The University of Texas at San Antonio

Prof. Ravi Sandhu
Executive Director and Lutcher Brown Endowed Chair
Institute for Cyber Security
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March 1, 2009

Dear Search Committee Members

Please find attached supporting documents for my application for the position of Editor-in-Chief of IEEE Transactions on Dependable & Secure Computing effective 2010. These comprise a letter of support from the Dean of my College, a brief plan for the publication's future and complete curriculum vitae. I am personally excited about this opportunity and will bring considerable editorial leadership experience as the Founding Editor-in-Chief of ACM Transactions on Information and Systems Security (1997-2004), as well as high dedication and commitment of professional service that I always pursued in my career. I will be happy to provide any additional information that may be appropriate.

Sincerely,

Ravi Sandhu,
Executive Director, Institute for Cyber Security
Lutcher Brown Endowed Chair in Cyber Security
Professor of Computer Science

UTSA The University of Texas at San Antonio
College of Sciences
Office of the Dean

February 23, 2009

EIC Search Committee
IEEE Transactions on Dependable and Secure Computing

Dear Search Committee Members:

The College of Sciences at the University of Texas at San Antonio is excited that Dr. Ravi Sandhu of the Computer Science Department in our College is applying for the position of Editor-in-Chief for IEEE Transactions on Dependable and Secure Computing. The College of Sciences strongly supports his candidacy and I have personally encouraged him to apply for this prestigious and important position. Researchers in the discipline need no introduction to Dr. Sandhu, and I will let his vita and statement speak for themselves.

The main purpose of my letter is to express the support of the College should Dr. Sandhu be selected. Currently, Dr. Sandhu has sufficient office, administrative and research space to undertake this task. Further, I know well his ability to organize staff to accomplish scholarly goals. In a little over a year, Dr. Sandhu has established a world-class institute at UTSA involving our students and faculty, as well as recruiting new talent.

I am confident that Dr. Sandhu will provide exceptional service in this position and further enhance the excellent reputation of the IEEE Transactions on Dependable and Secure Computing.

Sincerely,

George Perry, Ph.D.

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Vision Statement for IEEE Transactions on Dependable & Secure Computing

Ravi Sandhu

Publication of the inaugural issue of IEEE TDSC in Q1 of 2005 was a much awaited and significant event for the dependability and cyber security communities. Since then the Transactions has established a strong name and has significantly enriched the archival literature in these disciplines. It would be a privilege and honor to serve as the next Editor-in-Chief (EIC). I will bring deep experience, demonstrated leadership and high commitment to this position. My management at UTSA is totally supportive of my candidacy and has strongly encouraged my application.

Editorial Focus

As conceived by the founding EIC Prof. Ravi Iyer, TDSC set out on a unique mission to bridge two mature and substantial research disciplines for mutual synergy. In an increasingly fragmented scientific universe this mission was and is a bold one. The fields of Dependability and Security are rooted in and have grown in different silos, although many researchers from both fields have long felt that there was a natural synergy that would be beneficial to both. Prof. Virgil Gligor who took over from Prof. Iyer has continued this original vision. In its fifth year of publication it can be said that TDSC has achieved some success in this direction. I believe the next EIC must continue to seek this synergy as a high priority. I am encouraged by Prof. Gligor's Q1 2008 editorial outlining changes in editorial directions and focus towards this goal. The focus on those aspects of the two disciplines that would be of interest and benefit to readers from either one is the right focus for TDSC. I am encouraged that Prof. Gligor reports some promising results after one year of this policy, in his Q1 2009 editorial.

As EIC I would continue to build on this tradition and seek to further develop the focus of TDSC in this direction. Current trends in computing will naturally bring these disciplines closer. We can safely predict that future computing will be very different from current systems and will be robust only if both dependability and security can be meaningfully provided. This is an exciting time for both fields and we will need much stronger synergy than in the past. IEEE TDSC is uniquely positioned to be the lead forum for research towards this end.

Editorial Operations

The individual fields of Dependability and Security are themselves very broad, and in combination even broader still. I applaud the practice of TDSC in having Associate EICs to represent at least these two broad areas. I would plan to continue the use of Associate EICs. As an incoming EIC I would work with the outgoing EIC to understand the overall status of the TDSC pipeline, processing times and backlog. The precise number of Associate EICs and the alignment of their expertise would depend on my findings during the status review, as well as on the areas that TDSC wishes to encourage through editorial policy. It would be premature of me to specify additional details at this point since my visibility into the current operations is necessarily limited.

Backlog and Processing Time

TDSC currently has a large backlog of accepted papers awaiting publication in print. Even with an increase in the page allocation for 2009 it appears that this backlog will persist for some time. Publication of accepted papers in the digital library does make the results available but creates confusion in terms of citations and references. Computer scientists well understand the need for rapid turnaround in journal reviews. As we expedite this end of the equation the backlog will only get worse. Clearly this problem is not unique to TDSC.

