

Paul Groth

Disruptive Technology Director
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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)

Experience

2015 - present Disruptive Technology Director
Elsevier Labs

2011 - 2015 Assistant Professor
Department of Computer Science, VU University Amsterdam

- My research focuses on the integration of diverse contextualized information with particular emphasis on data provenance.
- 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,
VU University 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/bootstrapped-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>).
 - 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

- Faculty of the Netherlands Bioinformatics Center
- Senior Research Fellow - Netherlands School for Information and Knowledge Systems (SIKS)

Funding Profile

- 2014 Lead acquisition of Big Data Europe project <http://www.big-data-europe.eu> for the Open PHACTS foundation.
- 2014 - 2018 Named staff. RISIS: Research infrastructure for research and innovation policy studies (700,000 € - VU University Amsterdam).
- 2011 - 2014 Work package Leader and led project acquisition for the VU University Amsterdam - Open Pharmacological Space (Open PHACTS). EU Innovative Medicine Initiative project. (615,880 € - VU University Amsterdam)
- 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)

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

JOURNAL SPECIAL ISSUE EDITORSHIP

- Journal of Web Semantics, Using Provenance in the Semantic Web
- Future Generation Computing Systems, The third provenance challenge on using the open provenance model for interoperability
- Organizer PLoS One, Altmetrics Collection

SELECTED PROGRAM COMMITTEES

- In-Use Chair – 2013 International Semantic Web Conference
- Program Chair – 2012 International Provenance and Annotation Workshop
PC member 2008, 2010
- Track Chair – 2010, 2011 Extended Semantic Web Conference
- International Joint Conference on Artificial Intelligence (2009, 2011)
- International Semantic Web Conference (2011, 2012)
- World Wide Web Conference (2010)
- International Conference on Intelligent User Interfaces (2009, 2013)
- International Workshop on the role of Semantic Web in Provenance Management (2010, 2011, 2012)

JOURNAL REVIEWING

I have reviewed for the following journals:

IEEE Intelligent Systems, Data & Knowledge Engineering, Future Generation Computer Systems, IEEE Transactions on Automation Science and Engineering, Journal of Web Semantics, Interacting with Computers and Concurrency Computation Practice and Experience, Computers & Geosciences, Journal of Systems and Software, Interacting with Computers, Semantic Web Journal

OTHER REVIEWING

- Proposal from National Science Foundation Science of Science Policy Program
- Report: “Users, narcissism and control” SURF Foundation
- Centre Virtuel de la Connaissance sur l’Europe (CVCE) “Evaluating the Web Impact of Open Access European Integration Studies Resources” - report for the Luxembourg Ministry of Higher Education and Research
- Data Provenance and Data Management for eScience - book chapter
- Web Science Conference 2011 - reviewer

Outreach

INVITED TALKS

- 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 Effectiveness 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: 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

- 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
- Knowledge & Media - VU University Amsterdam - Fall 2013
- Web-based Knowledge Representation & Semantic Web - VU University Amsterdam - Fall 2009 - 2012

SUPERVISION

- Sara Magliacane - PhD - in progress
- Manolis Stamatogiannakis - PhD - in progress
- Dena Tahvildari - PhD - in progress

TUTORIALS

- 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

- Future Internet Symposium Doctoral Consortium - September 22, 2010

GUEST LECTURES

- An Introduction to Semantic Technologies for Bioinformatics - Introduction to Bioinformatics at the VU University 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

- 929 followers on Twitter – <http://twitter.com/pgroth>
- My blog <http://thinklinks.wordpress.com> has had over 25,000 views
- My presentations have been viewed more than 15000 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

Publications

According to Google Scholar¹(as of June 17, 2014), my h-index is 30 and my publications have received over 3368 citations. My top ten publications have each received more than 75 citations. All publications listed below except technical reports are peer-reviewed. Highlighted publications are denoted with a *.

BOOKS & THESES

1. Luc Moreau and Paul Groth. *Provenance: An Introduction to PROV*, volume 3. 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, September 2007

EDITED VOLUMES

4. 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
5. 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

