

Timothy Roscoe (Mothy)

- Education** **University of Cambridge**, United Kingdom
Ph.D., Computer Science (Operating Systems and Networking), November 1995
Diploma in Computer Science (passed with Distinction), August 1990
B.A. Pure Mathematics (2nd class honours), July 1989
- Research Interests** Large-scale distributed systems, operating systems, network architecture.
- Research Experience** **ETH (Swiss Federal Institute of Technology) Zürich**, Switzerland. From January 2007 (Professor of Computer Science).
Barrelfish: Operating system support for heterogeneous, manycore processors and high-level concurrent programming languages.
Rhizoma: Declarative distributed resource management using Constraint Logic Programming.
r-OSGI: Extending module management techniques to distributed computing deployments.
National ICT Australia, Sydney, Australia. 2006 (Visiting Researcher): High-assurance kernels for embedded real-time systems.
Intel Research, Berkeley, California, USA. 2002–2006 (Principal Research Scientist):
P2: A declarative toolkit for expressing, building, executing, debugging, monitoring distributed systems (with U.C. Berkeley).
PlanetLab. An open platform for developing, deploying, and accessing planetary-scale services. The de facto standard testbed for wide-area distributed systems research. See <http://www.planet-lab.org/> for more details.
PIER: A distributed relational query processor (with U.C. Berkeley and ICSI). Scalable continuous relational queries over large numbers of widely-distributed data sources.
Bamboo: A highly robust distributed hash table (DHT) implementation (with U.C. Berkeley).
Internet Capabilities: Preventing denial of service using hard-to-forge identifiers stored as soft-state in routers along the packet forwarding path (with U. Washington).
Palimpsest: A wide-area ephemeral storage system (with U. Cambridge). Palimpsest stores erasure-coded blocks in a distributed hash table which functions as a FIFO queue, allowing the application of congestion-pricing models to storage.
Sophia: An Information Plane for networked systems (with Princeton University). Inspired by InfoSpect (see below), Sophia is a distributed Prolog expression evaluator used for resource discovery and system monitoring on PlanetLab.
Sprint Advanced Technology Labs, Burlingame, California, USA. 1998–2002 (Distinguished Research Scientist).

Predicate Routing: A unified approach to firewalling, routing, and addressing in constrained IP networks based on the use of annotated logical predicates to express packet properties and reachability.

Infospect: Using a declarative logic programming language for system and network health monitoring.

Mnemosyne: A peer-to-peer steganographic storage service.

Radically Heterogeneous Networking: The naming, binding, and routing issues involved in connecting diverse networks and systems without imposing a single architecture or interworking protocol.

Additional projects included data and metadata management of very large traces from Sprint's operational IP backbone, script-driven end-system support for network quality-of-service, and issues in deployable, source-based IP multicast.

Sprint Subject Matter Expert (SME) for distributed systems and operating systems: consultant to the corporation on Content Distribution Networks, edge processing, operating systems design for residential gateways and set-top boxes, and cluster-based service hosting.

Persimmon IT Inc., Durham, North Carolina, USA. 1995–1998 (Vice President, Research and Development): User embodiment and collaboration in World Wide Web applications. CORBA-based WWW server architectures using long-lived browser-server bindings. Non-intrusive approaches to enterprise-wide document management systems. Compilation of HTML to increase performance of adaptive documents.

University of Cambridge Computer Laboratory, UK. 1990–1995 (Research Associate): Developed the Nemesis novel operating system architecture to minimize the effect of application Quality of Service Crosstalk. Linkage in single address-space operating systems. Explicit binding models for QoS negotiation in object-based distributed systems. QoS-based CPU scheduling algorithms.

Olivetti Research Limited, Cambridge, UK. 1994 (Contractor): Adding multimedia stream concepts to object-based RPC systems

Xerox PARC, Palo Alto, California, USA. 1993 (Intern Student): Single-point multiplexing, application-level framing, and TCP cut-through over ATM networks.

