Ian Kelley, Ph.D.

Contact Information

Seattle, WA	Website:	*http://www.kelley.tv/*
U.S.A.	Email:	ikelley@alumni.washington.edu

Education

Ph.D., Computer Science, Cardiff University, Cardiff, Wales, U.K., 2012. Thesis Advisor: Ian Taylor. Dissertation title: "Data Management in Dynamic Distributed Computing Environments"

B.A., Political Science, University of Washington, Seattle, WA, U.S.A., 1999.

Certificate in Trans-Atlantic Studies, University of Bath, Bath, U.K., 1998.

Employment Overview

Research Consultant, Jan 2014 – Sep 2014
Information School, http://ischool.uw.edu/
University of Washington, Seattle, U.S.A.

Solutions Engineer, 2010 – 2013 (contract work)
Building Information Systems, http://www.buildingi.com/
Bellevue, WA, U.S.A.

Research Fellow, May 2007 – June 2012
Cardiff School of Computer Science & Informatics, http://www.cs.cf.ac.uk/
Cardiff University, Cardiff, U.K.

Information Technology Analyst (Researcher), Oct 2003 – June 2008
Center for Computation & Technology, http://www.cct.lsu.edu/
Louisiana State University, Baton Rouge, LA, U.S.A.

Scientific Software Engineer (Researcher), Dec 1999 – Feb 2004
Max-Planck-Institute for Gravitational Physics, http://www.aei.mpg.de/
Golm, Germany

Research Interests

Distributed computing, big data, collaborative environments, workflows, scientific computing, information management, social media, mobile devices, high-performance computing, Grids, Clouds, privacy and security.

Professional Activities

Reviewer for the journal: Journal of Cloud Computing: Advances, Systems and Applications (2013, 2014)

Reviewer for the journal: Future Generation Computer Systems (2010, 2013, 2014)

Reviewer for the journal: IEEE Computer (2013)

Reviewer for the journal: Journal of Grid Computing (2005, 2007, 2008, 2009, 2010, 2012)

Reviewer for the journal: Multiagent and Grid Systems (2008)

Reviewer of 50+ articles for various workshops and conferences: e.g., EuroPar, SuperComputing, and CCGrid

Technical Program Committee member of: The First International Workshop on MapReduce and its Applications, held in conjunction with The International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC) 2010.

Technical Program Committee member of: The Fourth International Conference on Complex, Intelligent and Software Intensive Systems (CISIS), 2010.

Technical Program Committee Member of: The 13th International Conference on Network-Based Information Systems (NBIS), 2010.

Technical Program Committee member of: The Third International Conference on Complex, Intelligent and Software Intensive Systems (CISIS), 2009

Technical Program Committee member of: UPGRADE-CN'08 workshop, held in conjunction with The International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC), 2008

Technical Program Committee Member of: Grid Computing Environments (GCE) workshop, held in conjunction with SuperComputing, 2007.

Technical Program Committee member of: Grid Computing Environments (GCE) workshop, held in conjunction with SuperComputing, 2006.

Technical Program Committee member of: Grid Computing Environments (GCE) workshop, held in conjunction with SuperComputing, 2005.

I have attended many conferences and workshops to interface with other members of the scientific community, gain a better understanding of the field, and present my research. The following is a partial list, and does not reflect the many research project meetings or CoreGRID Network of Excellence workshops that I have attended: XML Europe 2000, XML Europe 2001, NeSC Workshop 2002, Global Grid Forum (GGF) 5, HPDC 11, CCGrid 2002, Supercomputing 2002, GGF 8, HPDC 12, Supercomputing 2003, GGF 10, Supercomputing 2004, GGF 13, Supercomputing 2005, GGF 17, Open Grid Forum (OGF) 18, Supercomputing 2006, OGF20, OGF21, DAPSYS 2008, PCGrid 2011, 7th BOINC Workshop, NDM 2011, Supercomputing 2011

Certifications

Red Hat Certified Engineer (RHCE) for Redhat 8.0. Certificate Number: 808003664707814
Awarded by Redhat Inc., one of the largest Linux distributers in the world.

