

CV of Professor, Dr. Techn. Bjarne E. Helvik

Affiliation: Professor Emeritus; Department of Information Security and Communication Technology, NTNU

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Personal: Nationality: Norwegian; Born: 5 Nov. 1952; Civil Status: Married

Academic degrees:

- Siv.ing. (MSc in Technology) from the Norwegian Institute of Technology (NTH), 1975
- Dr. Techn. from the Norwegian Institute of Technology (NTH), 1982.

Work experience:

- 1975: Scientific assistant, NTH;
- 1976 - 1980: Scientist at ELAB;
- 1981: Doctor research fellowship (NTNF);
- 1982 - 1997: Head of Section, Senior Scientist, and Principal Research Scientist at ELAB, DELAB, SINTEF Telecom and Informatics;
- 1988 - 1997: Adjunct Professor at Department of Computer Engineering and Telematics (IDT), NTH;
- 1997 – 2021: Professor, NTNU;
- 2003 - 2012: Principal investigator the Norwegian Centre of Excellence-Q2S - the Centre for Quantifiable Quality of Service in Communication Systems;
- 2003 - 2004: Visiting professor, Lund's University;
- 2009 - 2017: Vice Dean for Research, Faculty of Information Technology, Mathematics and Electrical Eng. (IME), NTNU
- 2020 – 2021: Work Package leader/PI, Centre for Research-based Innovation - NORCICS Norwegian Centre for Cybersecurity in Critical Sectors -;
- 2022 – ...: Professor Emeritus

Fields of interest and current research activities

- Dependability modelling, analysis and simulation, analysis of operational data.
- Communication network dependability; design & management for resilience and survivability,
- Fault-tolerant systems,
- Combined security and dependability evaluation, probabilistic approaches in security,
- Architecture of networking/telecommunication systems (Emphasis on dependability issues)
- QoS in communication network and services.

The current research focus is on ensuring dependability of services provided by multi-domain, virtualised ICT systems. Primary applications are 5G and beyond (SDN, NFV, Slicing, ...), BlockChains and SmartGrids.

Excerpt of professional activities:

Editor: Networks, Special Issue on Resilience of Communication Networks to Random Failures and Disasters

Editor: Computer communications, Special Issue on Reliable Network-based Services (RNS)

TPC chair: RNDM 2018 – 10th International Workshop on Resilient Networks Design and Modeling,

TPC chair: Networking 2014,

TPC chair: RESIM 2012 – the 9th International Workshop on Rare Event Simulation,

TPC co-chair: DRCN'11 International Workshop on the Design of Reliable Communication Networks,

Advisory Chair: DEPEND 2009 The Second International Conference on Dependability.

TPC co-chair: EURO NGI 2007 (Euro-NGI Conference on Next Generation Internet Networks).

TCP member of approx. 3–4 conferences each year, **Reviewer** for 3–4 journals and a number of conferences each year.

Educational activities

Leadership:

- Defining syllabus and establishing: *Communications Technology*, 5 year integrated MSc programme (1998)
- Chair *Communications tech. programme*, 2000 – 2004
- Member IME Educational Board, 2000 – 2004
- Member of the *Two year Intern.l Master Programme in Telematics* programme board. 2004 . 2016
- Coordinator of the Department of Telematics' specialization in *Networks and QoS*
- Responsible for IME-NTNU's six PhD programmes 2009 – 2017
- ACE accreditation panel of *BSc and MSc studies in Information and Communications Technologies* at the Danish University of Technology [DTU], 2012
- NOKUT accreditation panel of *PhD studies in 'Computer Science: Software Engineering, Sensor Networks and Engineering Computing'* at the Western Norway University of Applied Sciences, 2016
- Member of the *PhD programme board in Social Sciences*, 2018 2021
- Member of the *PhD programme board in Educational Sciences*, 2018 2021

Teaching:

Developed, prepared teaching material, written lecture notes/textbooks (MSc courses) and lectured the courses below. Two in co-operation with a colleague.