**Project
Management
Experience**

Principal Investigator, P2 Dataflow Engine, Intel Research, Berkeley, 2004–present. Technical lead, coordinated with graduate and undergraduate students, academic collaborators, and fellow researchers at Intel.

Co-Principal Investigator, PlanetLab Strategic Research Project, Intel Research, Berkeley. 2002–2005. Technical lead and system architect for PlanetLab at Intel Research. With Mic Bowman, built up PlanetLab SRP team within Intel. Liaised with academic research community and other collaborators (e.g. HP). Helped establish PlanetLab as the premier research platform for developing and deploying planetary-scale services.

Leader, Systems Research Group, Sprint Advanced Technology Lab, Burlingame, CA, 1998–2002.

Vice President for Research and Development, Persimmon IT Inc., Durham, North Carolina, USA. 1995–1998. Established, led and developed the corporation's technical direction. Leader of team of about 10 researchers in a company of about 90 employees. Interfaced with Sales, Marketing and Production areas of the company to provide technology transfer and product feedback. Identified and initiated collaborative ventures with appropriate partners. Coordinated research activities across two company sites (Durham, NC and Cambridge, U.K.)

Teaching and Advising **Full Professor of Computer Science**, ETH Zürich, January 2007–present. Networks and Operating Systems Group, Institute for Pervasive Computing.

Adjunct Professor of Computer Science, U.C. Berkeley, July 2005–December 2006.

Mentor and/or intern supervisor for a number of UCB graduate students (1999–2006).

Intel PhD fellowship mentor for students from MIT and Princeton.

Taught CS199-6 course "Wide Area Application Design, Deployment, and Management", U.C. Berkeley (Spring 2003). Undergraduate independent study.

Visiting Industrial Fellow, U.C. Berkeley (2001–2002). Guest lecturer in graduate networking course.

Guest lecturer, University of North Carolina at Chapel Hill (1997–1998): undergraduate seminars in Computer-Mediated Inter-Personal Communication, and Gender and Technology.

Teaching Assistant, Queens' College, Cambridge: Computer Science tutorials and lectures, and final year project advisor for undergraduate and graduate students.

Program Committees USENIX Annual Technical Conference, 2010 (*Program co-chair*).

7th USENIX/ACM Symposium on Networked Systems Design and Implementation (NSDI), 2010

22nd ACM Symposium on Operation Systems Principles (SOSP), 2009

4th ACM SIGOPS European Systems Conference (Eurosys), 2009

USENIX/ACM Hot Topics in Operating Systems (HotOS), 2009

USENIX/ACM Networked Systems Design and Implementation (NSDI), 2008

USENIX Annual Technical Conference, 2008

ACM/USENIX Virtual Execution Environments (VEE), 2007

USENIX Annual Technical Conference, 2007

2nd ACM SIGOPS European Systems Conference (Eurosys), 2007

3rd ACM SIGMOD/VLDB Conference on Innovative Data Systems Research (CIDR), 2007

USENIX/ACM Networked Systems Design and Implementation (NSDI), 2006 (*Co-chair*)

5th International Workshop on Peer-to-Peer Systems (IPTPS), 2006

2nd Workshop on Real, Large Distributed Systems (WORLDS), 2005

21st Annual Computer Security Applications Conference (ACSAC), 2005 (*"Tech Blitz" committee*)

USENIX Annual Technical Conference, 2005

4th International Workstop on Peer-to-Peer Systems (IPTPS), 2005

1st International Workshop on Real, Large Distributed Systems (WORLDS), 2004 (*Co-chair*)

