CV for Robin Sharp

1 Personal data

Born in London, England, 11th. June 1942. British citizen.
Private address: Højgårdsvej 3A, Ågerup, DK-4000 Roskilde, Denmark.

Education

B.A. (1963), Ph.D. (1967) from University of Cambridge, England.

Employment

1967–1968:		Science Research Council Fellow at Univ. of Cambridge Dept. of Physics and Atomic Energy Research Establishment, Harwell, England.
1969–1970:		Royal Society European Fellow at the Dept. of Physics, Risø National Laboratory, Denmark.
1971–1972:		Technical Officer at Univ. of Cambridge Dept. of Physics
1973–1976:		Junior lecturer at Department of Computer Science, DTU.
1977–1989:		Senior lecturer *idem.*
1989–2013:		Reader *idem.*
2013—	:	emeritus Reader *idem.*]

From January 2010, the previous Dept. of Computer Science, after a series of intermediate reorganisations, became part of the new department *DTU Compute* at DTU. I am attached to the Cyber Security section at DTU Compute.

Professional Memberships

I am a member of the IEEE Computer Society, the ACM and its special interest group SIGSAC (Special Interest Group on Security, Auditing and Control).

2 Research

After many years of work in the area of computer networks, my research is currently focussed on modelling and development of secure IT systems, with special focus on distributed systems. This includes work on security engineering and systematic design of secure systems, and design and evaluation methodologies based on the Common Criteria. It also includes work on the psychological aspects of user security and how to improve it.

Research Projects

While employed at DTU, I have taken part in the following externally funded research projects:

NSL: Network System Language (1979–80), where I was project leader. The aim of the project was to develop a language for specifying protocols for use in heterogeneous computer networks.

High Speed Local Area Networks: Design and Services: a project within the framework of the EEC initiative Cost-11 bis (1982–84), whose aim was to investigate possible protocols and system structures for use in local area networks of high capacity, with a view to supporting mixed traffic types.

LAN-DTH: a project supported by the Danish Technical Research Council, the Danish Technology Council and the Thomas B. Thrige Foundation (1984–86), for which I was the project leader and *primus motor*. The main aim of the project was to develop a high-speed (140 Mbit/s) local area network and to investigate the interaction between hardware and software in this type of system.

Petri net semantics for CSP: a project supported by the Danish Technical Research Council (1988–89), for which I was project leader. The aim was to express the semantics pf CSP using Petri nets, with a view to analysing CSP descriptions of parallel systems using well-known analytical tools for Petri nets.

RapID: an umbrella project about formal methods in computer science, supported by the Danish Technical Research Council (1990–1993), in which I participated in the sub-project *Relational specification of VLSI*.

Codesign: an umbrella project about integrated design of hardware and software, supported by the Danish Technical Research Council (1994–1997).

Networks and Paradigms for the Next Generation of Distributed Systems: a collaborative project, supported by the Danish Natural Sciences Research Council, whose aim was to investigate appropriate network architectures for supporting distributed computations (1996–1998).

DTU-RTMM: a collaborative project within the DMM (Distributed Multimedia) project of the Center for Multimedia, supported by the Danish Research Councils and the Danish Center for IT Research, CIT (1998–2001). The aim of DTU-RTMM was to investigate technical aspects of real-time interactive multi-modal communication systems, and in particular the necessary technologies for the establishment of a Virtual Seminar Room.

Support of Network Services: a collaborative project, supported by the Danish Natural Sciences Research Council, whose aim is to investigate network architectures for very large (global) distributed systems (2000-2002).

Danish Center for Grid Computing: a collaborative project, supported by the Danish Natural Sciences Research Council, whose aim is to coordinate Danish research efforts in the area of Grid computing (2003-2007). This includes both the development of more advanced technical solutions to the problems of very large scale computing systems, and the promotion of the use of shared computing resources among large communities of users.

CIT-AWARE: a collaborative project, supported by the Danish Strategic Research Council as part of the research program on "Citizens' IT-Security" (2007-2009). The aim of CIT-AWARE within this program is to investigate ordinary citizens' understanding of and awareness of IT-security issues, in particular with relation to their use of the Internet.