- MSc - Dependability and performance with discrete event simulation [Parts of]
- MSc - Dependable systems [Closed 2014]
- MSc - Traffic and dependability, laboratory in tools and methodology [Closed 2015]
- MSc - Networks and Quality of Service, Specialization Course [2016 - 2018]
- MSc - Advanced topics in Networking - Networked Systems, Specialization Course [2019 – 2021]
- Phd - Dependability Analysis of Information and communication systems
- Phd - Advanced Discrete Event Simulation Methodology [Parts of]
- MSc thesis and specialization project responsible for programmes: *Communication Technology and Digital Security, Digital Infrastructure and Cyber Security, and Security and Cloud Computing*. [2018 – 2021]

Publications: Selected Recent Journal Paper

- Henrik Austad, Erling Rennemo Jellum, Sverre Hendseth, Geir Mathisen, Torleiv Håland Bryne, Kristoffer Nyborg Gregersten, Sigurd Mørkved Albrektsen, and Bjarne Emil Helvik. Composable distributed real-time systems with reliable network channels. *Journal of Systems Architecture*, 137:102853, April 2023.
- Befekadu G. Gebrselase, Bjarne E. Helvik, and Yuming Jiang. Bitcoin P2P network measurements: A testbed study of the effect of peer selection on transaction propagation and confirmation times. *IEEE Transactions on Network and Service Management*, 19(4):3975 – 3987, Dec. 2022.
- Besmir Tola, Yuming Jiang, and Bjarne E. Helvik. Model-driven availability assessment of the NFV-MANO with software rejuvenation. *IEEE Transactions on Network and Service Management*, 18(3):2460–2477, Sept. 2021. DOI: 10.1109/TNSM.2021.3090208.
- Jacek Rak, Poul E. Heegaard, and Bjarne E. Helvik. Resilience of communication networks to random failures and disasters: An optimization perspective. *Networks*, 75(4):337 – 339, 2020.
- Tesfaye Amare Zerihun, Michele Garau, and Bjarne E. Helvik. Effect of communication failures on state estimation of 5G-enabled smart grid. *IEEE Access*, 8(DOI: 10.1109/AC-CESS.2020.3002981):112642 – 112658, 2020.
- Besmir Tola, Gianfranco Nencioni, and Bjarne E. Helvik. Network-aware availability modeling of an end-to-end NFV-enabled service. *IEEE Transactions on Network and Service Management*, 16(4):1389–1403, Dec. 2019.
- Andres J. Gonzalez, Gianfranco Nencioni, Andrzej Kamisinski, Bjarne E. Helvik, and Poul E. Heegaard. Dependability of the NFV orchestrator: State of the art and research challenges. *IEEE Communications Surveys & Tutorials*, 20(4):3307 - 3329, 2018.
- Petra Vizarreta, Kishor Trivedi, Bjarne Helvik, Poul Heegaard, Andreas Blenk, Wolfgang Kellerer, and Carmen Mas Machuca. Assessing the maturity of SDN controllers with software reliability growth models. *IEEE Transactions on Network and Service Management*, 15(3): 1090- 1104, 2018.
- Gianfranco Nencioni, Rosario G. Garroppo, Andres J. Gonzalez, Bjarne E. Helvik, and Gregorio Procissi. Orchestration and control in software-defined 5G networks: Research challenges. *Wireless Communications and Mobile Computing*, 2018(Article ID 6923867): 18, 2018.
- Jorik Oostenbrink, Fernando A. Kuipers, Poul E. Heegaard, and Bjarne E. Helvik. Evaluating local disaster recovery strategies. *Accepted for publication in ACM SIGMETRICS Performance Evaluation Review*, August 2018.
