stipendium recipient
- Study Abroad - Fukuoka Communication Arts, Japan (Summer 2001)

Service

STANDARDIZATION ACTIVITIES

- Co-chair W₃C Provenance Interchange Working Group - April 1, 2011 - September 30, 2013
http://www.w3.org/2011/prov/wiki/Main_Page
- Member W₃C Incubator Group on Provenance - October 1, 2009 - November 30, 2010

EDITORSHIPS

- Co-editor Morgan & Claypool Synthesis Lectures on the Semantic Web: Theory and Technology
- International Provenance and Annotation Workshop Steering Committee (Chair)
- Journal of Web Semantics Editorial Board
- Journal of Web Semantics, Using Provenance in the Semantic Web special issue editor
- Future Generation Computing Systems, The third provenance challenge on using the Open Provenance Model for interoperability special issue editor
- Organizer PLoS One, Altmetrics Collection

SELECTED PROGRAM COMMITTEES

- Program Chair - 2016 International Semantic Web Conference
Track Chair - 2013, 2015 International Semantic Web Conference
SPC 2018
PC Member 2011, 2012, 2014, 2017
- Track Chair – 2010, 2011, 2017 Extended Semantic Web Conference
PC member 2008, 2010, 2014, 2016, 2018
- Program Chair - 2012 International Provenance & Annotation Workshop
PC member 2008, 2010, 2014, 2016, 2018
- International Joint Conference on Artificial Intelligence (2009, 2011, 2015, 2016)
- World Wide Web Conference (2010, 2015)
SPC Web Content & Analytics Track 2018
Posters & Demos Chair 2018
- International Conference on Intelligent User Interfaces (2009, 2013)
- Senior PC Theory & Practice of Digital Libraries (2018)

REVIEWING

I have reviewed for a wide variety of journals including:

Communications of the ACM, IEEE Intelligent Systems, Data & Knowledge Engineering, Future Generation Computer Systems, IEEE Internet Computing, IEEE Transactions on Automation Science and Engineering, Journal of Web Semantics, Semantic Web Journal, Interacting with Computers, Concurrency Computation Practice and Experience, Computers & Geosciences, Journal of Systems and Software, Interacting with Computers, Semantic Web Journal, Journal of Data & Information Quality, Applied Ontology, Journal of Parallel & Distributed Systems

I have been on the PhD committee of: Tom De Nies, Marcin Wylot, Matthew Gamble, Krystina Milian, Mohammad Rezwanul Huq

I have reviewed for a wide variety of funders, institutes and book publishers.

Funding Profile

2015	Industry Partner - Elsevier. Re-SEARCH: Contextual Search for Scientific Research Data (750,000 € total). NWO Funded.
2014	Lead acquisition of Big Data Europe project http://www.big-data-europe.eu for the Open PHACTS foundation. H2020 Funded.
2014 - 2018	Named staff. RISIS: Research infrastructure for research and innovation policy studies (700,000 € - VU University Amsterdam). FP7 Funded.
2011 - 2014	Work package Leader and led project acquisition for the VU University Amsterdam - Open Pharmacological Space (Open PHACTS). (615,880 € - VU University Amsterdam). EU IMI Funded.
2011 - 2015	Work package Leader - Data2Semantics - A COMMIT Dutch National Project (1 PhD student)
2012 - 2013	VU University Amsterdam Network Institute Student Assistantships (2 paid students for 10 months)

Outreach

INVITED TALKS

- Diversity and Depth: Implementing AI across many long tail domains. Industry Day - International Joint Conference on AI (IJCAI) 2018
- Panel - Increasing Scientific Productivity through Artificial Intelligence. EuropeanScience Open Forum. July 13 2018
- Keynote - From Text to Data to the World: The Future of Knowledge Graphs. Paul Groth. Integrative Bioinformatics. June 15, 2018
- Panel - Do we need a Google for Data? International Workshop on Profiling and Searching Data on the Web. Web Conference April 24, 2018