Research collaboration

While employed at the Dept. of Computer Science, DTU, I have built up a number of national and international contacts with a view to research collaboration. Among the formalised contacts are:

1979		On leave at the European Research Center at Ispra in Italy, in order to take part in the NSL project.
1982–84	:	Participation in the EEC initiative Cost-11 bis, via the project "High Speed Local Area Networks: Design and Services", in collaboration with CNUCE (Pisa, Italy), "J. Stefan" Institute (Ljubljana, Yugoslavia), ETSIT (Barcelona, Spain) og the European Research Center (Ispra, Italy).
1984–86	:	Project leader for LAN-DTH project, performed as a collaboration between researchers from Dept. of Computer Science, Dept. of Telecommunications and the Electromagnetics Institute (all at DTH), together with the companies NKT Elektronik A/S, Regnecentralen af 1979 A/S, Søren T. Lyngsø A/S og KTAS.
1995–98	:	Participation in the project "Networks and Paradigms for the Next Generation of Distributed Systems", with collaboration between research groups at the Dept. of Information Technology (DTU), and the Departments of Computer Science at Copenhagen University and Aalborg University.
Spring 1998		On leave at the Oxford University Computing Laboratory in UK.
1998–01	:	Participation in the project "DTU-RTMM", a collaboration between the Dept. of Information Technology, Dept. of Telecommunications, Dept. of Mathematical Modelling and the COM Center, all at DTU, together with other partners within the Distributed Multimedia (DMM) project of the Danish Research Councils' Center for Multimedia.
2000–02	:	Participation in the project "Support of Network Services", with collaboration between research groups at Informatics and Mathematical Modelling (DTU), and the Departments of Computer Science at Copenhagen University, University of Southern Denmark and Aalborg University.
2003–07	:	Participation in the Danish Center for GRID Computing, in collaboration with the Niels Bohr Institute, Copenhagen, and the Departments of Computer Science at Copenhagen University, the University of Southern Denmark, Aalborg University and Aarhus University.
2007–2010	:	Participation in the project "CIT-AWARE", in collaboration with the University of Aarhus School of Education, UNI-C/DK-CERT and Telia Stofa A/S.

I have also had a number of smaller collaborative projects with Danish companies, including NKT Elektronik A/S (now DSC Communications), Brüel & Kjær A/S, Regnecentralen af 1979 A/S, Dansk Data Elektronik A/S, TeleDanmark Research og Fischer & Lorenz A/S.

From 1979 to 1991 I was a member of Dansk Standardiseringsråd's sub-committee on "Interconnection of Open Systems", and from 1984 to 1991 chairman of Dansk Standardiseringsråd's *ad*

hoc committee on "Local Area Networks". In connection with this I took part in ISO's technical sub-committee TC97/SC21 (previously TC97/SC16) on standardisation of data communication systems, and in particular in its working group WG1 on architecture and formal description tools.

From 1986 to 1989 I was a member of IFIP's technical committee TC6.4: "Local Area Networks", together with its special interest group on high-speed local area networks.

3 Teaching and Supervision

During my time at DTU, I have taught courses in, amongst other things, Elementary Computer Science, Machine-level Programming, Computer Networks and Distributed Systems. I have taught a course in Computer Security 10 times, a course in Network Security 7 times, and a course in IT security for non-specialists 5 times. I have also taught a considerable number of project-oriented courses on specialised topics within distributed systems and computer security.

I have supervised 10 Ph.D. students, one post.doc, and more than 100 M.Sc. thesis students.

4 Administrative Experience

From February 1977 to October 1978, and again from February 1980 to February 1983 I has a member of the Board of the Department of Computer Science, in the latter period as the Department Chairman.

From 1977 to 1983, except during my period of leave, I was a member of the Electrical Engineering Faculty Board.

From 1993 to December 1995 I was a member of the Ph.D. Committee for Electrical Engineering at DTU, during the period 1994–95 as chairman.