- G. Nencioni, Bjarne E. Helvik, and Poul E. Heegaard. Including failure correlation in availability modelling of a software-defined backbone network. *IEEE Trans. on Network and Service Management*, 14(4):1032 – 1045, 2017.
- Eirik L. Følstad and Bjarne E. Helvik. Maximizing the reliability of dual homed, critical services in mobile/cellular networks. *Optical Switching and Networking (OSN)*, 19(2):110 – 121, January 2016..
- Eirik Larsen Følstad and Bjarne E. Helvik. The cost for meeting SLA requirements; implications for customers and providers. *Reliability Engineering & System Safety*, 145:136–146, January 2016.
- Atef Abdelkefi, Yuming Jiang, Bjarne E. Helvik, Gergely Biczók, and Alexandru Calu. Assessing the service quality of an internet path through end-to-end measurement. *Computer Networks*, 70:30–44, 2014.
- Piotr Cholda, Eirik Larsen Følstad, Bjarne E. Helvik, Pirkko Kuusela, Maurizio Naldi, and Ilkka Norros. Towards risk-aware communications networking. *Reliability Engineering and System Safety*, 109:160 – 174, January 2013.
- Peiqing Zhang, Nikos Fotiou, Bjarne E Helvik, Giannis F Marias, and George C Polyzos. Analysis of the effect of inforanking on content pollution in peer-to-peer systems. *Security and Communication Networks*, 7(4):700–713, 2014.
- Piotr Cholda and Bjarne E. Helvik. Reliable network-based services. *Computer Communications*, 36(6):607 – 610, March 2013.
- Andres J. Gonzalez and Bjarne E. Helvik. SLA success probability assessment in networks with correlated failures. *Computer Communications Journal*, 36(6):708 – 733, 2013.
- Eugene S. Myakotnykh, Otto J. Wittner, Bjarne E. Helvik, Atef Abdelke, Jon Kåre Hellan, Olav Kvittum, Trond Skjesbø, and Arne Øslebø. An analysis of interdomain availability and causes of failures based on active measurements. *Telecommunication Systems Journal*, 52(2):847 – 860, 2013.
- Andres J. Gonzalez and Bjarne E. Helvik. Characterization of router and link failure processes in UNINETT’s IP backbone network. *International Journal of Space-Based and Situated Computing*, 2012.
- Peiqing Zhang and Bjarne E. Helvik. Modeling push-based live p2p streaming by stochastic activity networks. *Journal of Digital Information Management*, 10(4):236–244, 2012.
- Stefano Secci, Huaiyuan Ma, Bjarne E. Helvik, and Jean-Louis Rougier. Resilient inter-carrier traffic engineering for internet peering interconnection. *IEEE Transactions on Network and Service Management*, 8(4):274 – 284, 2011.
- Huaiyuan Ma, Bjarne E. Helvik, and Otto J. Wittner. An impact of addressing schemes on routing scalability. *Journal of Communications and Networks; Special issue on Management Issues in the Future Internet*, 13(6):602–611, December 2011.
- Andres J. Gonzalez and Bjarne E. Helvik. Guaranteeing service availability in SLAs; a study of the risk associated with contract period and failure process. *Latin America Transactions, IEEE (Revista IEEE America Latina)*, 8(4):410 –416, aug. 2010.
- Hein Meling, Alberto Montresor, Bjarne E. Helvik, and Ozalp Babaoglu. Jgroup/ARM: A distributed object group platform with autonomous replication management. *Software: Practice and Experience*, 38(9):885–923, 25 July 2008.