- Keynote - Combining Explicit and Latent Web Semantics for Maintaining Knowledge Graphs. Keynote. Big Net Workshop at The Web Conference. April 24, 2018.
- Panel - How does scholarly publishing move towards digital/Web based publishing? Digital Publishing Summit Europe. May 17, 2018
- Keynote - Leveraging AI to construct large scale scientific knowledge graphs. Connected Data London. Nov. 16, 2017
- Keynote - The Roots: Linked Data and the foundations of successful agriculture data. G20 Meeting of Agricultural Chief Scientists (MACS) Workshop Linked Open Data in Agriculture. Sept. 27, 2017
- Keynote - Machines are People Too. 21st Theory and Practice of Digital Libraries. Sept. 18, 2017
- Robotic Labs and Science as a Service. Information Sciences Institute. May 30, 2017
- Data: The Driver of Precision Medicine. Internet Medicine: Medicine in the Year 2045 RWTH Aachen. January 18, 2017
- Panel - Data, metadata and partnerships. STM event Publishing in a larger world, or is it a smaller one?. Dec. 8, 2016
- Tuning Search: Making the most of Open Source Search and SOLR at Elsevier. BigDataLDN. November 3-4, 2016
- Panel - Deep Learning to Solve Business Problems. BigDataLDN. November 3-4, 2016
- Structured Data & the Future of Educational Material. Education & Linked Data - Platform Linked Data Netherlands. September 9, 2016
- Data For Science: How Elsevier Is Using Data Science To Empower Researchers. European Data Forum. June 29-30, 2016
- Knowledge Graph Construction and the Role of DBpedia. 6th DBpedia Community Meeting 2016
- What does that column mean? Semantics and the messy part of data science. Leiden Center for Data Science Symposium. Jan 14, 2016.
- The future of linked data in an open world. Linking Life Science Data: Design to Implementation, and Beyond. Feb 19, 2016
- Panel - NSF Northeast Big Data Hub Kickoff workshop. December 2015
- Data Integration and Transparency tackling the tension. University of Fribourg Informatics Colloquim. June 15, 2015

- Panel - Celebrating 5 years of the altmetrics manifesto. Almetrics Conference 2015
- Machine Reading - what it means for publishers. Society of Scholarly Publishing Conference 2015
- Panel - Knowledge Graphs in Industry. World Wide Web Conference 2015.
- Increasing the Productivity of Scholarship: The Case for Knowledge Graph - Semantics, Analytics, Visualisation: Enhancing Scholarly Data (SAVE-SD) Workshop at World Wide Web Conference 2015.
- Open PHACTS – A Platform For Drug Discovery – European Data Forum. March 18-19, 2014
- Altmetrics: Building a Broader Picture of Impact - Academic Publishing in Europe 9 - January 20 - 21, 2014
- “Open Phacts - Increasing the Effectives of Open Data” - Royal Society Workshop on Revaluing Science in the Digital Age - September 2, 2012
- “Altmetrics: New approaches to measuring and tracking research” - Elsevier Labs Online Lectures on Science Informatics - November 22, 2011
- “Authenticity, provenance, and trust - maintaining the scholarly value chain” - National Academies of Science, Developing Data Attribution and Citation Practices and Standards - August. 22, 2011
- “People as Provenance: The Key to Validating, Reproducing and Measuring New Science” - Second Annual VIVO Conference - August 24, 2011
- “Buy microscopes - don't build them: The scientific demand for HPC as an instrument and how the Semantic Web can help” - 1st Workshop on High-performance Computing for the Semantic Web (HPCSW2011) - May 29 2011
- “Total Impact: Aggregating alternative measures of impact “ - Beyond the PDF Workshop, San Diego, CA - January 20, 2011
- ”W3C Incubator Group summary and open questions” - UK e-Science Institute, Edinburgh, UK Workshop Understanding Provenance and Linked Open Data - March 20, 2011
- ”Seminar on the Findings of the W3C Provenance Incubator Group” -UK e-Science Institute, Edinburgh, UK - February 18, 2011
- “Enabling Data DJs” - Florida Institute for Human and Machine Cognition - June 24, 2010
- “Background Knowledge for Automated Experimentation” - February 23-24, 2010; International Workshop on Automated Experimentation, e-Science Institute, Edinburgh, UK.