From 1994 to December 1995 I was a member of the Ph.D. Board at DTU.

From January 1996 until December 2000 I was Head of Department and chairman of the board for the Department of Information Technology at DTU.

From January until December 2001 I was head of the Computer Science & Technology Section at the Informatics and Mathematical Modelling department (now part of DTU Compute) at DTU.

From 2006 until my retirement from full empoyment in 2013 I was the IT Security Officer (CISO) at the department and a member of DTU's IT Security Board.

5 Selected Publications *(since 1977)*

Books

1. R. Sharp: "Principles of Protocol Design". Prentice Hall International Series in Computer Science, November 1994. ISBN 0-13-182155-5.
2. R. Sharp: "Principles of Protocol Design". (Revised edition) Springer-Verlag Berlin Heidelberg, February 2008. ISBN 978-3-540-77540-9.

Articles in journals and refereed proceedings

3. F. Tarini, R. Sharp, M. Martelli & A. Endrizzi: "A Network System Language", *Proc. 1st. Intl. Conference on Distributed Computing Systems, Huntsville*, 305–314 (1979).
4. R. Sharp, N. Nørup Pedersen & C. Jensen: "Services and Protocols in High-Speed LANs", *Proc. EUTECO Conf., Varese*, 425–433 (1983).
5. N. Nørup Pedersen & R. Sharp: "Analysis of Channel Access Schemes for High-Speed LANs", *Proc. SIGCOMM '84 Symposium on Communications Architectures and Protocols, Montreal*, 164–171 (1984).
6. R. Sharp: "A High-speed Baseband Net for Integrated Services", *Proc. European Computer Communications Conference, NETWORKS '85, London*, 255–264 (1985).
7. R. Sharp, M. Skov, M.N. Jensen og J. Sparsø: "Architectural Considerations in LAN-DTH", *Proc. IFIP TC6 International Symposium on Local Communication Systems, LAN and PBX, Toulouse*, 339–351 (1986).
8. R. Sharp: "The LAN-DTH 140 Mbit/s Token Ring", *Proc. IFIP WG6.4 Workshop on High Speed Local Area Networks, Aachen*, 213–225 (1987).
9. L. Rossen and R. Sharp: "Sequence semantics of Ruby". In J. Staunstrup and R. Sharp, editors, *Proceedings of the 2nd Workshop on Designing Correct Circuits*, pages 159–172. IFIP WG10.5, Elsevier Science Publishers B.V., 1992.
10. R. Sharp og O. Rasmussen: "Transformational rewriting with Ruby". In L. Claesen, editor, *Computer Hardware Description Languages, CHDL'93*, pages 243–260. IFIP WG10.2, Elsevier Science Publishers, B.V., 1993.
11. R. Sharp og O. Rasmussen: "Rewriting with constraints in T-Ruby". In G. J. Milne and L. Pierre, editors, *Correct Hardware Design and Verification Methods, CHARME'93*, volume 683 of *Lecture Notes in Computer Science*, pages 226–241. IFIP WG10.2, Springer-Verlag, 1993.
12. R. Sharp og O. Rasmussen: "Using a language of functions and relations for VLSI specification". In S. Peyton-Jones, editor, *Functional Programming and Computer Architecture, FPCA'95*, pages 45–54. ACM, 1995.
13. R. Sharp og O. Rasmussen: "The T-Ruby design system". In S. Johnson, editor, *CHDL'95*, pages 587–596. IFIP WG10.5, 1995.
14. S. Mørk, J. Godskesen M. R. Hansen and R. Sharp: "A Timed Semantics for SDL". In *Protocol Specification, Testing and Verification*, Chapman & Hall, 1996.
15. R. Sharp and O. Rasmussen: "The T-Ruby design system". *Formal Methods in System Design*, vol. 11(3), pages 239–264, 1997.
16. S. Forchhammer, A. Fosgerau, P.S.K. Hansen, S.D. Hansen, O.R. Jensen, R. Sharp and J.Aa. Sørensen: "Virtual Seminar Room – Modelling and Experimentation in Horizontal and Vertical Integration". IEEE International Workshop on Multimedia Signal Processing (MMSP'99), pages 581–586, September 1999.
17. S. Forchhammer, A. Fosgerau, P.S.K. Hansen, R. Sharp, E. Todirica and A. Zsigri: "Video Conferencing for a Virtual Seminar Room", Proc. 4th International Conference on Digital Signal Processing and its Applications, Moscow, pages 382–385, February 2002.
18. H. Pilegaard, M.R. Hansen and R. Sharp: "Using Interval Logics and Isabelle/HOL for