- Karin Sallhammar, Bjarne E. Helvik, and Svein J. Knapskog. A framework for predicting security and dependability measures in real-time. *International Journal of Computer Science and Network Security [IJCSNS]*, 7(3):169–183, March 2007.
- Piotr Cholda, Anders Mykkeltveit, Bjarne Helvik, Otto Wittner, and Andrzej Jajszczyk. A survey of resilience differentiation frameworks in communication networks. *Communications Surveys and Tutorials*, 9(4), 2007.
- Frank Y. Li, Norvald Stol, and Bjarne E. Helvik. Conformance deterioration in QoS networks: Phenomenon, analysis and elimination. *Computer Networks*, 50(12), 24 August 2006.

Books and Book Chapters

- Bjarne E. Helvik, Petra Vizarrata, Poul E. Heegaard, Kishor Trivedi, and Carmen Mas Machuca. Modelling of Software Failures, Guide to Disaster-Resilient Communication Networks, , July 2020.
- Kamisinski, F. Musumeci, A. Hmaity, M. Tornatore, M. Casazza, S. Secci, A. Farshad, D. Hutchison, B. E. Helvik, and P. E. Heegaard. Resilient NFV Systems. Guide to Disaster-Resilient Communication Networks. Springer, July 2020.
- Poul E Heegaard, Bjarne E Helvik, Gianfranco Nencioni, and Jonas Wäfler. *Principles of Performance and Reliability Modeling and Evaluation*, Chapter: Managed dependability in interacting systems. Springer, 2016.
- Marie E. G. Moe, Bjarne E. Helvik, and Svein J. Knapskog. *Trust Management III*, volume 300/2009 of *IFIP Advances in Information and Communication Technology*, chapter Comparison of the Beta and the Hidden Markov Models of Trust in Dynamic Environments. Springer Boston, 2009.
- Peder Johannes Emstad, Poul Einar Heegaard, Bjarne E. Helvik, and Laurent Paquereau. *Dependability and performance with discrete event simulation*. Tapir academic publisher, 2007.
- Bjarne E. Helvik. *Dependable Computing Systems and Communication Networks; Design and Evaluation*. Tapir academic publisher, 2007.
- Bjarne E. Helvik, Karin Sallhammar, and Svein J. Knapskog. *Information Assurance; Dependability and Security in Networked Systems*, chapter Chapter 8: Integrated Dependability and Security Evaluation Using Game Theory and Markov Models, pages 209 – 245. Number ISBN: 978-0-12-373566-9; ISBN10: 0-12-373566-1. Elsevier, Morgan Kaufmann, December 28 2007.
- Bjarne E. Helvik and Otto Wittner. *Dependable Computing Systems: Paradigms, Performance Issues, and Applications*, chapter Network Resilience by Emergent Behavior from Simple Autonomous Agents, pages 449 – 477. Number ISBN: 0-471-67422-2. Wiley, October 2005.
- Poul E. Heegaard, Otto Wittner, and Bjarne E. Helvik. Self-managed virtual path management in dynamic networks. In Ozalp Babaoglu, Mark Jelasity, Alberto Montresor, Aad van Moorsel, and Maarten van Steen, editors, *Self* Properties in Complex Information Systems*, Lecture Notes in Computer Science, pages 417 – 432. Springer-Verlag GmbH, 2005.