As EIC I would work on all parameters of this situation. I believe it is necessary to speed up review times. I also believe it is necessary to reduce publication delay for accepted papers. One possibility is to be more aggressive in rejecting marginal papers. This serves the overall interest of TDSC in building its premier reputation. Unfortunately, marginal papers often linger since no one quite wants to kill them. I would lean on the Associate Editors to be more aggressive in making the call on marginal papers rather than letting them linger. To some degree a quick turnaround allows a more aggressive rejection strategy. Papers that linger due to inaction by the EIC and Associate Editors become harder to reject. So I will try to balance all these concerns carefully.

Regarding backlog of excellent papers TDSC needs to increase its page allocation in the short term, including possible evolution into a bi-monthly and subsequently monthly publication. However, a more sustainable solution may require the IEEE to consider different modes of publication. Perhaps the full papers are published only electronically while a hard copy digest is produced on a periodic basis. As EIC I would certainly lobby for increased page count for TDSC, and possible increase in frequency. I will also engage with IEEE Publications leadership to discuss longer term sustainable approaches.

Fairness to All Stakeholders

As EIC I will be personally accountable for fair and equitable treatment of all authors, reviewers and editors. All submissions will be processed under the same policy and there will be no special positive or negative treatment of any individual or organization.

Professor Ravi Sandhu
University of Texas at San Antonio
Executive Director and Founder, Institute for Cyber Security
Lutcher Brown Endowed Chair in Cyber Security
Professor of Computer Science (College of Science)
Also Chief Scientist and Co-Founder, TriCipher

Contact

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Degrees

Degree	Major	University	Year
Ph.D.	Computer Science	Rutgers University, New Jersey	1983
M.S.	Computer Science	Rutgers University, New Jersey	1980
M.Tech.	Computer Technology	Indian Institute of Technology, New Delhi	1976
B.Tech.	Electrical Engineering	Indian Institute of Technology, Bombay	1974

Academic Career

- **Univ. of Texas at San Antonio,** 2007 onwards: As above (50% in CS, 25% each in ECE and ISTM).
- **George Mason University,** 1995-2007: Full Prof., 1989-1995: Assoc. Prof. (Information Security).
- **Ohio State University,** 1983-1989: Assistant Professor, 1982-1983: Instructor (Computer Science).

Career Focus and Goals

My career has focused on high impact research, practice and education in cyber security starting with my doctoral thesis. Effective cyber security requires science, engineering, business, policy and people skills. My goal is to instill this culture in the cyber-security discipline and provide leadership in all elements.

Professional Recognition

- **Citations and Impact.** (Based on Google Scholar) 10,000+ citations. #1 and #2 papers in access control with 3000+ and 1800+ citations. My h-index is 47 (47 papers with 47 or more citations).
- **AAAS Fellow, 2008.** "For distinguished contributions to cyber security, including seminal role-based access control and usage control models, and for professional leadership in research journals and conferences."
- **ACM SIGSAC Outstanding Contribution Award, 2008.**
- **IEEE Computer Society Technical Achievement Award, 2004.** "For outstanding and pioneering contributions to information security including innovation of the RBAC model and usage control."
- **IEEE Fellow 2002.** "For contributions to the field of information and system security."
- **ACM Fellow 2001.** "For technical contributions to the field of info. and system security, notably access control models and systems, and professional leadership in research journals and conferences."
- **Best Paper Awards 1992 and 1998.** NIST/NSA National Computer Security Conference.

Highly Cited Papers at Google Scholar Include
Role-Based Access Control

- Role-Based Access Control Models, IEEE Comp., 29(2):38-47, 1996. 3000+ hits. #1 in access control.
- Proposed NIST Std. for RBAC. ACM TISSEC, 4(3):224-274, 2001. 1800+ hits. #2 in access control.
- The ARBAC97 Model for Role-Based Admin. of Roles. ACM TISSEC, 2(1):105-135, 1999. 450+ hits.
- The NIST Model for Role-Based Access Control. 5th ACM RBAC:47-63, 2000. 400+ hits.
- Configuring RBAC to Enforce MAC and DAC. ACM TISSEC, 3(2):85-106, 2000. 350+ hits.
- Role-Based Authorization Constraints Specification. ACM TISSEC, 3(4):207-226, 2000. 250+ hits
- Numerous others with 100+ hits.

Usage Control

- The $UCON_{ABC}$ Usage Control Model, ACM TISSEC, 7(1):128-174, 2004. 150+ hits.

Access Control Tutorials

- Access Control: Principles and Practice. IEEE Communications, 32(9): 40-48, 1994. 350+ hits.
- Lattice-Based Access Control Models. IEEE Computer, 26(11): 9-19, 1993. 350+ hits.