Analyzing Real-time Properties of Security Protocols", Proc. 14th Nordic Workshop on Programming Theory, NWPT'02, Talinn, November 2002.
19. M.R. Hansen and R. Sharp: "Using Interval Logics for Temporal Analysis of Security Protocols", Proc. Intl. Workshop on Formal Methods in Security Engineering, Washington, D.C., pages 24–31, October 2003.
20. H. Pilegaard, M.R. Hansen and R. Sharp: "Using Interval Logics and Isabelle/HOL for Analyzing Availability Properties of Security Protocols", Nordic Journal of Computing, vol. 10, pages 337–373 (2003).
21. R. Sharp and M.R. Hansen: "Timed Traces and Strand Spaces", Proc. 16th Nordic Workshop on Programming Theory, NWPT'04, Uppsala (November 2004).
22. R. Sharp: "Can we avoid misuse of Grid systems?", Proc. 1st Nordic Grid Neighbourhood Conference, Oslo (August 2005).
23. A. Pedersen, A. Hedegaard and R. Sharp: "Designing a Secure Point-of-Sale System", Proc. 4th IEEE International Workshop on Information Assurance, Royal Holloway, UK, pages 51–65 (April 2006).
24. R. Sharp: "An Ontology for the Common Criteria for IT Security Evaluation", web publication. Available via URL `http://www.ontologyportal.org` (August 2006).
25. M. Brinkløv and R. Sharp: "Incremental Trust in Grid Computing", Proc, 7th IEEE International Symposium on Cluster Computing and the Grid, Rio de Janeiro, pages 135–144 (May 2007).
26. C.D. Jensen and R. Sharp: "Trust Management in Open Grid Systems", Proc. NOrdic workshop and doctoral symposium on DEpendability and Security, Oslo, Norway (2007).
27. R. Sharp and M.R. Hansen: "Timed Traces and Strand Spaces", Proc. 2nd International Computer Science Symposium in Russia, CSR2007, Ekaterinburg, Russia. LNCS 4649, pages 373–386 (September 2007).
28. R. Sharp: "CC-Based Design of Secure Application Systems", Proc. International Symposium on Engineering Secure Software and Systems (ESSoS09), Louvain. LNCS5429, pages 111–121 (February 2009).
29. L. Gjedde, R. Sharp, P. Andersen and H. Meldgaard: "Safeguarding the User - Developing a Multimodal Design for Surveying and Raising Internet Safety and Security Awareness", Proc. V International Conference on Multimedia and ICT in Education. Lisbon, Portugal, 2009. In: Research, Reflections and Innovations in Integrating ICT in Education ; Volume 1, pages 568–571 (April 2009).
30. R. Sharp: "Incorporating User-oriented Security into CC", Proc. 10th International Common Criteria Conference (ICCC), Troms, Norway (September 2009).
31. R. Sharp and L. Gjedde: "Improving on Tacit Knowledge through a Media-rich Survey", In: Proceedings of the World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education, Vancouver, Canada, pages 1962–1965 (October 2009).
32. L. Gjedde and R. Sharp: "Questions as Pathways to Learning — Implicit Learning in a Simulated Environment", In: Proceedings of CELDA 2009, Rome (November 2009).
33. R. Sharp and L. Gjedde: "Improving e-Learning by Emotive Feedback", In: Proceedings of IADIS IHCI 2011, Rome (July 2011).
34. L.T. Herbert and R.Sharp: "Quantitative analysis of probabilistic BPMN workflows", In: Proceedings of the ASME 2012 International Design Engineering Technical Conferences, American Society of Mechanical Engineers (2012).
35. M. Stevanovic, K. Revsbech, J.M. Pedersen, R. Sharp, and C.D. Jensen: "A collaborative approach to botnet protection", In: Proceedings of International Cross-Domain Conference and Workshop on Availability, Reliability, and Security (CD-ARES 2012), pages 624–638 (August 2012).
36. L.T. Herbert and R.Sharp: "Analyzing Properties of Stochastic Business Processes By Model Checking" , In: "Model Checking Business Processes", pages 3–40. American Society of Mechanical Engineers (2013).
37. L.T. Herbert and R.Sharp: "Workflow Fault Tree Generation Through Model Checking", In: Proceedings of Safety, Reliability and Risk Analysis, (ed. R.D.J.M. Steenbergen, P.H.A.J.M.