Conference Papers; peer reviewed

- Befekadu G. Gebraselase, Charles M. Adrah, Tesfaye Amare, Bjarne E. Helvik, and Poul E. Heegaard. Blockchain support for time-critical self-healing in smart distribution grids. In IEEE Power & Energy Society (PES) Innovative Smart Grid Technologies (ISGT) Europe 2022, October 10th-12th 2022.
- Michele Garau and Bjarne Emil Helvik. Power unavailability reduction in distribution grid fault management with entropy minimization. In 5th International Conference on System Reliability and Safety (ICSRS), pages 32–41. IEEE, 2021.
- Michele Garau, Romina Muka, Poul E. Heegaard, and Bjarne E. Helvik. Co-simulation and discrete event simulation for reliability assessment of power system and ICT: A comparison. In 2021 5th International Conference on System Reliability and Safety (ICSRS), pages 66–73, 2021.
- Befekadu Gebraselase, Bjarne Emil Helvik, and Yuming Jiang. An analysis of transaction handling in bitcoin. 2021 IEEE International Conference on Smart Data Services [IEEE SMDS 2021], 2021.
- Befekadu G. Gebraselase, Bjarne E. Helvik, and Yuming Jiang. Transaction characteristics of bitcoin. In 2021 IFIP/IEEE International Symposium on Integrated Network Management (IM 2021), Bordeaux, France, 17-21 May 2021 2021.
- Befekadu Gezaheng Gebraselase, Bjarne Emil Helvik, and Yuming Jiang. Effect of miner incentive on the confirmation time of bitcoin transactions. In Proceedings of the 2021 IEEE International Conference on Blockchain (Blockchain), pages 521–529. IEEE, 2021.
- Andres J. Gonzalez, Jose Ordóñez-Lucena, Bjarne E. Helvik, Gianfranco Nencioni, Min Xie, Diego R. Lopez, and Pål Grønsund. The isolation concept in the 5G network slicing. In 2020 European Conference on Networks and Communications (EuCNC): Network Softwarisation (NET), pages 12 – 16. IEEE Press, june 15-18 2020.
- Besmir Tola, Yuming Jiang, and Bjarne E. Helvik. On the resilience of the NFV-MANO: An availability model of a cloud-native architecture. In Design of Reliable Communication Networks 2020 [DRCN 2020], 2020.
- Besmir Tola, Gianfranco Nencioni and Bjarne E. Helvik, and Yuming Jiang. Modeling and evaluating NFV-enabled network services under different availability modes. In 15th International Conference on the Design of Reliable Communication Networks (DRCN 2019), Coimbra, Portugal, March 19-21 2019.
- Tesfaye Amare Zerihun, Michele Garau, and Bjarne E. Helvik. Dependability modeling and analysis of 5G based monitoring system in distribution grids. In Proceedings of the 12th EAI International Conference on Performance Evaluation Methodologies and Tools [VALUETOOLS 2019], 2019.