- “Nanopublications” at the Scientific Discourse Task Force, of the W₃C Health Care and Life Science Interest Group– February 15, 2010
- “CMapTools: Designing a useable and research oriented learning technology”. Learning Societies Lab, University of Southampton. June 6, 2006, Southampton, UK.
- “What Happened? Using Provenance for Compliance and Verification.” Florida Institute for Human and Machine Cognition. Jan. 11, 2006, USA
- ”The Origin of Data: Determining the Provenance of Data Produced by Multi-institutional Applications.” At the AI Seminar Series. Intelligent Systems Division. Information Sciences Institute. Nov. 11, 2008.

INVITED PARTICIPATION

- Dagstuhl Seminar: Dagstuhl Seminar on Knowledge Graphs. Sept. 9 - 14, 2018
- Lorentz Center: Workshop on Online Information Quality. March 26 - 29, 2018
- The Royal Society & KNAW Bilateral Meeting on Responsible Data Science. Feb. 20 - 22, 2018
- Dagstuhl Seminar: Citizen Science: Design and Engagement. July 2 - 5, 2017
- Observatory for Knowledge Organization Systems Workshop. Feb. 1 - 3, 2017
- Scholarly Commons Working Group Infrastructure and Policy Workshop. Sept. 18 - 20, 2016
- Evolution and Variation of Classification Systems Workshop. March 4-5, 2015
- NSF & Sloan Foundation. Supporting Scientific Discovery through Norms and Practices for Software and Data Citation and Attribution. Jan 29 - 30, 2015
- Dagstuhl Perspectives Workshop: Digital Scholarship and Open Science in Psychology and the Behavioral Sciences - July 19 - 24, 2015
- Preserving Linked Data Workshops (PRELIDA). April 2 - 4 and subsequently October 17 - 18, 2014
- NSF Computational Challenges in Data Citation. Philadelphia. April 18, 2014
- Lorentz Center. Jointly designing a data FAIRPORT. Jan 13 - 16, 2014
- Dagstuhl Seminar: Semantic Data Management - April 22 - 27, 2012
- Dagstuhl Seminar: Principles of Provenance - February 26 - March 2, 2012
- Data Citation Principles Workshop - IQSS at Harvard University - May 16 - May 17, 2011

- Dagstuhl Perspectives Workshop: The Future of Research Communication - August 15 - 18, 2011
- Elsevier Life Sciences Strategy Meeting - September 21, 2011
- Beyond Impact Workshop - Open Society Foundation and the Wellcome Trust - May 9 - 11, 2011.
- NSF/JSMF Workshop on Mapping of Science and Semantic Web - Indiana University Bloomington - March 4-5, 2010
- Elsevier Workshop on the Journal Workflow of the Future. July 8, 2010
- Subject Matter Expert for AstraZenca Design and Interpretation - Structured Authoring Workshop, Moindal, Sweden - August 31- September 2, 2010
- The Role of Biomedical Informatics in Overcoming Barriers in Cancer Research Workshop. May 21-23, 2008. Hosted by the NIH-National Cancer Institute
- Panel discussion on UK-Sino e-Science Collaborations. UK e-Science All Hands Meeting. September 2005

EVENT ORGANIZATION

- Organizing Committee Chair. Beyond the PDF 2. Amsterdam. March 19 - 20, 2013
- altmetrics12 at the An ACM Web Science Conference 2012, Evanston, IL - 21 June 2012
- Extended Semantic Web Conference - Publicity Chair - May 27th, 2012 - May 31st, 2012
- altmetrics11: Tracking scholarly impact on the social Web at the ACM Web Science Conference 2011. Koblenz, DE - June 14, 2011
- ScienceOnline 2011 Session: How is the Web changing the way we identify scientific impact? - Jason Priem, Paul Groth, Martin Fenner, and Jason Hoyt - January 13, 2011
- Two Dutch Semantic Web Meetups with 80 and 20 attendees respectively - February & June 2010
- Provenance Hackathon attended by 18 participants at IPAW 2010.
- 2nd Network Institute symposium Colliding Computer & Social Science at the VU University Amsterdam symposium, 17 participants - June 29, 2010
- Network Institute symposium on Colliding Computer Science and Social Science at the VU University Amsterdam - 13 participants - August 28, 2010
- Provenance Challenge 3 and corresponding workshop, Amsterdam, NL - June 10-11, 2009