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

JOURNAL PUBLICATIONS

6. 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
7. *Paul Groth. The Knowledge-Remixing Bottleneck. *IEEE Intelligent Systems*, 28(5):44–48, September 2013
8. *Paul Groth. Transparency and Reliability in the Data Supply Chain. *Internet Computing, IEEE*, 17(2):2–4, 2013
9. Jason Priem, Paul Groth, and Dario Taraborelli. The Altmetrics Collection. *PLoS ONE*, 7(11):e48753, November 2012
10. 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, December 2012
11. 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, June 2012
12. Yolanda Gil, Varun Ratnakar, Timothy Chklovski, Paul Groth, and Denny Vrandečić. Capturing Common Knowledge about Tasks. *ACM Transactions on Interactive Intelligent Systems*, 2(3):1–35, September 2012
13. * Paul Groth, Yolanda Gil, James Cheney, and Simon Miles. Requirements for Provenance on the Web. *International Journal of Digital Curation*, 7(1), 2012 - **Covered online in The Atlantic**
14. * 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, July 2011
15. Barend Mons, Herman van Haagen, Christine Chichester, Peter-Bram 't Hoen, Johan T den Dunnen, Gertjan van Ommen, Erik van Mulligen, Bharat Singh, Rob Hooft, Marco Roos, Joel Hammond, Bruce Kiesel, Belinda Giardine, Jan Velterop, Paul Groth, and Erik Schultes. The value of data. *Nature Genetics*, 43(4):281–3, January 2011
16. 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, August 2011

17. Christophe Guéret, Shenghui Wang, Paul Groth, and Stefan Schlobach. Multi-scale analysis of the Web of Data: a challenge to the Complex System's community. *Advances in Complex Systems*, 14(4):589–607, 2011
18. Paul Groth and Luc Moreau. Representing distributed systems using the Open Provenance Model. *Future Generation Computer Systems*, 27(6):757–765, October 2011
19. 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
20. Yolanda Gil and Paul Groth. Using Provenance in the Semantic Web. *Web Semantics: Science, Services and Agents on the World Wide Web*, 9(2):147–148, 2011
21. Paul Groth, Andrew Gibson, and Jan Velterop. The anatomy of a nanopublication. *Information Services & Use*, 30:51–56, 2010
22. Paul Groth and Luc Moreau. Recording Process Documentation for Provenance. *IEEE Transactions on Parallel and Distributed Systems*, 20(9):1246–1259, 2009
23. * Paul Groth, Simon Miles, and Luc Moreau. A Model of Process Documentation to Determine Provenance in Mash-ups. *Transactions on Internet Technology (TOIT)*, 9(1), 2009
24. Jie Xu, Paul Townend, Nik Looker, and Paul T Groth. FT-Grid: a system for achieving fault tolerance in grids. *Concurrency and Computation: Practice and Experience*, 20(3):297–309, 2008
25. Luc Moreau, Paul Groth, Simon Miles, Javier Vazquez-Salceda, John Ibbotson, Sheng Jiang, Steve Munroe, Omer Rana, Andreas Schreiber, Victor Tan, and Laszlo Varga. The provenance of electronic data. *Communications of the ACM*, 51(4):52–58, 2008
26. Simon Miles, Paul Groth, Steve Munroe, Sheng Jiang, Thibaut Assandri, and Luc Moreau. Extracting Causal Graphs from an Open Provenance Data Model. *Concurrency and Computation: Practice and Experience*, 20(5):577–586, 2008
27. Simon Miles, Paul Groth, Ewa Deelman, Karan Vahi, Gaurang Mehta, and Luc Moreau. Provenance: The Bridge Between Experiments and Data. *Computing in Science and Engineering*, 10:38–46, 2008
28. Luc Moreau, Bertram Ludäscher, Ilkay Altintas, Roger S Barga, Shawn Bowers, Steven Callahan, George Chin Jr., Ben Clifford, Shirley Cohen, Sarah Cohen-Boulakia, Susan Davidson, Ewa Deelman, Luciano Digiampietri, Ian Foster, Juliana Freire, James Frew, Joe Futrelle, Tara Gibson, Yolanda Gil, Carole Goble, Jennifer Golbeck, Paul Groth, David A Holland, Sheng Jiang, Jihie Kim, David Koop, Ales Krenek, Timothy McPhillips, Gaurang Mehta, Simon Miles, Dominic

- Metzger, Steve Munroe, Jim Myers, Beth Plale, Norbert Podhorszki, Varun Ratnakar, Emanuele Santos, Carlos Scheidegger, Karen Schuchardt, Margo Seltzer, Yogesh L Simmhan, Claudio Silva, Peter Slaughter, Eric Stephan, Robert Stevens, Daniele Turi, Huy Vo, Mike Wilde, Jun Zhao, and Yong Zhao. The First Provenance Challenge. *Concurrency and Computation: Practice and Experience*, 20:409–418, 2007
29. Simon Miles, Sylvia C Wong, Weijian Fang, Paul Groth, Klaus-Peter Zauner, and Luc Moreau. Provenance-Based Validation of e-Science Experiments. *Journal of Web Semantics: Science, Services and Agents on the World Wide Web*, 5(1):28–38, 2007
 30. Simon Miles, Paul Groth, Miguel Branco, and Luc Moreau. The Requirements of Using Provenance in e-Science Experiments. *Journal of Grid Computing*, 5(1):1–25, 2007
 31. David W. Eccles and Paul T. Groth. Wolves, bees, and football: Enhancing coordination in sociotechnological problem solving systems through the study of human and animal groups. *Computers in Human Behavior*, 23(6):2778–2790, November 2007
 32. David W Eccles and Paul T Groth. Agent coordination and communication in sociotechnological systems: Design and measurement issues. *Interacting with Computers*, 18:1170–1185, 2006
 33. David W. Eccles and Paul Groth. Problem Solving Systems Theory: Implications for the Design of Socio-technological Systems. *Technology Instruction Cognition and Learning*, 3:323–343, 2006