- Tesfaye Amare, Charles M. Adrah, and Bjarne E. Helvik. A method for performability study on wide area communication architectures for smart grid. In 7th International Conference on Smart Grid [icSmartGrid2019], pages 64–73, Newcastle, Australia, Dec. 2019. IEEE.
- Tesfaye Amare and Bjarne E. Helvik. Dependability of smart distribution grid protection using 5G. In 2019 3rd International Conference on Smart Grid and Smart Cities (ICSGSC), pages 51–59, Berkeley, CA, USA, 2019. IEEE.
- Befekadu G. Gebraselase, Bjarne E. Helvik, and Yuming Jiang. Suitability of blockchains to enable and support networking functions: State of art. In Proceedings of the 2019 4th International Conference on Cloud Computing and Internet of Things [CCIOT 2019], pages 110–119, Tokyo, Japan, September 20-22 2019. Association for Computing Machinery (ACM).
- Tesfaye Amare and Bjarne E. Helvik. Dependability analysis of smart distribution grid architectures considering various failure modes. In *Accepted at 2018 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT Europe 2018)*, Sarajevo, Bosnia and Herzegovina., October 21-25 2018.
- Tesfaye Amare, Bjarne E. Helvik, and Poul E. Heegaard. A modeling approach for dependability analysis of smart distribution grids. In *14th International Conference on the Design of Reliable Communication Networks (DRCN)*, 2018.
- Christian Esposito, Antonios Gouglidis, David Hutchison, Andrei Gurtov, Bjarne E. Helvik, Poul E. Heegaard, Gianluca Rizzo, and Jacek Rak. On the disaster resiliency within the context of 5G networks: The RECODIS experience. In *European Conference on Networks and Communications [EuCNC 2018]*, Ljubljana, Slovenia, June 18-21 2018.
- Petra Vizarreta, Kishor Trivedi, Bjarne Helvik, Poul Heegaard, Wolfgang Kellerer, and Carmen Mas Machuca. An empirical study of software reliability in SDN controllers. In *13th International Conference on Network and Service Management [CNSM 2017]*, 2017.
- Andrzej Kamisinski, Bjarne E. Helvik, Andres J. Gonzalez, and Gianfranco Nencioni. Assessing the risk of violating SLA dependability requirements in software-defined networks. In *2017 IEEE Conference on Network Function Virtualization and Software Defined Networks*, Berlin, Germany, 6-8 November 2017.
- Besmir Tola, Yuming Jiang, and Bjarne E. Helvik. Failure process characteristics of cloud-enabled services. In *9th International Workshop on Resilient Networks [RNDM 2017]*, Alghero Sardinia, Italy, Sept 4 – 6 2017.
- Petra Vizarreta, Poul E. Heegaard, Bjarne E. Helvik, Wolfgang Kellerer, and Carmen Mas Machuca. Characterization of failure dynamics in SDN controllers. In *9th International Workshop on Resilient Networks [RNDM 2017]*, 2017.
- Andres J. Gonzalez, Gianfranco Nencioni, Bjarne E. Helvik, and Andrzej Kamisinski. A fault-tolerant and consistent SDN controller. In *2016 IEEE Global Communications Conference: Communication, QoS, Reliability and Modeling*, 2016.
- Gianfranco Nencioni, Bjarne E. Helvik, Andres J. Gonzalez, Poul E. Heegaard, and Andrzej Kamisinski. Availability modelling of software-defined backbone networks. The 2nd Workshop on Dependability Issues on SDN and NFV (DISN'2016), 2016.
- Poul E. Heegaard, Bjarne E. Helvik, and Veena B. Mendiratta. Achieving dependability in softwaredefined networking - a perspective. In *7th International Workshop on Reliable Networks Design and Modeling [RNDM'15]*, München, Germany, October 5-7 2015.
- Andres J. Gonzalez, Bjarne E. Helvik, Prakriti Tiwari, Denis M. Becker, and Otto J. Wittner. GEARSHIFT: Guaranteeing availability requirements in SLAs using hybrid fault tolerance. In Sonia Fahmy, Baohun Li, and John Lui, editors, *2015 IEEE Conference on Computer Communications (INFOCOM)*, pages 1373 –1381, April 2015.
- Andres Gonzalez, Pål Grønsund, Kashif Mahmood, Bjarne E. Helvik, Poul Heegaard, and Gianfranco Nencioni. Service availability in the NFV virtualized evolved packet core. In *2015 IEEE Global Communications Conference: Communication QoS, Reliability and Modeling*, 2015.
- Poul E. Heegaard, Bjarne E. Helvik, Kishor S. Trivedi, and Fumio Machida. Survivability as a generalization of recovery. In *11th International Conference on Design of Reliable Communication Networks [DRCN 2015]*, 2015.
- Eirik L. Følstad and Bjarne E. Helvik. Using genetic algorithms to improve the reliability of dual homed wireless critical services. In *Proc. RNDM'14 - 6th International Workshop on Reliable Networks Design and Modeling*, number ISBN 978-1-4799-7039-1, pages 158 – 164, Barcelona, Spain, 2014.
- Andres Gonzalez and Bjarne E. Helvik. The positive impact of failures on energy efficient virtual machines consolidation. In *Proceedings of 2014 IEEE International Conference on Communications*, Sydney, Australia, 10-14 June 2014.
- Andres J. Gonzalez and Bjarne E. Helvik. Hybrid cloud management to comply efficiently with SLA availability guarantees. In *The 12th IEEE International Symposium on Network Computing and Applications (IEEE NCA13)*, August 22-24 2013.
- Eirik Larsen Følstad and Bjarne E. Helvik. Optimizing service continuity in a multi operator multi technology wireless environment. In *Design of Reliable Communication Networks [DRCN 2013]*, Budapest, Hungary, March 4-7 2013.
- Eirik Larsen Følstad and Bjarne E. Helvik. Reliability modelling of access point selection and handovers in heterogeneous wireless environments. In *Design of Reliable Communication Networks [DRCN 2013]*, Budapest, Hungary, March 4-7 2013.