Memberships

- Phi Kappa Phi
- Association of Computing Machinery (ACM)
- The Institute of Electrical and Electronics Engineers (IEEE)
- Association for the Advancement of Artificial Intelligence (AAAI)

Teaching & Supervision

- I have obtained University Teaching Qualification the recognized qualification by Dutch universities for teaching within higher education.

COURSES

- Information Retrieval - VU University Amsterdam - Fall 2013, 2014
- Knowledge & Media - VU University Amsterdam - Fall 2013, 2014
- Web-based Knowledge Representation & Semantic Web - VU University Amsterdam - Fall 2009 - 2012
- I regularly give guest lectures.

SUPERVISION

- Manolis Stamatogiannakis - PhD - in progress
- Kathleen Gregory - PhD - in progress
- Sara Magliacane - PhD - (co-promoter) - complete - Thesis: "Logics for causal inference under uncertainty" - Sara is now at IBM Research.
- Multiple masters students

TUTORIALS

- Research Data Sharing a Basic Framework. Data Stewardship for Scientific Discovery and Innovation LERU Summer School 2016.
- Provenance on the Web. Web Intelligence Summer School. August 25 - 29, 2014
- The W3C Provenance Specifications at the 4th International Provenance and Annotation Workshop, San Diego CA - June 19, 2012
- LarKC and Relational Database Conversion - NBIC PhD Course on Managing Life Science Information (2nd edition) - October 28, 2011

- The Open Provenance Model at the Future Internet Symposium, Berlin, DE - September 20, 2010
- RDF for Programmers Tutorial at NBIC Bioassist Programmers Meeting, Utrecht, NL - February 19, 2010
- Introduction to RDF at the Centre for Molecular and Biomolecular Informatics (CMBI) NCMLS, Radboud University Nijmegen Medical Centre - November 24, 2010
- Making your application provenance-aware using EU Provenance and PASOA at the University of Southampton, UK - March 30 - 31 2006

DOCTORAL CONSORTIUMS

- Extended Semantic Web Conference 2016
- International Semantic Web Conference 2014
- Future Internet Symposium Doctoral Consortium - September 22, 2010

GUEST LECTURES

- Data Provenance. Data Management and Practice Masters Course. UCLA. Spring 2015, 2016, 2017
- Knowledge Graph Analysis in Practice. Knowledge Graph Analysis Masters Course. University of Bonn. Spring 2017
- Elsevier & Information Architecture. Business Process Integration Lab. Twente University. Spring 2017
- Elsevier & Information Architecture. Knowledge Representation & Reasoning Masters Class. Vrije Universiteit Amsterdam. Spring 2016, 2017
- Information architecture at Elsevier. Guest Lecture in Introduction to Information Science Course. Vrije Universiteit Amsterdam. Fall 2015, 2016, 2017
- An Introduction to Semantic Technologies for Bioinformatics - Introduction to Bioinformatics at the Vrije Universiteit Amsterdam - September 18, 2012
- Semantic Technologies for Introduction to Grid Computing at the University of Southern California, USA - Fall 2007

Courses and Seminars

- Successful Grant Writing, Amsterdam, NL - June 27, 2012,
- 1 Day Solution Selling Course, London, UK - May 30, 2007

- 2nd International Summer School on Grid Computing, Vico Equense, Italy - 2004.
- 5 Day Seminar in the Restoration of Painting and Canvases. Held at Oro e Colore Workshop, Florence, Italy - January 2002.