BOOK CHAPTERS

34. Ewa Deelman, Bruce Berriman, Ann Chervenak, Oscar Corcho, Paul Groth, and Luc Moreau. Metadata and Provenance Management. In Arie Shoshani and Doron Rotem, editors, *Scientific Data Management: Challenges, Technology, and Deployment*, chapter 12, pages 433–466. Chapman & Hall, 1 edition, 2010
35. Paul Groth, Steve Munroe, Simon Miles, and Luc Moreau. *Applying the Provenance Data Model to a Bioinformatics Case*. IOS Press, 2008

CONFERENCE PUBLICATIONS

36. Marcin Wylot, Philippe Cudré-Mauroux, and Paul Groth. TripleProv: Efficient Processing of Lineage Queries over a Native RDF Store. In *Proceedings of the 23rd International World Wide Web Conference*, 2014
37. Philippe Cudré-Mauroux, Iliya Enchev, Sever Fundatureanu, Paul Groth, Albert Haque, Andreas Harth, Felix Leif Keppmann, Daniel P Miranker, Juan Sequeda, and Marcin Wylot. NoSQL Databases for RDF: An Empirical Evaluation. In Harith Alani, Lalana Kagal, Achille Fokoue, Paul T Groth, Chris Biemann, Josiane Xavier

- Parreira, Lora Aroyo, Natasha F Noy, Chris Welty, and Krzysztof Janowicz, editors, *International Semantic Web Conference (2)*, volume 8219 of *Lecture Notes in Computer Science*, pages 310–325. Springer, 2013
38. Fabian Eikelboom, Paul Groth, Victor De Boer, and Laura Hollink. A Comparison between Online and Offline Prayer. In *Web Science 2013*, number 2, 2013
 39. Anca Dumitrache, Paul Groth, and Peter van den Besselaar. Identifying Research Talent Using Web-Centric Databases. In *Web Science 2013*, 2013
 40. Paul Groth and David A. Shamma. Spinning data: remixing live data like a music dj. In *CHI '13 Extended Abstracts on Human Factors in Computing Systems on - CHI EA '13*, pages 3063–3066, New York, New York, USA, April 2013. ACM Press
 41. Christophe Guéret, Paul Groth, Claus Stadler, and Jens Lehman. Assessing Linked Data Mappings using Network Measures. In Elena Simperl, Philipp Cimiano, Axel Polleres, Óscar Corcho, and Valentina Presutti, editors, *The Semantic Web: Research and Applications - 9th Extended Semantic Web Conference, ESWC 2012*, volume 7295 of *Lecture Notes in Computer Science*, pages 87–102, Heraklion, Crete, Greece, May 2012. Springer
 42. Shenghui Wang and Paul Groth. A Framework for Longitudinal Influence Measurement between Communication Content and Social Networks. In Toby Walsh, editor, *Proceedings of the Twenty-Second International Joint Conference on Artificial Intelligence (IJCAI'11)*, pages 2758–2763, Barcelona, Catalonia, Spain, July 2011. AAAI Press
 43. Bruce Berriman, Ewa Deelman, Paul Groth, and Gideon Juve. The Application of Cloud Computing to the Creation of Image Mosaics and Management of Their Provenance. In *SPIE Conference 7740: Software and Cyberinfrastructure for Astronomy*, 2010
 44. * Shenghui Wang and Paul Groth. Measuring the dynamic bi-directional influence between content and social networks. In *The 9th International Semantic Web Conference (ISWC 2010)*, pages 814–829, 2010 - **Best Paper Award**
 45. Christophe Guéret, Paul Groth, Frank Van Harmelen, and Stefan Schlobach. Finding the Achilles Heel of the Web of Data : using network analysis for link-recommendation. In *The 9th International Semantic Web Conference (ISWC 2010)*, 2010
 46. * Paul Groth and Thomas Gurney. Studying Scientific Discourse on the Web using Bibliometrics: A Chemistry Blogging Case Study. In *WebSci10: Extending the Frontiers of Society On-Line*, page In Press, Raleigh, NC, 2010
 47. Yolanda Gil, Paul Groth, Varun Ratnakar, and Christian Fritz. Expressive Reusable Workflow Templates. In *Proceedings of the Fifth IEEE International Conference on e-Science*, Oxford, UK, 2009