Certificate in MPI, OpenMP and Advanced Topics in Parallel Programming.
Awarded for a course on advanced topics in parallel programming by HLRS, Stuttgart.

Prizes and Awards

Recipient of the Global Grid Forum 17's (GGF17) Student Travel Scholarship, 2006.

Winner of Best Paper Award at SuperComputing 2005's Grid Computing Environments workshop. "An Application Portal for Collaborative Coastal Modeling." Authors: C. Zhang, C. Dekate, G. Allen, I. Kelley, and J. MacLaren.

Member of winning team at the HPC Challenge Awards (Supercomputing 2002, November 2002) for *Most Geographically Distributed Applications* and *Most Heterogeneous Set of Platforms*.

Member of the winning team at the High-Performance Bandwidth Challenge (Supercomputing 2002, November 2002), *Highest Performing Application: Wide Area Distributed Simulations Using Cactus, Globus and Visapult.*

Grants and Funding

During my time at the Cardiff School of Computer Science & Informatics (Cardiff University), I was very proactive in pursuing grant funding and developing collaborations with international researchers. I partnered with Dr. Ian J. Taylor to conceptualize, write, and subsequently manage several research projects.

- 2014: **SuperComputing Travel Grant**

  - $1,000 travel grant to attend WSSSPE2 workshop at SuperComputing 2014 in New Orleans.

- 2010 – 2012: **European Desktop Grid Initiative** (EDGI)

  - 2.4M€ (total) European Union Framework 7 infrastructure project.
  - Ten partners and four subcontractors. Project coordinator: MTA SZTAKI.
  - I co-wrote the proposal and was the co-manager/co-PI at Cardiff University (with Ian Taylor).
  - My responsibilities included overseeing the project's data management tasks, CU's deliverables, monitoring our budget, managing student activities, attending project meetings and workshops, and representing Cardiff University at EU reviews and project board meetings.

- 2008 – 2010: **Enabling Desktop Grids for e-Science** (EDGeS)

  - 2.9M€ (total) European Union Framework 7 infrastructure project.
  - Nine partners and eight subcontractors. Project coordinator: MTA SZTAKI.
  - I co-wrote the proposal and was the co-manager/co-PI at Cardiff University (with Ian Taylor).

- I was responsible for the Data Management Joint Research Activity (JRA3), one of three research work-packages in the project. Thus, I was in charge of deliverables, monitoring budgets, managing students and researchers, and coordinating partner activities in JRA3. I was CU's representative to project meetings and workshops, and I presented for JRA3 at both EU project reviews.

- **2007 – 2008: Workflows Hosted In Portals (WHIP): The myExperiment workflow companion**

  - £178K Open Middleware Infrastructure Institute (OMII UK) project.
  - I co-wrote the proposal and was co-manager in the project (with Ian Taylor, the project's PI).
  - The project was a fusion of Cardiff University's workflow engine "Triana" and portal/collaborative technologies. I was experienced in portal development from my time developing *GridSphere*, and helped oversee the project and provided guidance.

- **2006 – 2007: GGF Grid Portal Standardization: Towards providing common portal services for Grid operations**

  - £6,000 in combined GridNet2 grants I received for travel expenses to attend GGF/OGF and contribute to standardization. I served mainly in the Grid Computing Environments (GCE-RG) research group.

- **2006: Global Grid Forum 17 Student Travel Scholarship**

  - ≈$2,500 travel scholarship I received to attend the Global Grid Forum (GGF) in Tokyo.

In addition to the list above, I was involved in CoreGRID, where I proposed a new data research topic and applied for several successful travel grants to bring fellow researchers and students to Cardiff (for several months at a time) and to send one Cardiff University Ph.D. student to the University of Coimbra in Portugal.

Please note that the list above depicts only the successfully funded grants I have contributed to in a significant way. During my time at Louisiana State University and Cardiff University I was also involved in the design, writing, and submission of several other grant proposals.

Employment Details

Research Consultant, Jan 2014 – Sep 2014
Information School, http://ischool.uw.edu/
University of Washington, Seattle, U.S.A.

This was a staff researcher position at the University of Washington's Information School (iSchool) working in the Data Science and Analytics lab (DataLab). The DataLab research topics focus on analyzing large, heterogeneous data to understand why individuals, consumers, and societies behave the way they do.

