

# Matthias Wählisch

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## Research Areas:

BGP, ICN, IoT, Mobile IP, Multicast, P2P Networking, *et al.*  
Network Security, Network Protocols, Internet Measurements & Analysis

## Education & Civil Service

01/2016	Dr. rer. nat. (PhD). Doctoral dissertation <i>Measuring and Implementing Internet Backbone Security: Current Challenges, Upcoming Deployment, and Future Trends</i> , submitted 10/2015. Grade <i>Summa cum laude (with highest honors)</i> , Freie Universität Berlin, Germany
04/2009	Dipl.-Inform. (MSc). Master's thesis <i>Scalable Adaptive Group Communication on Bi-directional Shared Prefix Trees</i> , submitted 07/2008
10/2002 – 04/2009	Study of computer science (major) and contemporary German literature (minor) at Freie Universität Berlin
04/2002 – 09/2002	Study of mathematics at Freie Universität Berlin
08/2001 – 05/2002	Civil service
08/1994 – 06/2001	Georg-Forster-Oberschule Berlin (High School)

## Work Experiences

10/2016 – now	Assistant Professor of Computer Science, head of Internet Technologies, Institute of Computer Science, Freie Universität Berlin
05/2009 – 09/2016	Researcher, lecturer, and project manager, Computer Systems and Telematics group, heading Internet Technologies, Institute of Computer Science, Freie Universität Berlin,
2007 – 2010	Teaching Assistant for course Broadband Communication, School of Systems Engineering, University of Reading, UK
04/2007 – 04/2011	Lecturer for Mobile Internet & Security, Haus der Technik
07/2006	Co-founder of the start-up link-lab
05/2006 – 03/2009	Research student in the Internet Technologies group, Hamburg University of Applied Sciences (HAW Hamburg)
04/2002 – 05/2006	Student assistant in the networking group of the Computer Center, University of Applied Sciences Berlin (FHTW Berlin)
08/1998 – 04/2002	Project collaborator, networking group of the Computer Center, University of Applied Sciences Berlin (FHTW Berlin)
07/1998 – 08/1998	Internship, Computer Center, FHTW Berlin

## Summary

# Co-organized scientific events	38	# PhD students supervised	7
# Awards	8	# Bachelor's and master's theses supervised	29
# Travel grants	11	# Term papers supervised	32
# Invited talks	20	# Courses taught	33
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## Selected Publications

The following papers have been selected to illustrate the variety of research topics I am involved in (or have been involved in). A complete publication list is presented on page 23 et seqq.

### Internet Backbone Routing & Cyber Security

- M. Wählisch, R. Schmidt, T. C. Schmidt, O. Maennel, S. Uhlig, and G. Tyson, “RiPKI: The Tragic Story of RPKI Deployment in the Web Ecosystem,” in *Proc. of Fourteenth ACM Workshop on Hot Topics in Networks (HotNets)*. New York: ACM, 2015.
- M. Wählisch, O. Maennel, and T. C. Schmidt, “Towards Detecting BGP Route Hijacking using the RPKI,” in *Proc. of ACM SIGCOMM. Poster Session*. New York: ACM, August 2012, pp. 103–104. Also selected for ACM CCR, Vol. 42, no. 4, pp. 103-104, October 2012.
- M. Wählisch, T. C. Schmidt, M. de Brün, and T. Häberlen, “Exposing a Nation-Centric View on the German Internet – A Change in Perspective on the AS Level,” in *Proc. of the 13th Passive and Active Measurement Conference (PAM)*, ser. Lecture Notes in Computer Science, N. Taft and F. Ricciato, Eds., vol. 7192. Heidelberg: Springer, 2012, pp. 200–210.

### Information-Centric Networking

- M. Wählisch, T. C. Schmidt, and M. Vahlenkamp, “Backscatter from the Data Plane – Threats to Stability and Security in Information-Centric Network Infrastructure,” *Computer Networks*, vol. 57, no. 16, pp. 3192–3206, Nov. 2013. First version published, arXiv:1205.4778v1, 05/2012.
- E. Baccelli, C. Mehlis, O. Hahm, T. C. Schmidt, and M. Wählisch, “Information Centric Networking in the IoT: Experiments with NDN in the Wild,” in *Proc. of 1st ACM Conference on Information-Centric Networking (ICN)*. New York: ACM, 2014, pp. 77–86.

### P2P and Overlay Networks

- M. Wählisch, T. C. Schmidt, and G. Wittenburg, “On Predictable Large-Scale Data Delivery in Prefix-based Virtualized Content Networks,” *Computer Networks*, vol. 55, no. 18, pp. 4086–4100, Dec. 2011.
- M. Wählisch, T. C. Schmidt, and G. Wittenburg, “A Common API for Hybrid Group Communication,” in *Proc. of the 34th IEEE Conference on Local Computer Networks (LCN)*, M. Younis and C. T. Chou, Eds. Piscataway, NJ, USA: IEEE Press, October 2009, pp. 265–268.

### Multimedia Networking

- H. L. Cycon, T. C. Schmidt, M. Wählisch, D. Marpe, and M. Winke, “A Temporally Scalable Video Codec and its Applications to a Video Conferencing System with Dynamic Network Adaption for Mobiles,” *IEEE Transactions on Consumer Electronics*, vol. 57, no. 3, pp. 1408–1415, August 2011.

### Mobile Multicast

- T. C. Schmidt and M. Wählisch, “Predictive versus Reactive — Analysis of Handover Performance and Its Implications on IPv6 and Multicast Mobility,” *Telecommunication Systems*, vol. 30, no. 1/2/3, pp. 123–142, November 2005.
- T. C. Schmidt, M. Wählisch, and S. Krishnan, “Base Deployment for Multicast Listener Support in Proxy Mobile IPv6 (PMIPv6) Domains,” IETF, RFC 6224, April 2011. [Online]. Available: <http://www.rfc-editor.org/rfc/rfc6224.txt>

## Overview

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## I. Honors and Awards

### Awards

- 2016 Best Poster Award at 3rd ACM SIGCOMM Conference on Information-Centric Networking (ICN)
- 2015 Forum for Excellent Young Scientists Award (first place) for contributions to the Internet of Things and their prospective entrepreneurial practice. 10,000 EUR donated by Foundation for Industrial Research
- 2012 Chester W Sall Memorial Award (first place) for the paper *A Temporally Scalable Video Codec and its Applications to a Video Conferencing System with Dynamic Network Adaption for Mobiles*, published in IEEE Transactions on Consumer Electronics, vol. 55, no. 18, 2011
- 2011 Young Talents Award for Outstanding Achievements in Advancing the Internet and its Applications. 2,500 EUR donated by Leibniz-Kolleg Potsdam
- 2009 International IPv6 Application Contest (first place), joint work with daviko and INET, HAW Hamburg. 10,000 EUR donated by various companies
- 2009 Best Paper Award 4th International Conference on Internet and Web Applications and Services
- 2009 Diploma Thesis Award 2008 in silver of the Semiramis Research and Service Unit (SeReS Unit), University of Innsbruck
- 2003 Outstanding Paper Award at 3rd International Conference on Wavelet Analysis and Its Applications, Chongqing, 2003

### Travel Grants

I was awarded the following travel grants after a competitive selection process. Each travel grant covers financial support of \$ 500 - \$ 2,500 to attend conferences in the fields I am working on.