48. * Paul T Groth. A Distributed Algorithm for Determining the Provenance of Data. In *Proceedings of the fourth IEEE International Conference on e-Science (e-Science'08)*, 2008
49. Simon Miles, Ewa Deelman, Paul Groth, Karan Vahi, Gaurang Mehta, and Luc Moreau. Connecting Scientific Data to Scientific Experiments with Provenance. In *Proceedings of the third IEEE International Conference on e-Science and Grid Computing (e-Science'07)*, Bangalore, India, 2007
50. Paul Townend, Paul Groth, and Jie Xu. A Provenance-Aware Weighted Fault Tolerance Scheme for Service-Based Applications. In *Proc. of the 8th IEEE International Symposium on Object-oriented Real-time distributed Computing (ISORC 2005)*, May 2005
51. Paul Groth, Simon Miles, Weijian Fang, Sylvia C Wong, Klaus-Peter Zauner, and Luc Moreau. Recording and Using Provenance in a Protein Compressibility Experiment. In *Proceedings of the 14th IEEE International Symposium on High Performance Distributed Computing (HPDC'05)*, July 2005
52. Sylvia C Wong, Simon Miles, Weijian Fang, Paul Groth, and Luc Moreau. Provenance-based Validation of E-Science Experiments. In *Proceedings of 4th International Semantic Web Conference (ISWC'05)*, volume 3729 of *Lecture Notes in Computer Science*, pages 801–815, Galway, Ireland, November 2005. Springer-Verlag
53. David W Eccles and Paul T Groth. Wolves, football, and ambient computing: facilitating collaboration in problem solving systems through the study of human and animal groups. In *Proceedings of the Third Nordic conference on Human-Computer interaction*, pages 269–275. ACM Press, October 2004
54. * Paul Groth, Michael Luck, and Luc Moreau. A protocol for recording provenance in service-oriented Grids. In *Proceedings of the 8th International Conference on Principles of Distributed Systems (OPODIS'04)*, Grenoble, France, 2004
55. Niranjan Suri, Jeffrey M Bradshaw, Marco M Carvalho, Thomas B Cowin, Maggie R Breedy, Paul T Groth, and Raul Saavedra. Agile Computing: Bridging the Gap between Grid Computing and Ad-hoc Peer-to-Peer Resource Sharing. In *Proceedings of the 3st International Symposium on Cluster Computing and the Grid*, page 618. IEEE Computer Society, 2003
56. Niranjan Suri, Jeffrey Bradshaw, Andrzej Uszok, Maggie Breedy, Marco Carvalho, Paul Groth, Renia Jeffers, Matt Johnson, Shri Kulkarni, James Lott, Mark Burstein, Brett Benyo, and David Diller. Towards DAML-based policy enforcement for semantic data transformation and filtering in multi-agent systems. In *Proceedings of the Second International joint conference on Autonomous agents and multiagent systems (AAMAS 2003)*, pages 1132–1133. ACM Press, 2003
57. Niranjan Suri, Paul T Groth, and Jeffrey M Bradshaw. While You're Away: A System for Load-Balancing and Resource Sharing Based on Mobile Agents. In

Proceedings of the 1st International Symposium on Cluster Computing and the Grid (CC-Grid'01), page 470. IEEE Computer Society, 2001

58. Niranjani Suri, Jeffrey M Bradshaw, Maggie R Breedy, Paul T Groth, Gregory A Hill, Renia Jeffers, Timothy S Mitrovich, Brian R Pouliot, and David S Smith. NOMADS: toward a strong and safe mobile agent system. In *Proceedings of the fourth international conference on Autonomous agents*, pages 163–164. ACM Press, 2000
59. Niranjani Suri, Jeffrey Bradshaw, Maggie R Breedy, Paul T Groth, Gregory A Hill, and Renia Jeffers. Strong Mobility and Fine-Grained Resource Control in NOMADS. In Friedemann Mattern David Kotz, editor, *Proceedings of the Second International Symposium on Agent Systems and Applications and Fourth International Symposium on Mobile Agents, ASA/MA 2000, Zurich, Switzerland*, volume 1882 / 2000 of *Lecture Notes in Computer Science*, pages 2–15. Springer-Verlag, 2000

WORKSHOP PUBLICATIONS

60. Rinke Hoekstra and Paul Groth. Linkitup: Link Discovery for Research Data. In *Proceedings of the AAAI Fall Symposium on Discovery Informatics*, 2013
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