International Symposium on Distributed Objects and Applications (DOA), 2004

USENIX/ACM Operating Systems Design and Implementation (OSDI), 2004

USENIX/ACM Networked Systems Design and Implementation (NSDI), 2004
 13th International World Wide Web Conference (WWW), 2004 (*Applications track*)
 24th International Conference on Distributed Computing Systems (ICDCS), 2004
 ACM Multimedia, 2003 (*Systems track*)
 OPENARCH, 2003
 USENIX Operating Systems Design and Implementation (OSDI), 2002
 Interactive Distributed Multimedia Systems / Protocols for Multimedia Systems (IP), 2002
 ACM/SPIE Multimedia Computing and Networking (MMCN), 2002
 9th International Conference on Network Protocols (ICNP), 2001
 Interactive Distributed Multimedia Systems (IDMS), 2001
 ACM/SPIE Multimedia Computing and Networking (MMCN), 2001
 USENIX Operating Systems Design and Implementation (OSDI), 2000
 10th Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV), 2000
 ACM/SPIE Multimedia Computing and Networking (MMCN), 2000
 ACM/SPIE Multimedia Computing and Networking (MMCN), 1999 (*Co-Chair*)
 ACM Multimedia, 1998 (*Systems track*)
 ACM/SPIE Multimedia Computing and Networking (MMCN), 1998 (*Co-Chair*)
 SPIE Multimedia Computing and Networking (MMCN), 1997

Other Professional Activities

National Science Foundation GENI Initiative (Global Environment for Network Investigation), Architecture Committee member. <http://www.geni.net/>. (2007–present)
 National Science Foundation GENI Initiative (Global Environment for Network Investigation), Software Services Working Group member. <http://www.geni.net/>. (2005–present)
 PlanetLab Consortium Steering Committee (chief technical body overseeing the direction of the PlanetLab platform). (2003–present)
 UK Engineering and Physical Sciences Research Council Review College (2002–present)
 US National Science Foundation Networking Research panels (2003–present)
 IEEE International Conference on Peer-to-Peer Computing, Steering Committee (2008–present)
 Occasional member, Internet Research Task Force End-to-End Research Group (2002–present)
 Member of the Association for Computing Machinery, and Usenix.

Refereed Conference Papers

Artefact: A Framework for Low-Bandwidth Web-Based Collaboration. Jeff Brandenburg, Boyce Byerly, Tom Dobridge, Jinkun Lin, Dharmaraja Rajan, Timothy Roscoe, *Proceedings 1998 ACM Conference on Computer Supported Cooperative Work (CSCW98), Seattle, Washington, USA, November 1998.*

Script-Driven Packet Marking for QoS Support in Legacy Applications. Timothy Roscoe and Gene Bowen, *Proceedings SPIE/ACM Multimedia Computing and Networking 2000, San Jose, California, USA, January 2000*.

Distributed Computing without DPEs: Design Considerations for Public Computing Platforms. Timothy Roscoe and Bryan Lyles, *Proceedings 9th ACM SIGOPS European Workshop, Kolding, Denmark, September 2000*.

Metadata Management of Terabyte Datasets from an IP Backbone Network: Experience and Challenges. Sue Moon and Timothy Roscoe, *Proceedings Workshop on Network-Related Data Management, Santa Barbara, California, USA, May 2001*.

New Resource Issues in Shared Clusters. Timothy Roscoe and Prashant Shenoy, *Proceedings 8th International Workshop on Interactive Distributed Multimedia Systems, Lancaster, UK, September 2001*.

Mnemosyne: Peer-to-Peer Steganographic Storage. Steven Hand and Timothy Roscoe, *Proceedings 1st International Workshop on Peer-to-Peer Systems (IPTPS), Boston, MA, March 2002*.

Transaction-based Charging in Mnemosyne: a Peer-to-Peer Steganographic Storage System. Timothy Roscoe and Steven Hand. *Proceedings of the International Workshop on Peer-to-Peer Computing at Networking 2002, Pisa, Italy, May, 2002*.

Spread Spectrum Storage with Mnemosyne. Steven Hand and Timothy Roscoe. *Proceedings of the International Workshop on Future Directions in Distributed Computing (FuDiCo'02), Bertinoro (Forli), Italy, June 2002*.

InfoSpect: Using a Logic Language for System Health Monitoring in Distributed Systems. Timothy Roscoe, Richard Mortier, Paul Jardetzky, and Steven Hand, *Proceedings of the Tenth ACM SIGOPS European Workshop, Saint-Emilion, France, September 2002*.