- Data ETL of large telecommunications data sets to extract key information from large datasets for different types of analysis (e.g., mobility, network structure, and mobile payments).

- Researched, designed, and deployed computational environments for data analysis (e.g., MapReduce, Spark).

- Contributed to broader efforts in the DataLab research group and collaborated with other campus Data Science initiatives (e..g, UW Data Seminar series, eScience Data Incubator).

Solutions Engineer, contracting 2010 – 2013
Building Information Systems, http://www.buildingi.com/
Bellevue, WA, U.S.A.

This was an interesting contracting role that provided me with insight into the "real-life" business practices of a successful and growing company – one that builds software for a variety of customers, from Fortune 500 companies to government agencies.

- Created a thorough User Acceptance Testing (UAT) plan for a large commercial project by analyzing its business requirements. Result included governance policies, user interface elements, and testing plan.

- Co-designed and architected a real-estate management system (C#, Silverlight, SharePoint, MVVM, WCF RIA, Waterfall). Wrote the design document and was a senior developer (6 months, 5 developers).

- Architected the rewrite of a financial management system (C#, InfoPath, SharePoint). Streamlined deployment by researching ways to automate the repackaging of InfoPath forms using PowerShell.

- Maintained a legacy codebase for a Web-based real-estate management system (lines: 37K VB, 11K ASP, 5K other). Fixed numerous bugs, refined code, and enhanced the system with additional features.

Research Fellow, May 2007 – June 2012
Cardiff School of Computer Science & Informatics, http://www.cs.cf.ac.uk/
Cardiff University, Cardiff, U.K.

This was a research position (level 3 from 2010-2012) in the department's Distributed & Scientific Computing group. I pursued research objectives in distributed networking, data distribution, and collaborative environments. I was also very proactive in securing continued funding, co-writing and managing several successful grants from both national and international agencies.

- Envisioned, researched, and developed a new distributed data management architecture (Attic, see *http://www.atticfs.org/*). Attic (Java, C) was created to support scientific Desktop Grid projects.

- Represented the Cardiff School of Computer Science & Informatics in several multi-institutional and international research projects. Sat on projects' Technical and Ethical Boards, and voted on decisions.

- Led work-packages and was responsible for directing collaborations, hiring and managing students and researchers, as well as submitting project deliverables and ensuring timelines.

- Co-wrote several grants and served as co-Principle Investigator (co-PI) when they were successfully funded. Oversaw finances and represented Cardiff at internal and external project reviews.

- Published and disseminated research results by presenting work at conferences and meetings. Acted as a reviewer for conference and journal papers and participated in several technical program committees.

Information Technology Analyst, Oct 2003 – June 2008
Center for Computation & Technology, http://www.cct.lsu.edu/
Louisiana State University, Baton Rouge, LA, U.S.A.

This was a research position within the Core Computing Sciences focus area of a multidisciplinary research center aimed at developing leading edge software technologies. I joined the center at its onset and I was responsible for creating and leading the Collaborative Environments Group. I also spearheaded many high-performance Grid infrastructure initiatives.

- Created and led the Collaborative Environments Group, which focused on researching new online environments for researchers where they could manage scientific simulations and collaborate with colleagues.

- Promoted the work of the group and the center through building collaborations, giving presentations, submitting publications, and other outreach efforts.

- Built several Web portals (Java, JavaScript, JSP, Spiral) for different scientific application groups (e.g., petroleum engineering, coastal modeling, astrophysics, and chemistry). Often worked with end-users to identify requirements, data workflows, and presentation logic.

- Managed and mentored graduate students in my group (maximum of 7 concurrently) and directed the work of other researchers. Contributed to the interviewing, evaluation, and hiring of employees.

- Furthered the center's high-performance computing research by taking on a leading role in the effort to integrate our clusters into several regional and international Grids. Setup local security policies and certificate authorities. Advised and helped other groups with high-performance and Grid technologies.