Broader Impact

- 1700 followers on Twitter – <http://twitter.com/pgroth>
- My blog <http://thinklinks.wordpress.com> has had over 30,000 views
- My presentations have been viewed more than 14000 times on slideshare.com
- I have been interviewed by The Times Higher Education Supplement, Science Magazine-Careers, De Volkskrant and published articles in SURF Magazine – the national Dutch magazine for ICT in Higher Education.
- I have participated in a number of workshops organized by policy makers such as the US National Institutes of Health, the Wellcome Trust, and JISC.
- Article “Reducing Friction” in SURF Magazine for ICT in Dutch Higher Education
- Article in Chemistry World ‘Data Ex Machina’
- Multiple articles for Elsevier Connect.

Publications

According to Google Scholar¹(as of January 9, 2019), my h-index is 43 and my publications have received over 8400 citations. My top ten publications have each received more than 150 citations. All publications listed below except technical reports are peer-reviewed.

BOOKS & THESES

1. Luc Moreau and Paul Groth. *Provenance: An Introduction to PROV*. Morgan & Claypool, 2013
2. Grigoris Antoniou, Paul Groth, Frank van Harmelen, and Rinke Hoekstra. *A Semantic Web Primer*. MIT press, third edition, 2012
3. Paul T Groth. *The Origin of Data: Enabling the Determination of Provenance in Multi-institutional Scientific Systems through the Documentation of Processes*. Ph.d thesis, University of Southampton, sep 2007

¹<http://scholar.google.com/citations?user=otHSHCIAAAAJ>

EDITED VOLUMES

4. Paul Groth, Elena Simperl, Alasdair Gray, Marta Sabou, Markus Krötzsch, Freddy Lecue, Fabian Flöck, and Yolanda Gil, editors. *The Semantic Web – ISWC 2016*, volume 9981 of *Lecture Notes in Computer Science*. Springer International Publishing, 2016
5. Marcelo Arenas, Oscar Corcho, Elena Simperl, Markus Strohmaier, Mathieu D’Aquin, Kavitha Srinivas, Paul Groth, Michel Dumontier, Jeff Heflin, Krishnaprasad Thirunarayan, Krishnaprasad Thirunarayan, and Steffen Staab, editors. *The Semantic Web – ISWC 2015*, volume 9366 of *Lecture Notes in Computer Science*. Springer International Publishing, Cham, 2015
6. Peter Mika, Tania Tudorache, Abraham Bernstein, Chris Welty, Craig Knoblock, Denny Vrandečić, Paul Groth, Natasha Noy, Krzysztof Janowicz, and Carole Goble, editors. *The Semantic Web – ISWC 2014*, volume 8796 of *Lecture Notes in Computer Science*. Springer International Publishing, Cham, 2014
7. Harith Alani, Lalana Kagal, Achille Fokoue, Paul Groth, Chris Biemann, Josiane Xavier Parreira, Lora Aroyo, Natasha Noy, Chris Welty, and Krzysztof Janowicz, editors. *The Semantic Web – ISWC 2013*, volume 8218 of *Lecture Notes in Computer Science*. Springer Berlin Heidelberg, Berlin, Heidelberg, 2013
8. Paul Groth and James Frew, editors. *Provenance and Annotation of Data and Processes: 4th International Provenance and Annotation Workshop, IPAW 2012*, volume 7525 of *Lecture Notes in Computer Science*. Springer, 2012

JOURNAL PUBLICATIONS

9. P. Groth and J. Cox. Indicators for the use of robotic labs in basic biomedical research: A literature analysis. *PeerJ*, 2017(11), 2017
10. Manolis Stamatogiannakis, Elias Athanasopoulos, Herbert Bos, and Paul Groth. PROV 2R: Practical Provenance Analysis of Unstructured Processes. *ACM Transactions on Internet Technology*, 17(4):1–24, aug 2017
11. M. Wylot, P. Cudre-Mauroux, M. Hauswirth, and P. Groth. Storing, Tracking, and Querying Provenance in Linked Data. *IEEE Transactions on Knowledge and Data Engineering*, 29(8), 2017
12. Michael Lauruhn and Paul Groth. Sources of Change for Modern Knowledge Organization Systems. *Knowledge Organization*, 43(8):622–629, 2016
13. Davide Ceolin, Paul Groth, Valentina Maccatrozzo, Wan Fokkink, Willem Robert Van Hage, and Archana Nottamkandath. Combining User Reputation and Provenance Analysis for Trust Assessment. *Journal of Data and Information Quality*, 7(1–2):1–28, jan 2016