- 2014 34th International Conference on Distributed Computing Systems (ICDCS) travel grant sponsored by IEEE
- 2013 22nd USENIX Security Symposium student grant sponsored by USENIX Association
- 2012 ACM CoNEXT 2012 student travel grant sponsored by ACM SIGCOMM and corporate supporters of the conference
- 2012 TERENA Networking Conference 2012 travel grant sponsored by Cisco Systems and the Internet Society (ISOC)
- 2012 PAM Conference/TMA Workshop 2012 student travel grant
- 2011 TERENA Networking Conference 2011 participation grant sponsored by Cisco Systems
- 2010 TERENA Networking Conference 2010 participation grant sponsored by Cisco Systems
- 2009 ACM CoNEXT 2009 student travel grant
- 2009 IEEE INFOCOM 2009 student travel grant
- 2009 TERENA Networking Conference 2009 participation grant sponsored by Cisco Systems
- 2007 ACM CoNEXT 2007 student travel grant

## Invited Talks

- Oct. 2017 *Internet Exchange Points – A Critical Infrastructure*, Conference on IT Security for Critical Infrastructures, Federal Ministry of Education and Research, Berlin, Germany
- Sep. 2017 *How hard can it be: DDoS & IoT*, Workshop BCIX Meets Research, Berlin, Germany
- Jul. 2017 *Cyber Security and the Internet Backbone*, Cyber Security Workshop, Vodafone Enterprise Plenum, Munich, Germany
- Jun. 2017 *BGPsec: Get Ready for the Next Step in Secure Inter-domain Routing*, Yearly Technical Meeting, DE-CIX, Frankfurt/Main, Germany
- Apr. 2017 *Open Source Intelligence for the Internet Backbone*, Universität der Bundeswehr München, München, Germany
- Mar. 2017 *ICN + Industrial Internet = Towards an ICN Cloud Architecture for the IoT?*, Networking Research & Innovation Symposium, Cisco and Ecole Polytechnique, Paris, France
- Jun. 2016 *Monitoring, Testing, and Deployment of RPKI Using RTRlib and RPKI MIRO*, 67th meeting of the North American Network Operator’s Group (NANOG 67), Track: Practical BGP Origin Validation using RPKI: Vendor Support, Signing and Validation Services, and Operational Experience, Chicago, USA
- Apr. 2016 *The Internet Engineering Task Force (IETF): An Intro*, BCIX Community Meeting, Berlin, Germany
- Nov. 2015 *A CASE for RIOT and ICN: The Internet of Things*, Keynote at the 7th EAI International Conference on Mobile Computing, Applications and Services (MobiCASE), Berlin, Germany
- Oct. 2015 *Origin Authentication in the Internet (of Things)*, Department of Electrical and Computer Engineering, American University of Beirut, Lebanon
- Dec. 2014 *How to Protect from Prefix Hijacking Using RPKI*, meeting of the expert group Infrastructure Security, eco/DE-CIX, Frankfurt/Main, Germany
- Nov. 2014 *Current Topics in Secure Inter-networking: RPKI, Mobile Honeypots, and ICN*, Institute of Telecommunications, Vienna University of Technology, Vienna, Austria
- Sep. 2013 *Prefix Origin Validation on Routers: Tools and Measurements*, National Provider Workshop organized by Federal Office for Information Security (BSI), Bonn, Germany
- Mar. 2013 *RPKI in the Wild. Prefix Origin Validation on BGP Routers*, CAIDA, UC San Diego, USA
- Mar. 2013 *The Internet – A Critical Infrastructure. About a Nation-Centric View on the Internet and the Importance of ASes*, CAIDA, UC San Diego, USA
- Feb. 2013 *Updates from the Internet Backbone: An RPKI/RTR Router Implementation, Measurements, and Analysis*, short talk at the Network and Distributed System Security Symposium (NDSS), San Diego, USA
- Nov. 2012 *Secure Inter-Domain Routing*, BCIX Technical Workshop “Securing the Internet’s Routing Infrastructure”, Berlin, Germany
- Jan. 2012 *(Mobile) Internet-Kommunikation – Aktuelle Themen zur Sicherheit*, IT Security Seminar, Technische Hochschule Wildau, Germany

- Oct. 2011      *Wie sicher ist eigentlich der Cyberspace*, 4. Nacht des Wissens, Hamburg, Germany
- Oct. 2011      *HAMcast – A system-centric architecture to enable a universal multicast service in the Future Internet*, Institute of Telematics, KIT, Karlsruhe, Germany

### Invitations to Schloss Dagstuhl

Schloss Dagstuhl is one of the world's premier meeting centers for research in computer science. Participation in a Dagstuhl Seminar is only by personal invitation, based on scientific reputation.

- 2017      GI-Dagstuhl Seminar *Kolloquium zum GI Dissertationspreis 2016*
- 2016      GI-Dagstuhl Seminar *Aware Machine-to-Machine Communication*
- 2016      Dagstuhl Seminar *Information-centric Networking and Security*
- 2015      Dagstuhl Seminar *Secure Routing for Future Communication Networks*
- 2014      Dagstuhl Seminar *Information-Centric Networking 3*
- 2013      Dagstuhl Seminar *The Critical Internet Infrastructure*
- 2012      Dagstuhl Seminar *Information-centric networking – Ready for the real world?*
- 2008      GI-Dagstuhl Seminar *Modeling Techniques for Computer Networks Simulation*

### Other Honors

- 2016      The Internet Society supported my activities to involve students in the Internet standardization. They sponsored the participation of ten students to attend IETF 96.
- 2013      Letter of Appreciation for supporting the Internet Society's IETF University Outreach pilot programme, and for efforts to involve students in IETF 87, from the President and CEO of the Internet Society, and the Chair of the Internet Engineering Task Force

## II. Professional Activities and International Involvement

### Organization Committees

The success of the research community is significantly based on ingenuous involvement and quality ensurance. These are some of the reasons why I am heavily involved in the organization of research-related events. These include upcoming as well as well-established venues such as ACM SIGCOMM, ACM IMC, and IEEE ICNP.

- 2018 Co-Chair of *NDSS Workshop on Decentralized IoT Security and Standards*
- 2018 Hackathon Chair of *ACM MobiSys*
- 2018 Co-Organizer of Dagstuhl Seminar *Secure Routing for the Internet*
- 2017 Poster Chair of *31rd ACM Annual Conference of the Special Interest Group on Data Communication (SIGCOMM)*
- 2017 Registration and Publication Chair of *ACM Internet Measurement Conference (IMC)*
- 2017 Local Chair of *4th ACM Conference on Information-Centric Networking (ICN)*
- 2017 Co-Organizer of Dagstuhl Seminar *The Critical Internet Infrastructure Revisited*
- 2017 Co-Organizer of GI-Dagstuhl Seminar *Internet of Things Hackathon: From Research to Practice*
- 2017 Travel Grant Chair of *International Conference on Networked Systems (NetSys)*
- 2017 Co-Chair of *2nd RIOT Summit*
- 2016 Co-Chair of *1st RIOT Summit*
- 2015 Communication Chair of *2nd ACM Conference on Information-Centric Networking (ICN)*
- 2015 Poster Co-chair of *IEEE/ACM International Symposium on Quality and Service (IWQoS)*, held in conjunction with ACM FCRC'15
- 2014 TPC Co-chair of *6th International Workshop on Peer-to-peer computing and Online Social neTworking (HotPOST)*, held in conjunction with IEEE ICD-CS'14
- 2014 Summit Organizer of *1st OMNeT++ Community Summit*
- 2014 Editorial Liaison Chair of *39th IEEE Conference on Local Computer Networks (LCN)*
- 2013 PhD Forum Chair of *21st IEEE International Conference on Network Protocols (ICNP)*
- 2013 Coordinator and co-initiator of Dagstuhl Seminar *The Critical Internet Infrastructure*
- 2013 Co-Organizer of *Workshop on RPKI: Tutorial and Deployment Strategies for Secure Internet Routing*
- 2013 Co-Organizer of *Workshop on Security Incident Information Sharing (SIIS)*
- 2013 Co-Chair of the *3rd MANIAC Challenge*, held in conjunction with 87th IETF meeting
- 2013 Editorial Liaison Chair of *38th IEEE Conference on Local Computer Networks (LCN)*
- 2013 Workshop Co-Chair of *6th International Workshop on OMNeT++*, held in conjunction with SIMUTools'13