Scientific Software Engineer, Dec 1999 – Feb 2004
Max-Planck-Institute for Gravitational Physics, http://www.aei.mpg.de/
Golm, Germany

This was a research position within the computational sciences group of the Astrophysical Relativity Department. I split my time between working on high-performance computing infrastructures and leading the technical development of an online highly-interactive scientific journal.

- Lead architect of the Living Reviews journal. Responsible for the technical vision, development, design, and maintenance of website and back-end processing software (Java, Perl). Six editorial staff in total.

- One of four researchers who developed an online portal (GridSphere) to interface with high-performance computing systems. GridSphere (Java, JavaScript, JSP) was a multi-tier (MVC) Portlet framework.

- Worked extensively with scientist end-users to identify their requirements, simulation and data workflows, and use-cases to better understand how they would like to use an online collaborative portal.

- Designed and developed a collection of Grid-related tools and a testing framework (GridTools). GridTools (Perl) was used to help create a global Grid testbed that was showcased at SuperComputing 2002.

- Created new features and plugins for the Cactus Computational Toolkit (C, Make, and Perl). Enhanced the projects website and developer tool library. Added new notification events (e-mail, SMS, and IM).

Publications

The following lists my publications (and 📘 posters). They are composed of 🔵 journal articles, 🟢 conference and workshop papers, 🟣 book chapters or collections, and ⚫ technical reports / other. The list is presented in reverse chronological order. It should be noted that several 🟣 publications originated as peer-reviewed workshop or conference papers and were then selected for inclusion in a collection or book. In these cases, the publication is only listed once, in its most recent publication form.

🔵 I. Kelley, "Attic: An Architecture for Distributed Science Clouds." IEEE Transactions on Cloud Computing: Special Issue on Scientific Cloud Computing. December, 2014. (in review)

🟢 I. Kelley, "Publish or perish: the credit deficit to making software and generating data." 2nd Workshop on Sustainable Software for Science: Practice and Experiences (WSSSPE2) to be held in conjunction with SuperComputing 2014. November 2014.

🟢 I. Kelley and J. Blumenstock "Computational Challenges in the Analysis of Large, Sparse, Spatiotemporal Data." in *Proceedings of ACM HPDC Sixth International Workshop on Data Intensive Distributed Computing (DIDC'14)*. Vancouver, Canada, June, 2014.

🟢 I. Kelley, "A Distributed Architecture for Intra- and Inter- Cloud Data Management." in *Proceedings of ACM HPDC 5th Workshop on Scientific Cloud Computing (ScienceCloud 2014)*, Vancouver, Canada, June 2014.

⚫ I. Kelley. "Data Management in Dynamic Distributed Computing Environments." Ph.D. thesis. School of Computer Science & Informatics, Cardiff University, UK, June 2012. See: http://orca.cf.ac.uk/44477/

📘 I. Kelley, T. Kiss, and I. Taylor "Secure Decentralised Data Sharing in Dynamic Distributed Networks." Poster at the RCUK Cybersecurity Research Showcase. London, UK. 23 November 2011.

🟢 I. Kelley and I. Taylor, "A Peer-to-Peer Architecture for Data-Intensive Cycle Sharing," in *Proceedings of the First International Workshop on Network-Aware Data Management (NDM '11)*. Seattle, WA, U.S.A. 14 November 2011.

🟢 A. Elwaer, A. Harrison, I. Kelley, and I. Taylor. "Attic: A Case Study for Distributing Data in BOINC Projects," in *Proceedings of the Fifth Workshop on Desktop Grids and Volunteer Computing Systems (PCGrid 2011)*. Anchorage, AL, U.S.A. 20 May 2011.

🟢 T. Kiss, I. Kelley, and P. Kacsuk, "Porting Computation and Data Intensive Applications to Distributed Computing Infrastructures Incorporating Desktop Grids," in *Proceedings of the International Symposium on Grids and Clouds (ISGC)*. 25 March 2011.

🔵 C. Mastroianni, P. Cozza, D. Talia, I. Kelley, and I. Taylor. "A Scalable Super-Peer Approach for Public Scientific Computation." Journal of Future Generation Computer Systems. Volume 25 , Issue 3, pp. 213–223, March 2009.