14. Mark D. Wilkinson, Michel Dumontier, IJsbrand Jan Aalbersberg, Gabrielle Appleton, Myles Axton, Arie Baak, Niklas Blomberg, Jan-Willem Boiten, Luiz Bonino da Silva Santos, Philip E. Bourne, Jildau Bouwman, Anthony J. Brookes, Tim Clark, Mercè Crosas, Ingrid Dillo, Olivier Dumon, Scott Edmunds, Chris T. Evelo, Richard Finkers, Alejandra Gonzalez-Beltran, Alasdair J.G. Gray, Paul Groth, Carole Goble, Jeffrey S. Grethe, Jaap Heringa, Peter A.C 't Hoen, Rob Hooft, Tobias Kuhn, Ruben Kok, Joost Kok, Scott J. Lusher, Maryann E. Martone, Albert Mons, Abel L. Packer, Bengt Persson, Philippe Rocca-Serra, Marco Roos, Rene van Schaik, Susanna-Assunta Sansone, Erik Schultes, Thierry Sengstag, Ted Slater, George Strawn, Morris A. Swertz, Mark Thompson, Johan van der Lei, Erik van Mulligen, Jan Velterop, Andra Waagmeester, Peter Wittenburg, Katherine Wolstencroft, Jun Zhao, and Barend Mons. The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data*, 3:e160018, mar 2016
15. Michel Dumontier, Alasdair J.G. Gray, M. Scott Marshall, Vladimir Alexiev, Peter Ansell, Gary Bader, Joachim Baran, Jerven T. Bolleman, Alison Callahan, José Cruz-Toledo, Pascale Gaudet, Erich A. Gombocz, Alejandra N. Gonzalez-Beltran, Paul Groth, Melissa Haendel, Maori Ito, Simon Jupp, Nick Juty, Toshiaki Katayama, Norio Kobayashi, Kalpana Krishnaswami, Camille Laibe, Nicolas Le Novère, Simon Lin, James Malone, Michael Miller, Christopher J. Mungall, Laurens Rietveld, Sarala M. Wimalaratne, and Atsuko Yamaguchi. The health care and life sciences community profile for dataset descriptions. *PeerJ*, 4:e2331, aug 2016
16. Luc Moreau, Paul Groth, James Cheney, Timothy Lebo, and Simon Miles. The rationale of PROV. *Web Semantics: Science, Services and Agents on the World Wide Web*, 35(P4):235–257, dec 2015
17. Sara Magliacane, Philip Stutz, Paul Groth, and Abraham Bernstein. foxPSL: A Fast, Optimized and eXtended PSL implementation. *International Journal of Approximate Reasoning*, jun 2015
18. Antonis Loizou, Renzo Angles, and Paul Groth. On the formulation of performant SPARQL queries. *Web Semantics: Science, Services and Agents on the World Wide Web*, nov 2015
19. Paul Groth, Antonis Loizou, Alasdair J.G. Gray, Carole Goble, Lee Harland, and Steve Pettifer. API-centric Linked Data Integration: The Open PHACTS Discovery Platform Case Study. *Web Semantics: Science, Services and Agents on the World Wide Web*, 29:12–18, apr 2014
20. Alyssa Goodman, Alberto Pepe, Alexander W Blocker, Christine L Borgman, Kyle Cranmer, Merce Crosas, Rosanne Di Stefano, Yolanda Gil, Paul Groth, Margaret Hedstrom, David W Hogg, Vinay Kashyap, Ashish Mahabal, Aneta Siemigowska, and Aleksandra Slavkovic. Ten simple rules for the care and feeding of scientific data. *PLoS computational biology*, 10(4):e1003542, apr 2014
21. Christine Chichester, Pascale Gaudet, Oliver Karch, Paul Groth, Lydie Lane, Amos Bairoch, Barend Mons, and Antonis Loizou. Querying neXtProt nanopub-