- 2013      Publicity Chair of *5th International Workshop on Peer-to-peer computing and Online Social neTworking (HotPOST)*, held in conjunction with IEEE ICD-CS'13
- 2012      (TPC) Co-Chair of *1st ACM International Workshop on Sensor-Enhanced Safety and Security in Public Spaces (SESP 2012)*, held in conjunction with ACM MobiHoc
- 2012      Students Grants Chair of *37th IEEE Conference on Local Computer Networks (LCN)*
- 2012      Publicity Chair of *4th International Workshop on Peer-to-peer computing and Online Social neTworking (HotPOST)*, held in conjunction with IEEE ICD-CS'12
- 2011      Co-founder & Publicity Chair of *1st International Conference on Consumer Electronics – Berlin (IEEE ICCE-Berlin)*
- 2011      (TPC) Co-Chair of *IEEE PerGroup – 2nd IEEE International Workshop on Pervasive Group Communication*, held in conjunction with IEEE GLOBECOM'11
- 2011      TPC Co-Chair of *Scalable Adaptive Multicast in P2P Overlays*, Special Session at the 8th Annual IEEE CCNC
- 2010      (TPC) Co-Chair of *IEEE PerGroup – 1st IEEE International Workshop on Pervasive Group Communication*, held in conjunction with IEEE GLOBECOM'10
- 2010      TPC Co-Chair of *Scalable Adaptive Multicast in P2P Overlays*, Special Session at the 7th Annual IEEE CCNC
- 2010      Local Arrangement Co-Chair of *2nd Google Android Conference (droidcon)*
- 2009      TPC Vice-Chair of *2nd International ACM/ICST Workshop on OMNeT++*, held in conjunction with SIMUTools'09
- 2008      Co-Organizer of *Zur Wellenmechanik der Pixel*, colloquium in honor of Prof. Hans L. Cycon
- 2007      TPC Co-Chair of *European Conference on Applied IPv6*
- 2007      Workshop Co-Chair of *Next Generation eLearning Content Management with hylOs: Semantic Networking, Reusable Structuring & Mobile Learning*, pre-conference Workshop at ICL'07
- 2007      Workshop Co-Chair of *Authoring eLearning Content: Augmentation & Reuse, Paradigms & Practical Experiences*, held in conjunction with the 4. Fernausbildungskongress der Bundeswehr

### Steering Committee

- 2014 – now      *OMNeT++ Community Summit* (former ACM/ICST International Workshop on OMNeT++)

### Guest Editor

- 2016      Elsevier Computer Communications special issue on *Current and Future Architectures, Protocols, and Services for the Internet of Things*, vol. 74, 2016.



## Journal Referee

ACM SIGCOMM Computer Communication Review  
Elsevier Computer Communications  
Elsevier Computer Networks  
Elsevier Computers & Security  
Elsevier Journal of Network and Computer Applications  
ETRI Journal  
IEEE Communications Letters  
IEEE Communications Magazine  
IEEE Internet Computing  
IEEE Network Magazine  
IEEE Transactions on Communications  
IEEE Transactions on Dependable and Secure Computing  
IEEE Transactions on Mobile Computing  
IEEE Transactions on Multimedia  
IEEE Transactions on Network and Service Management  
International Journal of Adaptive, Resilient and Autonomic Systems  
International Journal of Digital Multimedia Broadcasting  
International Journal of Wireless and Mobile Computing  
Journal of Communications  
Springer Telecommunication Systems  
Wiley European Transactions on Telecommunications  
Wiley International Journal of Communication Systems  
Wiley Security and Communication Networks

## Book Referee

Cambridge University Press  
Springer-Verlag

## Technical Program Committees

- |      |   |
|------|---|
| 2018 | ACM ICN, IEEE GLOBECOM (SAC IoT track) IEEE ICCCN (SNPC track, HOT track)   |
| 2017 | Reproducibility (at ACM SIGCOMM), ACM ICN, IPTComm, ICFC (at IFIP Networking), NOM (at IEEE INFOCOM), HotPOST (at IEEE ICDCS), IEEE ICC (SAC-IoT track)   |
| 2016 | ACM ICN, ACM MSWiM, IEEE WNM (at IEEE LCN), IEEE LCN, MuSIC (at IEEE INFOCOM), HotPOST (at ACM MobiHoc)   |
| 2015 | ACM ICN (main track and poster/demo track), ACM MSWiM, IEEE CCN (at IEEE MASS), IEEE WNM, IEEE LCN, IEEE ICC (SAC-IoT track), IEEE ICCE-Berlin, Wintersim |

- 2014 IEEE ICNP PhD Forum, CARTOON (at IEEE MASS), ACM MSWiM, CSWS (at ACM SIGCOMM), IEEE/IFIP NOMS (special track IoT), IEEE WNM (at IEEE LCN), IEEE GLOBECOM (SAC Symposium), WPMC, IEEE ICC (SAC-IoT track)
- 2013 IEEE GHTCE, CSWS (at IEEE ICNP), IEEE GWS (including WirelessVitae, WPMC, WWSMC), IEEE WNM (at IEEE LCN), IEEE LCN, IWS, EuroSys (shadow TPC)
- 2012 IEEE LCN, IEEE ISWTA, SNDS, OMNeT++, IEEE ICCE-Berlin, ICACCI, IEEE CCNC
- 2011 HotPOST (at IEEE ICPADS), IMSAA, AFIN, IEEE LCN, IEEE ICCE-Berlin, IEEE CCNC,
- 2010 P2PNet (at IEEE ICPADS), IEEE LCN, IEEE CCNC, MP2P-Nets(at Mobility Conference), IWCMC, ICN, ACM/ICST OMNeT++
- 2009 IEEE LCN, Mobile P2P Workshop (at IWCMC), ICN, ACM/ICST OMNeT++
- 2008 ICN
- 2007 ECAI6

### External Referee for Workshops and Conferences

- 2009 – now IEEE INFOCOM'13 (Poster/Demo track), MILCOM'11, IEEE GI'10 (at IEEE INFOCOM), IEEE ISCE'10, ACM CoNEXT Student Workshop 2009, IEEE IMSAA'09

### Internet Standardisation

- 2005 – now Regular contributions to IETF/IRTF (e.g., SIDR, MultiMob, ICNRG, SAMRG)  
Document shepherd of *BGPsec Protocol Specification (RFC 8205)*.