A Blueprint for Introducing Disruptive Technology into the Internet. Larry Peterson, Tom Anderson, David Culler, and Timothy Roscoe. *Proceedings of the First Workshop on Hot Topics in Networking (HotNets-I), Princeton, NJ, USA, October 28–29, 2002*.

Predicate Routing: Enabling Controlled Networking. Timothy Roscoe, Steve Hand, Rebecca Isaacs, Richard Mortier, and Paul Jardetzky *Proceedings of the First Workshop on Hot Topics in Networking (HotNets-I), Princeton, NJ, USA, October 28–29, 2002*.

Resource Overbooking and Application Profiling in Shared Hosting Platforms. Bhuvan Urgaonkar, Prashant Shenoy, and Timothy Roscoe. *Proceedings of Operating Systems Design and Implementation (OSDI 2002), Boston, MA, USA, December 2002*.

Structured Peer-to-Peer Overlays Need Application-Driven Benchmarks. Sean Rhea, Timothy Roscoe, and John Kubiawicz. *Proceedings of the 2nd International Peer-to-Peer Systems Workshop (IPTPS'03), Berkeley, CA, USA, February 20–21, 2003*.

Palimpsest: Soft-Capacity Storage for Planetary-Scale Services. Timothy Roscoe and Steven Hand. *Proceedings of the 9th Workshop on Hot Topics in Operating Systems (HotOS-IX), Lihue, Hawaii, USA, May 18–21, 2003*.

QoS's Downfall: At the bottom or not at all! Jon Crowcroft, Steve Hand, Richard Mortier, Timothy Roscoe, Andrew Warfield *Proceedings of SIGCOMM Workshop on Revisiting IP QoS (RIPQOS'03), August 2003*.

Plutarch: An Argument for Network Pluralism. Jon Crowcroft, Steve Hand, Richard Mortier, Timothy Roscoe, and Andrew Warfield. *Proceedings of SIGCOMM Workshop on Future Directions in Network Architecture (FDNA'03), August 2003*.

Sophia: An Information Plane for Networked Systems. Mike Wawrzoniak, Larry Peterson and Timothy Roscoe. *Proceedings of the Second Workshop on Hot Topics in Networking (HotNets-II)*, Cambridge, MA, USA, November 19–20, 2003.

Preventing Internet Denial-of-Service using Capabilities. Tom Anderson, Timothy Roscoe and David Wetherall. *Proceedings of the Second Workshop on Hot Topics in Networking (HotNets-II)*, Cambridge, MA, USA, November 19–20, 2003.

Operating Systems Support for Planetary-Scale Network Services. Andy Bavier, Larry Peterson, Mike Wawrzoniak, Scott Karlin, Tammo Spalink, Timothy Roscoe, David Culler, Brent Chun, and Mic Bowman. *Proceedings of the First Symposium on Networked Systems Design and Implementation*, San Francisco, CA, USA, March 29–31, 2004.

Handling Churn in a DHT. Sean Rhea, Dennis Geels, Timothy Roscoe, and John Kubiawicz. *Proceedings of the 2004 Usenix Technical Conference*, Boston, MA, USA, June 28–30, 2004 (**awarded Best Paper**).

Design Considerations for Information Planes. Brent Chun, Joseph M. Hellerstein, Ryan Huebsch, Petros Maniatis, and Timothy Roscoe. *Proceedings of the 1st Workshop on Real, Large Distributed Systems*, San Francisco, CA, USA, December 2004.

The Architecture of PIER: an Internet-Scale Query Processor. Ryan Huebsch, Brent Chun, Joseph M. Hellerstein, Boon Thau Loo, Petros Maniatis, Timothy Roscoe, Scott Shenker, Ion Stoica, and Aydan R. Yumerefendi. *Proceedings of the 2nd biennial Conference on Innovative Data Systems Research (CIDR)*, January 2005.

Implementing Declarative Overlays. Boon Thau Loo, Tyson Condie, Joseph M. Hellerstein, Petros Maniatis, Timothy Roscoe, and Ion Stoica. *Proceedings of the 20th ACM Symposium on Operating Systems Principles (SOSP)*, October 2005.