🟣 Z. Balaton, Z. Farkas, G. Gombas, P. Kacsuk, R. Lovas, A. C. Marosi, A. Emmen, G. Terstyanszky, T. Kiss, I. Kelley, I. Taylor, O. Lodygensky, M. Cardenas-Montes, G. Fedak, and F. Araujo. "EDGeS: The Common Boundary Between Service and Desktop Grids." Parallel Processing Letters (PPL), Special Issue on Grid Architectural Issues: Scalability, Dependability, Adaptability. Volume: 18, Issue: 3, pp. 37–48. September, 2008.

F. Costa, L. Silva, G. Fedak, and I. Kelley. "Optimizing Data Distribution in Desktop Grid Platforms." Parallel Processing Letters (PPL), Special Issue on Grid Architectural Issues: Scalability, Dependability, Adaptability. Volume: 18, Issue: 3, pp. 391–410. September, 2008.

G. Fedak, H. He, O. Lodygensky, Z. Balaton, Z. Farkas, G. Gombas, P. Kacsuk, R. Lovas, A. C. Marosi, I. Kelley, I. Taylor, G. Terstyanszky, T. Kiss, M. Cardenas-Montes, A. Emmen, and F. Araujo. "EDGeS: A Bridge between Desktop Grids and Service Grids," in *Proceedings of the Third ChinaGrid Annual Conference (ChinaGrid 2008)*. Dunhuang, China. 20–22 August 2008

I. Kelley and I. Taylor. "Bridging the Data Management Gap Between Service and Desktop Grids." Distributed and Parallel Systems, In Focus: Desktop Grid Computing, pp. 13–26. Peter Kacsuk, Robert Lovas and Zsolt Nemeth (Editors), Springer, August 2008.

D. Barbalace, D. Talia, I. Kelley, I. Taylor, and C. Mastroianni. "A Data-Sharing Protocol for Desktop Grid Projects." CoreGRID Network of Excellence – Institutes on Knowledge and Data Management & Grid Systems, Tools and Environments. Technical Report TR-0165. August 2008.

F. Costa, L. Silva, I. Kelley, and I. Taylor. "P2P Techniques for Data Distribution in Desktop Grid Computing Platforms." Making Grids Work, Marco Danelutto, Paraskevi Fragopoulou and Vladimir Getov (Editors), Springer, July 2008.

P. Cozza, I. Kelley, C. Mastroianni, D. Talia, and I. Taylor. "Cache-Enabled Super-Peer Overlays for Multiple Job Submission on Grids." Grid Middleware and Services: Challenges and Solutions, pp. 155–169. Domenico Talia, Ramin Yahyapour, and Wolfgang Ziegler (Editors), Springer, July 2008.

M. Cardenas-Montes, A. Emmen, A. C. Marosi, F. Araujo, G. Gombas, G. Fedak, I. Kelley, I. Taylor, O. Lodygensky, P. Kacsuk, R. Lovas, T. Kiss, Z. Balaton, Z. Farkas, and G. Terstyanszky, "EDGeS: Bridging Desktop and Service Grids," in *Proceedings of the Second Iberian Grid Infrastructure Conference (IBERGRID 2008)*. Porto, Portugal. 12–14 May 2008.

F. Costa, L. Silva, G. Fedak, and I. Kelley. "Optimizing the Data Distribution Layer of BOINC with BitTorrent," in *Proceedings of the Second Workshop on Desktop Grids and Volunteer Computing Systems (PCGrid 2008) held in conjunction with the IEEE International Parallel & Distributed Processing Symposium (IPDPS)*. Miami, Florida, U.S.A. 18 April 2008

F. Costa, L. Silva and I. Kelley. "Using a Content Distribution Network for Data Distribution in Desktop Grid Computing Platforms." Poster at the CoreGRID Integration Workshop 2008: Integrated Research in Grid Computing. Crete, Greece. 2–4 April 2008.

S. Isaiadis, V. Getov, I. Kelley and I. Taylor. "Dynamic Service-Based Integration of Mobile Clusters in Grids." CoreGRID Network of Excellence – Institute on Grid Systems, Tools and Environments. Technical Report TR-0094. February 2008

P. Cozza, I. Kelley, C. Mastroianni, D. Talia, and I. Taylor. "Use of P2P Overlays for Distributed Data Caching in Public Scientific Computing." CoreGRID Network of Excellence – Institute on Knowledge and Data Management. Technical Report TR-0112. October 2007.