### Expert Evaluator

- 2017 Expert group IT security of German Federal Ministry of Education and Research (BMBF)
- 2017 Reviewer for Deutsche Forschungsgemeinschaft (German Research Foundation, DFG)
- 2016 Remote reviewer for European Coordinated Research on Long-term Challenges in Information and Communication Sciences & Technologies (CHIST-ERA) ERA-NET
- 2015 External evaluator for Computer Science Department at UCLA (University of California, Los Angeles)
- 2007 – 2008 european e-Learning award (eureleA)

## Press Interviews

- Print      *We need a new internet*, Science Node, August 09, 2017  
*Digitale Vandalen*, Frankfurter Rundschau, June 28, 2017  
*Vandalen im Netz. Der jüngste weltweite Angriff auf Firmencomputer soll offenbar vor allem Chaos verbreiten*, Berliner Zeitung, June 29, 2017  
*Cyber-Attacke. Digitale Dilettanten*, Frankfurter Rundschau, May 16, 2017.  
*In France, a hack falls flat*, The Washington Post, May 8, 2017  
*Zahlen oder nicht? Wie Firmen mit Cyber-Erpressung umgehen sollten*, Berliner Zeitung, 15.05.2017  
*Arbeitspferdchen. IoT-Betriebssystem RIOT*, c't, number 17, August 2016  
*Internet Society Attracts Record Number of Students to IETF 87*, IETF Journal, October 2013  
*RPKI: Angst vor einem Staatshack*, heise online, 05.08.2013  
*Experten antworten. Zum Thema Bin Raiding*, Schwäbische Zeitung, 06.12.2011  
*Web-Überwachung: Neues Internet-Protokoll erschwert anonymes Surfen*, SPIEGEL ONLINE, 18.11.2010  
*Internetangriff: US-Kommission wirft China Datenentführung vor*, SPIEGEL ONLINE, 17.11.2010
- Radio      *RIOT soll das offene Betriebssystem für das IoT werden*, Computer und Kommunikation, Deutschlandfunk, 20.05.2017  
*Safest – Neue Sicherheit für Menschenmengen?*, Logo – Das Wissenschaftsmagazin, NDR Info, 14.03.2014  
*Wer im Internet wohnt. Per Botnet zählen Hacker das Internet aus – natürlich illegal*, Breitband – Medien und digitale Kultur, Deutschlandradio Kultur, 30.03.2013  
*Gefährliche Nummer – Virenschutz fürs Smartphone*, Elektronische Welten, Deutschlandradio Kultur, 18.09.2012  
*Immunsystem für Smartphone*, Wissenswerte: Forschung im Gespräch, rbb Inforadio, 22.12.2011  
*Schadsoftware auf dem Smartphone – Wie wir unsere Minicomputer vor Viren und Trojanern schützen können*, Wissenschaftssendung Leonardo, WDR 5 – Hörfunk, 07.12.2011
- TV      *Bin Raiding*, hallo deutschland, ZDF, 05.01.2012  
*Bin Raiding: Die unterschätzte Gefahr*, WISO, ZDF, 28.11.2011

## Research Papers Discussed in the Press (w/o Explicit Interview)

- Print      *How the Internet of Things could become a critical part of disaster response*, www.itworld.com, July 22, 2014  
*How the Internet of Things Could Aid Disaster Response*, shlasdot.org, July 24, 2014

## Participation in Fairs

CeBIT 2015	The Internet under the Peeroskop. Live hacking, monitoring, and protection of BGP peering. Booth of the Federal Ministry of Education and Research, Germany
IETF 90, 2014	RIOT – The friendly OS for the IoT. Booth at Bits-n-Bites.
LinuxTag 2014	RIOT – The friendly OS for the IoT
CeBIT 2014	SAFEST – Civil Security with Smart Technologies. Booth of Fraunhofer
CeBIT 2012	SKIMS – Vitamin C for your Smartphone. How a digital immune system helps to protect your mobile. Booth of the Federal Ministry of Education and Research, Germany
CeBIT 2008	Moviecast – First H.264-videoconference software for smartphones and mobiles
Online Educa 2007	Combining LMS and LCMS with hylOs
CeBIT 2007	hylOs – Mobile learning and mobile videoconferencing
Learntec 2007	hylOs – Easy semantic content creation
Online Educa 2006	hylOs – The Hypermedia Learning Object System
CeBIT 2006	hylOs – Instructional Design Tools

## Scientific Demos

EWSN'16	Topological Robustness of RPL with TRAIL
ACM SIGCOMM'15	See How ISPs Care: An RPKI Validation Extension for Web Browsers
ACM SIGCOMM'15	RPKI MIRO: Monitoring and Inspection of RPKI Objects
ACM SIGCOMM'14	Native Actors: How to Scale Network Forensics
ACM/IEEE IPSN'14	Simply RIOT: Teaching and Experimental Research in the Internet of Things
ACM SIGCOMM'12	Vitamin C for your Smartphone: The SKIMS Approach for Cooperative and Lightweight Security at Mobiles
IEEE LCN'11	Transparent Conferencing Without Central Control - Demonstration of the DisCo Approach in P2PSIP
IEEE LCN'11	A Showcase on Usage and Monitoring of the HAMcast Architecture for Universal Multicast
EuroView'11	Hybrid Adaptive Mobile Multicast – Communicating via the HAMcast Middleware
ACM IPTComm'10	An H.264-compliant Multipoint Video Conferencing with Adaptive, Temporally Scalable Support for Mobiles
EuroView'10	Hybrid Adaptive Mobile Multicast – Communicating via the HAMcast Middleware
Long Night of Science	Each year several projects since 2009

## Open Source Software Projects

I am the co-founder of the following successful open source projects, and still co-leading their strategic development.

**RTRlib** The RTRlib is the reference implementation in C of the RPKI router protocol. The Resource Public Key Infrastructure (RPKI) stores attestation objects for Internet resources such as IP prefixes. It enables routers to verify the correctness of BGP data. Based on RTRlib several applications have been created and deployed to improve the robustness and stability of the Internet backbone routing. Amongst others, a Firefox plugin validates the Internet routing of the requested web server infrastructure, a Perl plugin allows for easy analysis of incidents, and a REST interface provides real-time access to verified BGP data. The RTRlib also enables Internet security in two of the most popular open source BGP daemons, Quagga and BIRD. Several Internet operators deploy applications that use RTRlib.

<http://rtrlib.realmv6.org> · <https://github.com/rtrlib>

**RPKI MIRO** RPKI MIRO is an open source tool to monitor and inspect RPKI objects. It includes (i) standard functions to collect RPKI data from remote repositories, (ii) the first browser to visualize RPKI objects, and (iii) statistical analysis of the collected objects. This software suite is used by Regional Internet Registries to improve their RPKI repositories, network operators (e.g., AT&T) to better understand RPKI, and academics to conduct research about secure Internet routing.

<http://rpki-miro.realmv6.org/> · <https://github.com/rpki-miro>

**RIOT** RIOT is the friendly operating system for the Internet of Things (IoT). RIOT explicitly implements the idea of an open Internet. It supports all relevant standards and is distributed under open source license. It allows for C and C++ application programming, contrary to other operating systems with similar memory footprint (such as TinyOS or Contiki). RIOT provides both full multi-threading and real-time capabilities.