- Andres J. Gonzalez and Bjarne E. Helvik. System management to comply with SLA availability guarantees in cloud computing. In *4th IEEE International Conference on Cloud Computing Technology and Science (CloudCom 2012)*, Taiwan, December 3-6 2012. IEEE press.
- Andres J. Gonzalez and Bjarne E. Helvik. Guaranteeing SLA availability in telecommunications networks. In *Proceedings of the International Telecommunications Network Strategy and Planning Symposium*, Rome, Italy, October 2012. IEEE.
- Andres J. Gonzalez and Bjarne E. Helvik. A study of the interval availability and its impact on SLAs risk. In *Proceedings of the International Conference on Computer Science, Engineering and Applications [ICCSEA]*, Delhi, India, May 2012. Springer.
- Laurent Paquereau and Bjarne E. Helvik. Ant-based systems for wireless networks: Retrospect and prospects. Invited paper. In *Proc. of the sixth International workshop on self-organizing systems [IWSOS 2012]*, Lecture Notes in Computer Science, Delft, The Netherlands, March 15-16 2012. Springer-Verlag.
- Peiqing Zhang and Bjarne E. Helvik. Modeling push-based live P2P streaming by stochastic activity networks. In *4'th International Conference on Networked Digital Technologies [NDT 2012]*. Communications in Computer and Information Science (CCIS 7899) Series of Springer LNCS, 2012.
- Peiqing Zhang and Bjarne E. Helvik. Towards greenP2P; analysis of energy consumption in P2P and approaches to control. In *submitted to 3rd International Workshop on Modeling and Simulation of Peer-to-Peer Architectures and Systems [MOSPAS 2012]*, 2012.
- Eirik Larsen Følstad and Bjarne E. Helvik. Failures and changes in cellular access networks; A study of field data. In *Design of Reliable Communication Networks [DRCN 2011]*, Krakow, Poland, Oct. 2011.
- Andres Gonzalez and Bjarne E. Helvik. Guaranteeing service availability in SLAs on networks with non independent failures. In *Design of Reliable Communication Networks [DRCN 2011]*, Krakow, Poland, Oct. 2011.
- Laurent Paquereau and Bjarne E. Helvik. Ant-based multipath routing for wireless mesh networks. In *In the proceedings of EVO* 2011; Evocomnet - 8th European event on nature-inspired techniques for telecommunication networks and other parallel and distributed systems. (Best paper award)*, Torino, Italy, April 27-29 2011.
- Andres J. Gonzalez and Bjarne E. Helvik. Analysis of failures characteristics in the UNINETT IP backbone network. In *IEEE 7th International Symposium on Frontiers in Networking with Applications [FINA2011]*, March 22 - 25 2011.
- Peiqing Zhang and Bjarne E. Helvik. Modeling and analysis of P2P content distribution under coordinated attack strategies. In *IEEE Consumer Communications and Networking Conference [CCNC'2011]; Workshop DRM*, Las Vegas, USA, January 9 - 12 2011.
- Eirik Larsen Følstad and Bjarne E. Helvik. Determining dependencies in multi technology inter domain wireless access; A case study. In *GlobeCom-2010; Workshop on Mobile Computing and Emerging Communication Networks*, December 10 2010.
- Andres J. Gonzalez, Bjarne E. Helvik, Jon K. Hellan, and Pirkko Kuusela. Analysis of dependencies between failures in the UNINETT IP backbone network. In *IEEE 16th Pacific Rim International Symposium on Dependable Computing [PRDC2010]*, pages 149 –156. IEEE, December 2010.
- Peiqing Zhang and Bjarne E. Helvik. Towards green P2P: Understanding the energy consumption in P2P under content pollution. In *International Symposium on Energy-aware Computing and Networking; GreenCom-2010*, Hangzhou, China, Dec 18-20 2010.
- Eugene S. Myakotnykh, Bjarne E. Helvik, Jon Kåre Hellan, Olav Kvittem, Trond Skjesol, Otto J. Wittner, and Arne Øslebø. Analyzing causes of failures in the global research network using active measurements. In Jacek Rak, editor, *2'nd international Workshop On Reliable Network Design and Modeling [RNDM 2010]*, pages 15–20. IEEE/IFIP, October 18-20 2010.
- Laurent Paquereau and Bjarne E. Helvik. Opportunistic ant-based path management for wireless mesh networks. In *7'th International Conference on Swarm Intelligence [ANTS 2010]*, LNCS, Brussels, Belgium, September 8-10 2010. Springer.
- Andrés J. González and Bjarne E. Helvik. Dynamic sharing mechanism for guaranteed availability in MPLS based networks. In *Proceedings of 2010 International Communications Quality and Reliability Workshop [CQR]*, Vancouver, British Columbia, Canada, June 8 – 10 2010.
- Huaiyuan Ma, Bjarne E. Helvik, and Otto J. Wittner. The stability of compact routing in dynamic inter-domain networks. In *The Third International Conference on Communication Theory, Reliability, and Quality of Service [CTRQ 2010]*, Athens/Glyfada, Greece, June 13-19 2010.
- Peiqing Zhang and Bjarne E. Helvik. Modeling QoS in P2P file-sharing with benign and malicious peers by stochastic activity networks. In Jörg Ott, Sergey Balandin, and Marcin Matuszewski, editors, *7th Annual IEEE Consumer Communications and Networking Conference (CCNC)*, Las Vegas, USA, Januar 9-12. 2010. IEEE conference proceedings.
- Eugene S. Myakotnykh, Bjarne E. Helvik, Otto J. Wittner, Olav Kvittem, Jon Kåre Hellan, Trond Skjesol, and Arne Øslebø. Measurement and analysis of end-to-end dependability characteristics in the global network. In *18th International Workshop on Quality of Service [IWQoS'10]*, Beijing, China, 2010.
- Stefano Secci, Huaiyuan Ma, Bjarne E. Helvik, and Jean-Louis Rougier. A resilient routing policy for peering management. In *IEEE Globecom 2010 - Communications QoS, Reliability and Modelling Symposium*, 2010.