Off by Default! Hitesh Ballani, Yatin Chawathe, Sylvia Ratnasamy, Timothy Roscoe, and Scott Shenker. *Proceedings of the Fourth Workshop on Hot Topics in Networking (HotNets-II)*, College Park, MD, USA, November 14–15, 2005.

Finally, a Use for Componentized Transport Protocols. Tyson Condie, Joseph M. Hellerstein, Petros Maniatis, Sean Rhea, and Timothy Roscoe. *Proceedings of the Fourth Workshop on Hot Topics in Networking (HotNets-II)*, College Park, MD, USA, November 14–15, 2005.

Using Queries for Distributed Monitoring and Forensics. Atul Singh, Petros Maniatis, Timothy Roscoe, and Peter Druschel. *Proceedings of the 1st European Systems Research Conference (Eurosys)*, Leuven, Belgium, March 2006.

Declarative networking: language, execution and optimization. Boon Thau Loo, Tyson Condie, Minos Garofalakis, David E. Gay, Joseph M. Hellerstein, Petros Maniatis, Raghuram Ramakrishnan, Timothy Roscoe, and Ion Stoica. *Proceedings of the 25th ACM SIGMOD International Conference on the Management of Data (SIGMOD 2006)*, Chicago, USA, June 2006.

Learning from PlanetLab. Tom Anderson and Timothy Roscoe. *Proceedings of the 3rd Workshop on Real, Large Distributed Systems*, Seattle, WA, USA, November 2006.

The End of Internet Architecture. Timothy Roscoe. *Proceedings of the Fifth Workshop on Hot Topics in Networking (HotNets-V)*, Irvine, CA, USA, November 29–30, 2006.

Hype and Virtue. Timothy Roscoe, Kevin Elphinstone, Gernot Heiser. *Proceedings of the 11th Workshop on Hot Topics in Operating Systems (HotOS-XI)*, San Diego, CA, USA, May 2007.

Towards a practical, verified kernel. Kevin Elphinstone, Gerwin Klein, Philip Derrin, Timothy Roscoe, Gernot Heiser. *Proceedings of the 11th Workshop on Hot Topics in Operating Systems (HotOS-XI)*, San Diego, CA, USA, May 2007.

Friday: Global Comprehension for Distributed Replay. Dennis Geels, Gautam Altekar, Petros Maniatis, Timothy Roscoe, Ion Stoica. *Proceedings of the 4th Symposium on Networked Systems Design and Implementation (NSDI'07)*, Boston, MA, USA, April 2007.

Public Health for the Internet. Joseph M. Hellerstein, Tyson Condie, Minos Garofalakis, Boon Thau Loo, Petros Maniatis, Timothy Roscoe, Nina A. Taft. *Proceedings of the 3rd Biennial Conference on Innovative Data Systems Research (CIDR)*, Asilomar, CA, USA, January 2007.

R-OSGi: Distributed Applications through Software Modularization. Jan Rellermeier, Gustavo Alonso, Timothy Roscoe. *Proceedings of ACM Middleware 2007*, Newport Beach, CA, USA, November 2007.

30 seconds is not enough! A Study of Operating System Timer Usage. Simon Peter, Andrew Baumann, Timothy Roscoe, Paul Barham, Rebecca Isaacs. *Proceedings of the 3rd European Systems Conference (Eurosys)*, Glasgow, Scotland, April 2008.

BFT Protocols under Fire. Atul Singh, Petros Maniatis, Peter Druschel, Timothy Roscoe. *Proceedings of the 4th Symposium on Networked Systems Design and Implementation (NSDI'08)*, San Francisco, CA, USA, April 2008.

Embracing diversity in the Barrelfish manycore operating system. Adrian Schüpbach, Simon Peter, Andrew Baumann, Timothy Roscoe, Paul Barham, Tim Harris, Rebecca Isaacs. *Proceedings of the Workshop on Managed Many-Core Systems (MMCS)*, Boston, MA, USA, June 2008.