The RIOT community increases continuously and consists of companies (e.g., Cisco), academics, and hobbyist. More than 100 international developers are contributing to this project. RIOT has been selected as mentoring organization for the Google Summer of Code in 2015, and is regularly showcased at major events such as Embedded World.

<http://riot-os.org> · <https://github.com/RIOT-OS>

## Older Projects

**LAN Accounting** We designed and developed a software suite for automatic configuration and accounting of LAN switching ports. Based on common LAN standards (802.1Q, 802.1v) and network management protocols (SNMP, RMON) access ports are separated in virtual security domains, restricted to predefined data rates, and monitored according to traffic volumes. Since more than ten years, this software has been deployed in a medium-sized business incubator to implement different billing models for the interconnection of companies.

**Modules for Spectrum** Cabletron's Spectrum (now CA Inc.) is a professional network management software. Based on its object oriented architecture Spectrum allows for the enhancement of vendor and MIB specific application

modules in a comfortable way. One challenge of Spectrum lies in the high-level visualization of the management information base attributes and the intelligent fault detection. We developed and maintained management modules for Ascend access router and BreezeCOM wireless access point. Both modules have been used by the Spectrum user community for more than five years.

### III. Research Grants

#### Acquired External Funding

So far I have acquired 4.1M EUR of grant money for research projects.

- 2017 – 2020      *RAPstore – RIOT App Store for the Internet of Things*  
Sponsor: Federal Ministry of Education and Resaerch  
Grant: 1,772,000 EUR (912,001 EUR to FUB) for 3 years  
Partners: HAW Hamburg  
Role: PI, coordinator and one of the two core authors of the proposal
- 2016 – 2019      *X-CHECK – Detection of Security Incidents at Internet Exchange Points*  
Sponsor: Federal Ministry of Education and Resaerch  
Grant: 1,972,645 EUR (626,514 EUR to FUB) for 3 years  
Partners: DE-CIX, BCIX, DFN-CERT Services GmbH, HAW Hamburg, TU Munich  
Acceptance rate: 7 %  
Role: PI, coordinator and core author of the proposal
- 2016 – 2019      *I3 – Information-centric Networks for the Industrial Internet*  
Sponsor: Federal Ministry of Education and Resaerch  
Grant: 1,568,956 EUR (629,676 EUR to FUB) for 3 years  
Partners: MSA Auer GmbH, HAW Hamburg  
Role: PI, coordinator and core author of the proposal
- 2013 – 2014      *Individual Visiting Professorship at Freie Universität Berlin*  
Sponsors: German Academic Exchange Service and Freie Universität Berlin  
Grant: 62,255 EUR (46,390 EUR DAAD + 15,864 EUR FU Berlin) for 1 year  
Ranking: Among the 25 % best proposals  
Role: Coordinator and core author of the proposal
- 2012 – 2015      *SAFEST – Social Area Framework for Early Security Triggers at Airports*  
Sponsors: Federal Ministry of Education and Resaerch (Germany) and L’Agence nationale de la recherche (France)  
Grant: 2,619,935 EUR (804,876 EUR to FUB) for 3 years  
Partners: Berlin-Brandenburg Airport GmbH, daviko GmbH, Fraunhofer FO-KUS, HAW Hamburg, INRIA, Sagem  
Acceptance rate: 18 %  
Role: PI, coordinator and core author of the main proposal
- 2012 – 2015      *Peeroskop – Peering Monitor and Microscopic Analysis of the Internet*  
Sponsor: Federal Ministry of Education and Resaerch  
Grant: 1,572.374 EUR (621,000 EUR to FUB) for 3 years  
Partners: BCIX, DE-CIX, DFN (associated), Globalways AG, HAW Hamburg, TU Munich, The unbelievable Machine Company GmbH  
Acceptance rate: 15 %, ranked as one of the top-4 proposals  
Role: PI, coordinator and core author of the main proposal
- 2010 – 2013      *SKIMS – A Cooperative Autonomous Immune System for Mobile Devices*  
Sponsor: Federal Ministry of Education and Resaerch  
Grant: 937,000 EUR (384,000 EUR to FUB) for 2.5 years  
Partners: DFN-CERT Services GmbH, escrypt GmbH, HAW Hamburg, NEC Labs Heidelberg (associated)  
Acceptance rate: 12 %  
Role: PI, coordinator and core author of the main proposal

2009 – 2010      *Scalable and adaptive group communication based on structured overlay networks and its deployment in the next generation Internet*  
Sponsor: Freie Universität Berlin Innovation Program  
Grant: 37,000 EUR for 0.5 years  
Role: PI, coordinator and only author of the proposal

### **Proudly Rejected Project Proposals**

2015      *Open and Secure Platform for the Internet of Things*  
Sponsor: European Commission (H2020 program)  
Partners: 17 partners from research and industry  
Ranking: 14 out of 15 points  
Role: Local host of the proposal preparation workshop; coordinator at FU Berlin and co-author of the proposal



## IV. Teaching and Student Supervision

### Courses Taught

Term		Type	Title	CP	University
WT 2017/18	*	L + Lab	<i>Telematik</i>	10 + 2	FU Berlin
WT 2017/18	*	BS/MS	<i>Internet Communication</i>	5	FU Berlin
ST 2017	*	MS	<i>Internet Communication</i>	5	FU Berlin
ST 2017	*	SWP	<i>Internet Communication</i>	10	FU Berlin
WT 2016/17	*	L + Lab	<i>Telematik</i>	10 + 2	FU Berlin
ST 2016	*	MS	<i>Technische Informatik. Special focus: Internet Standardization</i> (supported by the Internet Society by providing free entrance to IETF 96 for ten students)	5	FU Berlin
ST 2016	*	SWP	<i>Telematik. Special focus: Communication along the protocol stack</i>	10	FU Berlin
WT 2015/16	*	Lab	<i>Telematik</i>	2	FU Berlin
WT 2015/16	*	MS	<i>Theory and Hands-on Experiences of Internet Communication</i>	5	FU Berlin
ST 2015	◇	SWP	<i>Technische Informatik</i>	10	FU Berlin
WT 2014/15	* ◇	BS	<i>Technische Informatik</i>	5	FU Berlin
ST 2014	◇	MS	<i>Technische Informatik</i>	5	FU Berlin
WT 2013/14	*	L + Lab	<i>Telematik</i> (together with E. Baccelli)	10 + 2	FU Berlin
WT 2013/14	◇	BS	<i>Technische Informatik</i>	5	FU Berlin
WT 2013/14	◇	MS	<i>Technische Informatik</i>	5	FU Berlin
ST 2013	*	MS	<i>IETF Seminar</i> (honored by IETF Chair Jari Arkko and ISOC)		FU Berlin
ST 2013	◇	SWP	<i>Telematik</i>	10	FU Berlin
WT 2012/13	◇	BS	<i>Technische Informatik</i>	3	FU Berlin
WT 2011/12	* ◇	BS	<i>Technische Informatik</i>	3	FU Berlin
ST 2011	* ◇	BS	<i>Technische Informatik</i>	3	FU Berlin
ST 2011	◇	MS	<i>Technische Informatik – Security, Robustness, Reliability</i>	4	FU Berlin
WT 2010/11	◇	BS	<i>Technische Informatik</i>	3	FU Berlin
WT 2010/11	◇	MS	<i>Technische Informatik – Network Organization and Protocols</i>	4	FU Berlin
ST 2010	* ◇	BS	<i>Technische Informatik</i>	3	FU Berlin
ST 2010	◇	MS	<i>Technische Informatik – Network Organization and Protocols</i>	4	FU Berlin
WT 2009/10	◇	Lab	<i>Telematik</i>	2	FU Berlin
WT 2009/10	◇	MS	<i>Technische Informatik – Mobile Ad-hoc Networks</i>	4	FU Berlin
WT 2009/10	◇	BS	<i>Technische Informatik</i>	3	FU Berlin