- Huaiyuan Ma, Bjarne E. Helvik, and Otto J. Wittner. A compact routing scheme with lower stretch. In *Third International Conference on New Technologies, Mobility and Security [NTMS'2009]*, Cairo, Egypt, December 20 - 23 2009. IFIP.
- Laurent Paquereau and Bjarne E. Helvik. Ensuring fast adaptation in an ant-based path management system. In *Proceedings of BIONETICS 2009. 4th International Conference on Bio-Inspired Models of Network, Information, and Computing Systems*, Avignon, France, December 9-11 2009.
- Laurent Paquereau and Bjarne E. Helvik. Revisiting the auto-regressive functions of the crossentropy ant system. In *Proceedings of Fourth International Workshop on Self-Organizing Systems [IWSOS 2009]*, Zurich, Switzerland, December 9-11 2009.
- Peiqing Zhang and Bjarne E. Helvik. Modeling reputation scheme in P2P file-sharing by stochastic activity networks. In *The 8th IEEE International Conference on Dependable, Autonomic and Secure Computing (DASC)*, pages 353–358, Chengdu, China,, December 12-14 2009. IEEE Computer Society.
- Piotr Cholda, Anders Mykkeltveit, Bjarne E. Helvik, and Andrzej Jajszczyk. Continuity-based resilient communication. In Deep Medhi, John Doucette, and David Tipper, editors, *Proc. 7th International Workshop on the Design of Reliable Communication Networks [DRCN 2009]*, number ISBN: 978-1-4244-5048-0, Washington, DC, USA, October 2009. IEEE press.
- Eirik Larsen Følstad and Bjarne E. Helvik. Managing availability in wireless inter domain access. In *Proceedings of Reliable Networks Design and Modeling [RNDM'09]*, St. Petersburg Russia, October 12 - 14 2009. IEEE press.
- Eugene Myakotnykh and Bjarne E. Helvik. Analysis of evolution scenarios for end-to-end quality of services provisioning in the internet. international conference on ultra modern telecommunications (icunt 2009), oct, 2009. In *Proc. of . International Conference on Ultra Modern Telecommunications (ICUMT 2009)*, St. Petersburg, Russia, Oct, 2009 2009.
- Huaiyuan Ma, Bjarne E. Helvik, and Otto Wittner. A stochastic clustering algorithm for swarm compact routing. In *Proceedings of the 5th Euro-NGI Conference on Next Generation Internet Networks (NGI 2009)*, Averoio, Portugal, july 2009. IEEE Press.
- Anders Mykkeltveit and Bjarne E. Helvik. Adaptive management of connections to meet availability guarantees in slas. In *Proceedings of the 11th IFIP/IEEE International Symposium on Integrated Network Management [IM 2009] Mini-Conference*, New York, USA, June 1 - 5 2009.
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