Dependable Self-Hosting Distributed Systems Using Constraints. Qin Yin, Justin Cappos, Andrew Baumann, Timothy Roscoe. *Proceedings of the 4th Usenix Workshop on Hot Topics in System Dependability (HotDep)*, San Diego, CA, USA, December 2008.

Your computer is already a distributed system. Why isn't your OS? Andrew Baumann, Simon Peter, Adrian Schüpbach, Akhilesh Singhanian, Timothy Roscoe, Paul Barham, Rebecca Isaacs. *Proceedings of the 12th Workshop on Hot Topics in Operating Systems (HotOS-XII)*, Monte Verita, Switzerland, May 2009.

The multikernel: a new OS architecture for scalable multicore systems. Andrew Baumann, Paul Barham, Pierre-Evariste Dagand, Tim Harris, Rebecca Isaacs, Simon Peter, Timothy Roscoe, Adrian Schüpbach, Akhilesh Singhanian. *Proceedings of the 22nd ACM symposium on Operating systems principles (SOSP09)*, Big Sky, MO, USA, October 2009.

Rhizoma: a runtime for self-deploying, self-managing overlays, Qin Yin, Adrian Schüpbach, Justin Cappos, Andrew Baumann, Timothy Roscoe. *Proceedings of ACM Middleware 2009*, Urbana-Champaign, IL, USA, October 2009.

**Refereed
Journal
Papers**

The Design and Implementation of an Operating System to Support Distributed Multimedia Applications. Ian. M. Leslie, Derek McAuley, Richard Black, Timothy Roscoe, Paul Barham, David Evers, Robin Fairbairns, and Eoin Hyden, *IEEE Journal on Selected Areas in Communications*, vol. 14, no. 7, pp. 1280–1297, September 1996.

The Construction of the World Wide Web Audience. Timothy Roscoe, *Media, Culture & Society* vol. 21 no. 5, September 2000.

PlanetLab: An Overlay Testbed for Broad-Coverage Services. Brent Chun, David Culler, Timothy Roscoe, Andy Bavier, Larry Peterson, Mike Wawrzoniak, and Mic Bowman. *ACM Computer Communication Review*, vol. 33, no. 3, July 2003.

Resource Overbooking and Application Profiling in a Shared Internet Hosting Platform. Bhuvan Urgaonkar, Prashant Shenoy, Timothy Roscoe. *ACM Transactions on Internet Technologies (TOIT)*, vol. 9, no. 1, February 2009, pp. 1–45.

Network architecture test-beds as platforms for ubiquitous computing. Timothy Roscoe. *Philosophical Transactions of the Royal Society A* vol. 366, no. 1881, pp. 3663–3838, October 28, 2008.

**Other
Publications**

Linkage in the Nemesis Single Address Space Operating System. Timothy Roscoe, *ACM Operating Systems Review*, October 1994, Vol. 28, No. 4.

The MIDDLE Manual. Timothy Roscoe, *Pegasus Project paper 94–16*, October 1994. October 1994

Nemesis Structure and Interfaces. David M. Evers and Timothy Roscoe, *Pegasus Project paper 94–17*, October 1994.

Clanger: An Interpreted Systems Programming Language, Timothy Roscoe, *ACM Operating Systems Review*, April 1995, Vol. 29, No. 2.

The Structure of a Multiservice Operating System. Timothy Roscoe, *Ph.D. dissertation, University of Cambridge Computer Laboratory*, April 1995.

Relational Databases and Ontologies. Timothy Roscoe, *50th Annual ICA Conference (Philosophy of Communication Division)*, Acapulco, Mexico, June 2000.

Techniques for Lightweight Concealment and Authentication in IP Networks. P. Barham, S. Hand, R. Isaacs, P. Jardetzky, R. Mortier, and T. Roscoe, *Intel Research Technical Report IRB-TR-02-009*, July 1, 2002.

PlanetLab Phase 0: Technical Specification. Timothy Roscoe (editor), *PlanetLab Design Note PDN-02-002*, August 2002.