Term	Type	Title	CP	University
ST 2009 †	Lab	<i>Broadband Communications &amp; Multi-media Networking</i>		U. of Reading, UK
WT 2008/09 †	Lab	<i>Broadband Communications &amp; Multi-media Networking</i>		U. of Reading, UK
WT 2007/08 †	Lab	<i>Broadband Communications &amp; Multi-media Networking</i>		U. of Reading, UK
ST 2007 †	Lab	<i>Broadband Communications &amp; Multi-media Networking</i>		U. of Reading, UK
WT 2006/07 †	Lab	<i>Broadband Networks</i>		U. of Reading, UK

*Remarks:* ★—Lecturer, ◇—Supervisor, †—Teaching assistant  
 MS—Master’s seminar, BS—Bachelor’s seminar, L—Lecture, SWP—Software project  
 ST—Summer Term, WT—Winter Term

## Student Honors & Awards

The following students that I advise have been awarded:

1. Ph.D. student Marcin Nawrocki given ACM SIGCOMM travel grant 2017.
2. Ph.D. student Marcin Nawrocki invited for ACM IMC Shadow TPC 2017.
3. Ph.D. student Marcin Nawrocki and Master’s students Samir Al-Sheikh and Andreas Reuter have been accepted as participants for the TMA PhD School and awarded travel grants to attend Network Traffic Measurement and Analysis Conference (TMA), Dublin, Ireland, 2017.
4. Master’s student Andreas Reuter received funding from RIPE Academic Cooperation Initiative (RACI) to present work about RPKI measurements at RIPE 74, Budapest, Hungary, 2017.
5. Master’s student Andreas Reuter invited to participate at the BGP Hackathon, including a travel grant, CAIDA, UCSD, USA, 2016.
6. Master’s students Cenk Gündogan and Lennart Dührsen named winner of the Cisco Challenge: Best Use of Cisco Technology at the Internet of Things World Europe Hackathon, Berlin, Germany, 2015.
7. Master’s student Samir Al-Sheikh given ACM SIGCOMM travel grant to attend ACM ICN 2015.
8. Master’s students Andreas Reuter, Fabrice Ryba, and Robert Schmidt given the opportunity to participate at the Cyber Security Summer School (C3S), Tallinn, Estonia, 2015.
9. Master’s students Martine Lenders and Philipp Rosenkranz given ACM MobiSys student travel grant 2015.
10. Ph.D. student Hauke Petersen and master’s student Christian Mehlis named winner of the IoT Week Award *and* the Connectivity Challenge at IoT Week 2014, London.

## Supervised PhD Students

### Ongoing

1. Martine Lenders (IoT, cloud, and ICN)

2. Marcin Nawrocki (attack detection and prevention at IXPs)
3. Hauke Petersen (services in IoT)
4. Andreas Reuter (Internet security, will start December 2017)
5. Cenk Gündogan (ICN and IoT, co-advised with Thomas Schmidt)
6. Sebastian Meiling (Internet and Smart Grid analysis, co-advised with Thomas Schmidt)

### Graduated

1. Oliver Hahm: *Enabling Energy Efficient Smart Object Networking at Internet-Scale: Experimental Tools, Software Platform, and Information-Centric Networking Protocols* (co-advised with Emmanuel Baccelli), Université Paris-Saclay, December 2016.  
*First job after PhD: Advanced Software Engineer at Zühlke Group*

### Supervised BSc/MSc Theses and Student Projects

#### Ongoing

1. Samir Al-Sheikh: *Analyzing consistency of RPKI data and implementation in BGPStream*, Master's student.
2. Luca Keidel: *ICN & IXPs*, Master's student.
3. Hendrik van Essen: *Design and implementation of an RIOT app store*, Bachelor's student.
4. Abbasi Hassan: *Automatic Data Cleaning And Transformation Using Approximate String Matching Algorithms*, Master's student.

#### Graduated

1. Andreas Reuter: *Measuring Route Origin Validation in the Wild*, Master's Thesis, Institute of Computer Science, Freie Universität Berlin, submitted November 2017.
2. Germán Márquez Mejía: *Ende-zu-Ende-Verschlüsselung mit OMEMO für das Kommunikationsprotokoll XMPP. Analyse anhand einer Implementierung für libpurple*, Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, May 2017.
3. Fabrice Ryba: *Is there only trash in the bin? Analyzing privacy conflicts in Pastebin*, Master's Thesis, Institute of Computer Science, Freie Universität Berlin, May 2017.
4. Marcin Nawrocki: *On Long-Term Honey-pot Deployment and Data Analysis for Heterogenous Network Access Types*. Master's Thesis, Institute of Computer Science, Freie Universität Berlin, March 2016.
5. Daniel Seidenstücker: *Leistungsvergleich von Open Source BGP-Implementierungen*. Master's Thesis, Institute of Computer Science, Freie Universität Berlin, March 2016.
6. Jin Zhang: *Intelligente Wegführung von Mobilien Endgeräten auf der Basis von Hotspots*. Master's Thesis, Institute of Computer Science, Freie Universität Berlin, December 2015.
7. Andrej Szaffranietz: *Untersuchung der Häufigkeiten von Schlüsselwörtern in Netzwerkkonferenzen*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, September 2015.
8. Andreas Reuter: *Monitoring and Inspection of RPKI Repositories*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, May 2015.
9. Jan-Christopher Pien: *Entwicklung und Evaluierung eines opportunistischen Verschlüsselungsverfahrens auf Basis von Social Trust*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, December 2014.