- lications and their value for insights on sequence variants and tissue expression. *Web Semantics: Science, Services and Agents on the World Wide Web*, 29:3–11, 2014
22. Christine Chichester, Daniela Digles, Ronald Siebes, Antonis Loizou, Paul Groth, and Lee Harland. Drug discovery FAQs: workflows for answering multidomain drug discovery questions. *Drug discovery today*, nov 2014
 23. Alasdair J. G. Gray, Paul Groth, Antonis Loizou, Sune Askjaer, Christian Breninkmeijer, Kees Burger, Christine Chichester, Chris T. Evelo, Carole Goble, Lee Harland, Steve Pettifer, Mark Thompson, Andra Waagmeester, and Antony J. Williams. Applying linked data approaches to pharmacology: Architectural decisions and implementation. *Semantic Web*, 5(2):101–113, 2014
 24. Paul Groth. Transparency and Reliability in the Data Supply Chain. *Internet Computing, IEEE*, 17(2):2–4, 2013
 25. Paul Groth. The Knowledge-Remixing Bottleneck. *IEEE Intelligent Systems*, 28(5):44–48, sep 2013
 26. Paul Groth, Yolanda Gil, James Cheney, and Simon Miles. Requirements for Provenance on the Web. *International Journal of Digital Curation*, 7(1), 2012
 27. Yolanda Gil, Varun Ratnakar, Timothy Chklovski, Paul Groth, and Denny Vrandeic. Capturing Common Knowledge about Tasks. *ACM Transactions on Interactive Intelligent Systems*, 2(3):1–35, sep 2012
 28. Jason Priem, Paul Groth, and Dario Taraborelli. The Altmetrics Collection. *PLoS ONE*, 7(11):e48753, nov 2012
 29. F. Harmelen, G. Kampis, K. Börner, P. Besselaar, E. Schultes, C. Goble, P. Groth, B. Mons, S. Anderson, S. Decker, C. Hayes, T. Buecheler, and D. Helbing. Theoretical and technological building blocks for an innovation accelerator. *The European Physical Journal Special Topics*, 214(1):183–214, dec 2012
 30. Antony J. Williams, Lee Harland, Paul Groth, Stephen Pettifer, Christine Chichester, Egon L. Willighagen, Chris T. Evelo, Niklas Blomberg, Gerhard Ecker, Carole Goble, and Barend Mons. Open PHACTS: Semantic interoperability for drug discovery. *Drug Discovery Today*, 17(21–22):1188–1198, jun 2012
 31. Yolanda Gil, Varun Ratnakar, Jihie Kim, Pedro Antonio Gonzalez-Calero, Paul Groth, Joshua Moody, and Ewa Deelman. Wings: Intelligent Workflow-Based Design of Computational Experiments. *IEEE Intelligent Systems*, 26(1):62 – 72, 2011
 32. Simon Miles, Paul Groth, Steve Munroe, and Luc Moreau. PrIME: A Methodology for Developing Provenance-Aware Applications. *ACM Transactions on Software Engineering and Methodology*, 20(3):1–42, aug 2011
 33. Luc Moreau, Ben Clifford, Juliana Freire, Joe Futrelle, Yolanda Gil, Paul Groth, Natalia Kwasnikowska, Simon Miles, Paolo Missier, Jim Myers, Beth Plale, Yogesh

- Simmhan, Eric Stephan, and Jan Van den Bussche. The Open Provenance Model core specification (v1.1). *Future Generation Computer Systems*, 27(6):743–756, jul 2011
34. Paul Groth and Luc Moreau. Representing distributed systems using the Open Provenance Model. *Future Generation Computer Systems*, 27(6):757–765, oct 2011
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