C. Zhang, I. Kelley, and G. Allen. "Grid Portal Solutions: A Comparison of GridPortlets and OGCE." Concurrency and Computation: Practice and Experience — Workshop on Grid Computing Portals (GCE 2005). Volume 19, Issue 12, pp 1739–1748. August 2007.

C. Zhang, C. Dekate, G. Allen, I. Kelley, and J. MacLaren. "An Application Portal for Collaborative Coastal Modeling." Concurrency and Computation: Practice and Experience — Workshop on Grid Computing Portals (GCE 2005). Volume 19, Issue 12, pp 1571–1581. August 2007.

A. Harrison, I. Kelley, K. Mueller, M. Shields, and I. Taylor. "Workflows Hosted In Portals," in *Proceedings of the UK eScience All Hands Meeting (AHM2007)*. Nottingham, U.K. 10–13 September 2007.

A. Harrison, I. Kelley, E. Mieilica, A. Riposan, and I. Taylor. "Mobile Peer-To-Grid Architecture for Paramedical Emergency Operations." Studies in Health Technology and Informatics, Challenges and Opportunities of HealthGrids. Volume 120, pp 283–294. Vicente Hernndez, Ignacio Blanquer, Tony Solomonides, Vincent Breton and Yannick Legr (Editors). IOS Press, 2006.

A. Harrison, I. Kelley, E. Mieilica, A. Riposan, I. Taylor. "MGFM – Mobile Grid for Fleet Management," in *Proceedings of the 6th IEEE Communications International Conference.* National Military Center, Bucharest, 8–10 June 2006.

A. Harrison, I. Kelley, E. Mieilica, A. Riposan, and I. Taylor. "Mobile Peer-To-Grid Architecture for Paramedical Emergency Operations," in *Proceedings of HealthGrid 2006.* Valencia, Spain. 7–9 June 2006.

A. Harrison, I. Kelley, and I. Taylor. "Workflow-Driven Portals for the Integration of Legacy Applications," in *Proceedings of the Grid-Enabling Legacy Applications and Supporting End Users Workshop (GELA), held in conjunction with the 15th IEEE International Symposium on High Performance Distributed Computing (HPDC'15).* 19–23 June 2006.

I. Kelley, O. Wehrens, M. Russell, and J. Novotny. "The Cactus Portal," in *Proceedings of the APAC Conference and Exhibition on Advanced Computing, Grid Applications and eResearch (APAC'05).* Gold Coast, Australia. 26–29 September 2005.

R. Bondarescu, G. Allen, G. Daues, I. Kelley, M. Russell, E. Seidel, J. Shalf, and M. Tobias. "The Astrophysics Simulation Collaboratory Portal: a Framework for Effective Distributed Research." Future Generation Computer Systems. Volume 21, Issue 2, pp. 259–270. February 2005.

G. Allen, K. Davis, T. Goodale, I. Kelley, J. Novotny, M. Russell, O. Wehrens, and E. Seidel. "GridLab: GAT and GridSphere." Poster at the Twelfth International Symposium on High Performance Distributed Computing (HPDC-12). Seattle, WA, U.S.A. 22–27 June 2003.

G. Allen, K. Davis, T. Goodale, I. Kelley, J. Novotny, M. Russell, O. Wehrens, and E. Seidel. "GAT and GridSphere: Application-Oriented Tools for the Grid." Poster at the 3rd IEEE/ACM International Symposium on Cluster Computing and the Grid (CCGrid 2003). Tokyo, Japan. 12–15 May 2003.

G. Allen, K. Davis, T. Dramlitsch, T. Goodale, I. Kelley, G. Lanfermann, J. Novotny, T. Radke, K. Rasul, M. Russell, E. Seidel, and O. Wehrens "The GridLab Grid Application Toolkit." Poster at the Eleventh International Symposium on High Performance Distributed Computing (HPDC-11). Edinburgh, United Kingdom. 24–26 July 2002.