10. Fabrice Jean Ryba: *Implementing and Analysing sFlow measurements at an Internet Exchange Point*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, July 2014.
11. Robert Schmidt: *Schutz wichtiger Webseiten durch RPKI. Messung und Analyse*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, January 2014.
12. Samir Al-Sheikh: *Vergleichende Analyse von Abwehrmethoden gegen Interest Flooding Attacks in Named Data Networking*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, January 2014.
13. Paul Wolpers: *Entwurf und Entwicklung eines Modells für die Analyse der Datenbanken der Regional Internet Registries*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, January 2014.
14. Michael Mester: *Untersuchung und Optimierung der Leistungsfähigkeit der Prefix-Origin-Validation in einer realen BGP-Umgebung*. Master's Thesis, Institute of Computer Science, Freie Universität Berlin, December 2013.
15. Raphael Wutzke: *Analyse, Entwicklung und Implementierung eines Schutzes vor Portangriffen auf Smartphones unter Nutzung von Multipath TCP*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, July 2013.
16. Marcel Kölbel: *Untersuchung der Qualität von Antworten im Amazon Mechanical Turk*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, February 2013.
17. Marcin Nawrocki: *Entwurf und Implementierung eines Frameworks für die Analyse von Ad-hoc-Hotspot-Kommunikation*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, October 2012.
18. Dennis Lampert: *Vergleichende Analyse von Private Set Intersection Protokollen*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, October 2012.
19. Maximilian Schmidt: *Autonome Vertrauensimplementierung zwischen Home Gateways und Smartphones*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, October 2012.
20. Robert Schlenz: *Entwurf und Implementierung einer Applikation zur Kategorisierung von Kontakten basierend auf Kommunikationsdaten*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, August 2012.
21. Michael Zettelmann: *Ein Dienst zur Präfixgenerierung für P2P-Overlay-IDs basierend auf BGP-Daten an Internet Exchange Points*. Diploma Thesis, Institute of Computer Science, Freie Universität Berlin, July 2012.
22. Dominik Weidemann: *Design and implementation of a protocol for establishing ad-hoc trust between smartphones*. Bachelor's Thesis, Institute of Computer Science, Freie Universität Berlin, June 2012.
23. Christopher Flach: *Die strukturelle, zeitliche Analyse der relevanten deutschen IPv6 Internet-Infrastruktur*. Master's Thesis, Institute of Computer Science, Freie Universität Berlin, February 2012.
24. Fabian Holler: *Konzeption und Entwicklung einer Client-seitigen RPKI-RTR Library zur Validierung der Präfix-Zugehörigkeit von autonomen Systemen in BGP-Routen*. Bachelor's Thesis, Department Informatik, Hamburg University of Applied Sciences, November 2011.
25. Till Weisfeld: *Implementierung von MLDv2 für OMNeT++*. Student research project, Department of Mathematics and Computer Science, Freie Universität Berlin, Berlin, Germany, September 2010.

## Supervised Term Papers

### Completed

1. Fabrice Ryba: *Amplification Attack Defense – State of the Art and New Perspectives*. Master Seminar, 2014/15
2. Stephan Arndt: *Capture your Data - Revealing Prefix Hijacking in the Internet*. Master Seminar, 2014
3. Maximilian Schmidt: *Misusing the RPKI to Disturb Reachability in the Internet*. Master Seminar, 2104
4. Christian Pfahl: *How hard is it to deploy new protocols in the Internet?*. Master Seminar, 2014
5. Jakob Lennart Dührsen: *A Security Analysis of Mesh-Routing Protocols*. Bachelor Seminar, 2013/14
6. Leon Martin George: *Why do we need CoAP in IoT?*. Bachelor Seminar, 2013/14
7. Gero Leinemann: *Cache-Control in the Web*. Master Seminar, 2013/14
8. Fabian Brandt, Lennart Dührsen, Andreas Reuter, Tim Scheuermann, Lotte Steenbrink: *Design, Implementation, and Testing of a Software Framework for Mobile Offloading on Smartphones*. Bachelor Software Project, 2013
9. David Dormagen: *Challenges for IP Spoofing Solutions*. Bachelor Seminar, 2012/13
10. Fabrice Jean Ryba: *IP Backtracing – From IPv4 to IPv6*. Bachelor Seminar 2012/13
11. Ron Wenzel: *Ternary Content Addressable Memory. State of the Art in Memory Design for Routers*. Bachelor Seminar, 2012/13
12. Philipp Rosenkranz: *Not RAM, not CAM but TCAM – State of the Art in Memory Design for Router and Intrusion Detection*. Bachelor Seminar, 2012/13
13. Laura Mielke: *Complexity Attacks on Hashtables*. Bachelor Seminar, 2012/13
14. Timo Hanisch: *Complexity Attacks on Hashtables*. Bachelor Seminar, 2012/13
15. Tarik Hidiroglu: *How does the infrastructure look behind your Mobile?*. Bachelor Seminar, 2011/12
16. Franz Schellenberg: *Detecting when interdomain routing goes wrong*. Master Seminar, 2011
17. Moritz v. H.: *Traffic analysis attacks on Skype VoIP calls*. Master Seminar, 2011
18. Dominik Weidemann: *Multipath TCP*. Bachelor Seminar, 2011
19. Victor Mier: *Taxonomy of Autonomous Systems*. Master Seminar, 2010/11
20. Jakub Ludma: *Power Consumption in Smartphones*. Bachelor Seminar, 2010/11
21. Christopher Flach: *Distributed Event Detection in the Context of Mobile Security*. Master Seminar, 2010/11
22. Hasan Gürcan: *Attract Attackers: Virtual Honeyclients for Mobile Devices*. Bachelor Seminar, 2010/11
23. Hernando Saen Sanchos: *Digital Immune System on Mobile Devices*. Master Seminar, 2010
24. José Manuel Barroso Galindo: *Mobile Sandbox*. Master Seminar, 010
25. Christopher Flach: *BGP Prefix Hijacking*. Master Seminar, 2010
26. Silvio Paepke: *Performance of the Domain Name System*. Bachelor Seminar, 2010
27. Alexander Bach: *Peer-to-Peer in Practice*. Bachelor Seminar, 2010
28. Jan Knipper: *Greening Network Links*. Bachelor Seminar, 2010
29. Yves Müller: *Why the Internet Sucks: A Core Perspective*. Bachelor Seminar, 2009/10

30. Robert Fehrmann: *You are Skyping – But How Does it Work!?*. Bachelor Seminar, 2009/10
31. Christian Cikryt: *Beyond Music File Sharing: A Technical Introduction to P2P Networks*. Bachelor Seminar, 2009/10
32. Johannes Klick: *Homegateways – Ready for the current and future Internet?*. Bachelor Seminar, 2009/10

## V. Publications

### Book Chapters

- [1] M. Wählisch, “Modeling the Network Topology,” in *Modeling and Tools for Network Simulation*, K. Wehrle, M. Günes, and J. Gross, Eds. Heidelberg: Springer, 2010, pp. 471–486.
- [2] S. Kaune, M. Wählisch, and K. Pussep, “Modeling the Internet Delay Space and its Application in Large Scale P2P Simulation,” in *Modeling and Tools for Network Simulation*, K. Wehrle, M. Günes, and J. Gross, Eds. Heidelberg: Springer, 2010, pp. 427–446.
- [3] P. Di, M. Wählisch, and G. Wittenburg, “Modeling the Network Layer and Routing Protocols,” in *Modeling and Tools for Network Simulation*, K. Wehrle, M. Günes, and J. Gross, Eds. Heidelberg: Springer, 2010, pp. 359–384.
- [4] M. Wählisch and T. C. Schmidt, “Multicast Routing in Structured Overlays and Hybrid Networks,” in *Handbook of Peer-to-Peer Networking*, X. Shen, H. Yu, J. Buford, and M. Akon, Eds. New York Heidelberg: Springer, January 2010, pp. 897–932.
- [5] T. C. Schmidt and M. Wählisch, “Group Conference Management with SIP,” in *SIP Handbook: Services, Technologies, and Security of Session Initiation Protocol*, S. Ahson and M. Ilyas, Eds. Boca Raton, FL, USA: CRC Press, 2008, pp. 123–158, on invitation.
- [6] T. C. Schmidt and M. Wählisch, “Mobile Multicast,” in *Encyclopedia of Mobile Computing & Commerce*, D. Taniar, Ed. Hershey, PA, USA: Idea Group Reference, 2007, pp. 541–545.
- [7] H. L. Cycon, T. C. Schmidt, and M. Wählisch, “Mobile Serverless Video Communication,” in *Encyclopedia of Mobile Computing & Commerce*, D. Taniar, Ed. Hershey, PA, USA: Idea Group Reference, 2007, pp. 589–595.