The SAHARA Model for Service Composition across Multiple Providers. Bhaskaran Raman, Sharad Agarwal, Yan Chen, Matthew Caesar, Weidong Cui, Per Johansson, Kevin Lai, Tal Lavian, Sridhar Machiraju, Z. Morley Mao, George Porter, Timothy Roscoe, Mukund Seshadri, Jimmy Shih, Keith Sklower, Lakshminarayanan Subramanian, Takashi Suzuki, Shelley Zhuang, Anthony D. Joseph, Randy H. Katz, and Ion Stoica, *Proceedings of the 1st International Conference on Pervasive Computing (Pervasive 2002)*, Zurich, Switzerland, August 2002.

PlanetLab Phase 1: Transition to an Isolation Kernel. Larry Peterson and Timothy Roscoe, *PlanetLab Design Note PDN-02-003*, September 2002.

Dynamic Slice Creation. The PlanetLab Architecture Team, *PlanetLab Design Note PDN-02-005*, October 2002.

A Simple Common Sensor Interface for PlanetLab. Timothy Roscoe, Larry Peterson, Scott Karlin, and Mike Wawrzoniak, *PlanetLab Design Note PDN-03-010*, March 2003 (updated May 2003).

Analyzing P2P Overlays and Recursive Queries. B. Loo, R. Huebsch, J.M. Hellerstein, T. Roscoe, and I. Stoica, *Intel Research Technical Report IRB-TR-03-045*, November 17, 2003.

Evolving the Slice Abstraction. Larry Peterson, John Hartman, Steve Muir, Timothy Roscoe, and Mic Bowman, *PlanetLab Design Note PDN-04-017*, January 2004.

Querying at Internet Scale. Brent Chun, Joseph M. Hellerstein, Ryan Huebsch, Shawn R. Jeffery, Boon Thau Loo, Sam Mardanbeigi, Timothy Roscoe, Sean Rhea, Scott Shenker, and Ion Stoica. *SIGMOD Demo*, June 2004.

The Design Principles of PlanetLab. Larry Peterson and Timothy Roscoe, *PlanetLab Design Note PDN-04-021*, June 2004.

The Network Oracle, Joseph M. Hellerstein, Vern Paxson, Larry Peterson, Timothy Roscoe, Scott Shenker, David Wetherall. In *Bulletin of the IEEE Computer Society Technical Committee on Data Engineering*, March 2005.

The PlanetLab Platform. Timothy Roscoe, book chapter in *In P2P Systems and Applications*, ed. Ralf Steinmetz and Klaus Wehrle, Springer-Verlag, September 2005.

Report of NSF Workshop on Overcoming Barriers to Disruptive Innovation in Networking, March 2005.

Making the world (of communications) a different place. David D. Clark, Craig Partridge, Robert T. Braden, Bruce Davie, Sally Floyd, Van Jacobson, Dina Katabi, Greg Minshall, K. K. Ramakrishnan, Timothy Roscoe, Ion Stoica, John Wroclawski, Lixia Zhang. *ACM SIGCOMM Computer Communication Review*, volume 35, issue 3 (July 2005), pages 91–96.

Comprehend the Planet. Timothy Roscoe, in *Proceedings of the NSF Workshop on Grand Challenges in Distributed Systems*, September 2005.

The Design Principles of PlanetLab, Larry Peterson and Timothy Roscoe. In *ACM Operating Systems Review*, January 2006, Vol. 40, No. 1.

Ready for Distribution? Turning Modular into Distributed Applications with the R-OSGi Deployment Tool (Demo), Jan Rellermeyer, Gustavo Alonso, Timothy Roscoe. *Proceedings of OOPSLA 2007*, October 2007.

The ETH Zurich systems group and enterprise computing center. Gustavo Alonso, Donald Kossmann, Timothy Roscoe, Nesime Tatbul, Andrew Baumann, Carsten Binning, Peter Fischer, Oriana Riva, Jens Teubner. *SIGMOD Record*, vol. 37, no. 4, December 2008, pp. 94–99.

Declarative Networking, Timothy Roscoe. Tamer Ozsu, Ling Liu (ed.) *Encyclopedia of Database Systems*, Springer, Heidelberg, Germany, Springer Reference Series, September 2009.