van Gelder, S. Miraglia and A.C.W.M. Ton Vrouwenvelder), pages 2229–2236, CRC Press (2014).

In 2006 I received the *SUMO Prize* for the best formally defined ontology, for the paper "An Ontology for the Common Criteria for IT Security Evaluation" listed above.

Technical reports

38. R. Sharp & N. Nørup Pedersen: "LAN-DTH Project Note 6: Low-level Protocols for LAN-DTH". Technical Report TR1988-35, 152 pages, Dept. of Computer Science, DTH (reprinted from report ID1134, December 1984).
39. R. Sharp: "LAN-DTH Project Note 9: Software Implementation of Low-level Protocols in LAN-DTH". Technical Report TR1988-36, 72 pages, Dept. of Computer Sciemce, DTH (reprinted from report ID1159, March 1986).
40. R. Sharp, N. Nørup Pedersen & K. Gregersen: "LAN-DTH Project Note 10: Software Interface Specifications in LAN-DTH". Technical Report TR1988-37, 36 pages, Dept. of Computer Science, DTH (reprinted from report ID1173, July 1986).
41. C. A. Madsen og R. Sharp: "A Petri Net Semantics for CSP". Technical Report ID–TR: 1991-99, 90 pages, Dept. of Computer Science, Technical University of Denmark, November 1991.
42. R. Sharp: "The Ruby Framework". Technical Report ID–TR: 1993-119, 72 pages, Dept. of Computer Science, Technical University of Denmark, June 1993.
43. R. Sharp: "T-Ruby: A tool for handling Ruby expressions". Technical Report ID–TR: 1994-154, 2. edition, 145 pages, Dept. of Computer Science, Technical University of Denmark, December 1994. (On-line version at URL: `http://www.it.dtu.dk/~ruby/manual/manual.html`)
44. R. Sharp and O. Rasmussen: "An introduction to Ruby". Teaching Report ID–U: 1995-80, 2nd. edition, 116 pages, Dept. of Computer Science, Technical University of Denmark, October 1995.
45. R. Sharp, H.-H. Løvengreen and E. Todirica: "Streams and Sockets in DTU-RTMM". Technical Report, Dept. of Information Technology, Technical University of Denmark, September 2000. (On-line version at URL: `http://www.imm.dtu.dk/~robin/RTMM/streams.pdf`)
46. R. Sharp (ed.): "Internet Safety and Security Surveys — A Review". IMM-Technical report-2007-21, DTU Informatics, Technical University of Denmark, December 2007.
47. R. Sharp (ed.): "CIT-AWARE-09 — En undersøgelse af it-sikkerhed blandt borgerne i Danmark". IMM-Technical report-2010-07, DTU Informatics, Technical University of Denmark, May 2010 (In Danish).
48. R. Sharp: "An Introduction to Malware", 4th. edition. Lecture notes. 35 pages, DTU Compute, May 2017. (On-line version at URL: `http://orbit.dtu.dk/en/publications/an-introduction-to-malware(992e6ec2-c788-474d-b3ac-eeb32431106c).html`)