### Peer-reviewed Journal Publications

- [8] A. Reuter, R. Bush, Í. Cunha, E. Katz-Bassett, T. C. Schmidt, and M. Wählisch, “Towards a Rigorous Methodology for Measuring Adoption of RPKI Route Validation and Filtering,” *ACM Computer Communication Review*, 2018, accepted for publication.
- [9] R. Hiesgen, D. Charousset, T. C. Schmidt, and M. Wählisch, “Programming Actors for the Internet of Things,” *Ercim News*, vol. 101, pp. 25–26, April 2015.
- [10] M. Wählisch, T. C. Schmidt, and M. Vahlenkamp, “Backscatter from the Data Plane – Threats to Stability and Security in Information-Centric Network Infrastructure,” *Computer Networks*, vol. 57, no. 16, pp. 3192–3206, Nov. 2013.
- [11] T. C. Schmidt, M. Wählisch, D. Charousset, and S. Meiling, “On Name-based Group Communication: Challenges, Concepts, and Transparent Deployment,” *Computer Communications*, vol. 36, no. 15–16, pp. 1657–1664, Sep.-Oct. 2013.
- [12] S. Meiling, D. Charousset, T. C. Schmidt, and M. Wählisch, “HAMcast – Evaluierung einer systemzentrierten Middleware-Komponente für einen universellen Multicast-Dienst im Future Internet,” *Praxis der Informationsverarbeitung und Kommunikation (PIK)*, vol. 35, no. 2, pp. 83–89, Mai 2012.
- [13] M. Wählisch, T. C. Schmidt, and G. Wittenburg, “On Predictable Large-Scale Data Delivery in Prefix-based Virtualized Content Networks,” *Computer Networks*, vol. 55, no. 18, pp. 4086–4100, Dec. 2011.

- [14] T. C. Schmidt, M. Wählisch, B. Jochheim, and M. Gröning, “WiSec 2011 Poster: Context-adaptive Entropy Analysis as a Lightweight Detector of Zero-day Shellcode Intrusion for Mobiles,” *ACM SIGMOBILE Mobile Computing and Communications Review (MC2R)*, vol. 15, no. 3, pp. 47–48, July 2011.
- [15] H. L. Cycon, T. C. Schmidt, M. Wählisch, D. Marpe, and M. Winke, “A Temporally Scalable Video Codec and its Applications to a Video Conferencing System with Dynamic Network Adaption for Mobiles,” *IEEE Transactions on Consumer Electronics*, vol. 57, no. 3, pp. 1408–1415, August 2011.
- [16] T. C. Schmidt, M. Wählisch, M. de Brühn, and T. Häberlen, “Ein Routing-Atlas für die strukturelle und visuelle Exposition des deutschen Internets,” *Praxis der Informationsverarbeitung und Kommunikation (PIK)*, vol. 34, no. 2, pp. 60–72, June 2011.
- [17] T. C. Schmidt, G. Hege, M. Wählisch, H. L. Cycon, M. Palkow, and D. Marpe, “Distributed SIP Conference Management with Autonomously Authenticated Sources and its Application to an H.264 Videoconferencing Software for Mobiles,” *Multimedia Tools and Applications*, vol. 53, no. 2, pp. 349–370, June 2011.
- [18] T. C. Schmidt, M. Wählisch, and M. Wodarz, “Fast Adaptive Routing Supporting Mobile Senders in Source Specific Multicast,” *Telecommunication Systems*, vol. 43, no. 1, pp. 95–108, February 2010.
- [19] O. Christ, T. C. Schmidt, and M. Wählisch, “Towards Seamless Source Mobility in SSM - Design and Evaluation of the Tree Morphing Protocol,” *International Journal of Internet Protocol Technology (IJIPT)*, vol. 3, no. 4, pp. 205–215, 2008.
- [20] H. L. Cycon, T. C. Schmidt, G. Hege, M. Wählisch, and M. Palkow, “Let’s Meet at the Mobile – Learning Dialogs with a Video Conferencing Software for Mobile Devices,” *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 3, no. 3, pp. 21–25, July 2009.
- [21] T. C. Schmidt, M. Wählisch, O. Christ, and G. Hege, “AuthoCast — a mobility-compliant protocol framework for multicast sender authentication,” *Security and Communication Networks*, vol. 1, no. 6, pp. 495–509, December 2008, special issue Secure Multimedia Communication.
- [22] M. Wählisch, T. C. Schmidt, and W. Spät, “What is happening from behind?: Making the impact of Internet topology visible,” *Campus-Wide Information Systems*, vol. 25, no. 5, pp. 392–406, November 2008, special issue, selected papers from the TERENA networking conference 2008.
- [23] H. L. Cycon, T. C. Schmidt, M. Wählisch, H. Regensburg, and M. Palkow, “Video-based eLearning in Groups — Combining SIP and Multicast in a Mobile Learning Internet Infrastructure,” *International Journal of Mobile Learning and Organisation*, vol. 2, no. 4, pp. 329–345, October 2008, special issue, selected papers from the IMCL 2007.
- [24] M. Wählisch and T. C. Schmidt, “Between Underlay and Overlay: On Deployable, Efficient, Mobility-agnostic Group Communication Services,” *Internet Research*, vol. 17, no. 5, pp. 519–534, 2007, selected papers from the TERENA networking conference 2007.
- [25] T. C. Schmidt and M. Wählisch, “Morphing Distribution Trees – On the Evolution of Multicast States under Mobility and an Adaptive Routing Scheme for Mobile SSM Sources,” *Telecommunication Systems*, vol. 33, no. 1–3, pp. 131–154, December 2006.
- [26] T. C. Schmidt and M. Wählisch, “Extending SSM to MIPv6 – Problems, Solutions and Improvements,” *Computational Methods in Science and Technology*, vol. 11, no. 2, pp. 147–152, 2005, selected papers from the TERENA networking conference 2005. [Online]. Available: <http://www.man.poznan.pl/cmst/vol11p2.html>



- [27] T. C. Schmidt and M. Wählisch, “Predictive versus Reactive — Analysis of Handover Performance and Its Implications on IPv6 and Multicast Mobility,” *Telecommunication Systems*, vol. 30, no. 1/2/3, pp. 123–142, November 2005.
- [28] H. L. Cycon, M. Palkow, T. C. Schmidt, M. Wählisch, and D. Marpe, “A fast wavelet-based video codec and its application in an IP version 6-ready serverless videoconferencing system,” *International Journal of Wavelets, Multiresolution and Information Processing*, vol. 2, no. 2, pp. 165–171, June 2004, special issue, selected papers from the Third International Conference on Wavelet Analysis and Its Applications (ICWAA ’03).
- [29] T. C. Schmidt, M. Wählisch, H. L. Cycon, and M. Palkow, “Global serverless videoconferencing over IP,” *Future Generation Computer Systems*, vol. 19, no. 2, pp. 219–227, February 2003, selected papers from the TERENA networking conference 2002.

### Peer-reviewed Conference & Workshop Publications

- [30] P. Kietzmann, C. Gündogan, T. C. Schmidt, O. Hahm, and M. Wählisch, “The Need for a Name to MAC Address Mapping in NDN: Towards Quantifying the Resource Gain,” in *Proc. of 4th ACM Conference on Information-Centric Networking (ICN)*. New York, NY, USA: ACM, September 2017, pp. 36–42.
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