Access Control Earlier Models

- Task-based Authorization Controls. 11th IFIP 11.3 Data and Application Sec.:262-275, 1997. 200+ hits.
- The Typed Access Matrix Model. 13th IEEE Security and Privacy (Oakland):122-136, 1992. 200+ hits.
- Toward a Multilevel Secure Relational Data Model, SIGMOD:50-59, 1991. 150+ hits.
- Transaction Control Expressions for Separation of Duties. 4th ACSAC:282-286, 1988. 100+ hits.
- The Schematic Protection Model, Journal of the ACM, 35(2):404-432, 1988. 100+ hits.
- Crypto. Implementation of a Tree Hierarchy for Access Control. IPL, 27(2):95-98, 1988. 100+ hits.

Research Highlights

- **Statistics:** 175+ papers (with 50+ co-authors), 12 USA patents, 14 PhD graduates, 35+ research grants.
- **Sponsors**: include NSF, NSA, NRO, NRL, AFOSR, NIST, DARPA, ARDA, AFOSR, Sandia, State Dept., DOE, IRS, RADC, FAA, Intel, Northrop Grumman, Lockheed Martin, ITT, Verizon.
- **Ongoing research initiatives include:** PEI (policy, enforcement, implementation) layered models, Applications of the UCON usage control model, Innovative applications of modern trusted computing, Next-generation role-based access control, Security for the semantic web, Stealthy Botnet Detection, Security and Privacy for Social Networks, Web 2.0 Security, Secure Information Sharing.
- **Earlier research**: My research on RBAC has been instrumental in establishing it as the preferred form of access control, including its acceptance as an ANSI/NIST standard in 2004. My earlier research on numerous access control models remains influential and state-of-the-art.

Professional Leadership Includes

- Founding Editor-in-Chief, ACM Transactions on Information & Systems Security (TISSEC), 1997-2004.
- Chairman, ACM Special Interest Group on Security Audit and Control (SIGSAC), 1995-2003.
- Security Editor, IEEE Internet Computing, 1998-2004.
- Conference Founder: ACM CCS (1993), ACM SACMAT (1995). Both very highly regarded.
- Conference Steering Committees: ACM CCS (1993-2003 Chair, 2003-2007 Member), ACM SACMAT (1995-2008 Chair), IEEE CSF (1992-2008 Member).
- Conference Program Chair: IEEE CSF (1991, 1992), ACM CCS (1993, 1994, 2002), ACM SACMAT (1995), ACSAC (1996), IFIP WG 11.3 (1996), ACM CSAW (2007).
- Conference General Chair: IEEE CSF (1993, 1994), ACM CCS (1996), ACM SACMAT (2001, 2002).

Entrepreneurial and Consulting Career

- TriCipher Inc., 2000 onwards, Chief Scientist and Co-Founder
- Consultant to numerous organizations including: McAfee, Trusted Information Systems, National Institute of Standards and Technology, Verizon, SETA Corporation, Argonne National Laboratory, Singapore Management University, Northrop Grumman, Integris Health.

Teaching Career

- I was the principal architect for the MS and PhD in Information Security and Assurance at George Mason University, where I personally developed and taught the core courses and multiple electives.
- I have presented short courses, tutorials and invited lectures all over the world including Asia, Australia, Europe, North America and South America.

Personal

- US Citizen since 1997. Born in India. Schooled at Doon School and IITs. Married with two sons.

Sponsored Research Grants

Currently Active

1. IAPD: A Framework for Integrated Adaptive and Proactive Defenses against Stealthy Botnets
   Principal Investigators: Shouhuai Xu and Ravi Sandhu
   Sponsor: *Air Force Office of Scientific Research*, 2009-2012
   Partners: Georgia Tech

2. Assured Information Sharing Life Cycle
   Principal Investigator: Ravi Sandhu
   Sponsor: *Air Force Office of Scientific Research, MURI*, 2008-2013
   Partners: U. of Maryland-BC, U. of Michigan, U. of Illinois-UC, Purdue U., UT Dallas

3. Securing Dynamic Online Social Networks
   Principal Investigator: Ravi Sandhu
   Sponsor: National Science Foundation, 2008-2012
   Partners: Penn. State Univ., Arizona State Univ., Univ. of North Carolina-Charlotte

4. Institute for Cyber Security Founding Grant
   Principal Investigator: Ravi Sandhu
   Sponsor: *State of Texas Emerging Technology Fund*, 2007-2010

5. STARS Grant for Establishing Institute for Cyber Security Laboratory
   Principal Investigator: Ravi Sandhu
   Sponsor: *UT System*, 2007-2008

6. Secure Knowledge Management: Models and Mechanisms
   Principal Investigator: Ravi Sandhu
   Sponsor: *National Science Foundation*, 2005-2009

7. Deploying Secure Distributed Systems using LaGrande Technology: Models, Architectures and Protocols
   Principal Investigator: Ravi Sandhu
   Sponsor: *Intel Research Council*, 2004-2009

Completed

8. Information Operations Across Infospheres
   Principal Investigator: Ravi Sandhu
   Sponsor: *Air Force Office of Scientific Research*, 2006-2008

9. Usage Control Models, Architectures and Mechanisms Based on Integrating Authorizations, Obligations and Conditions
   Principal Investigator: Ravi Sandhu
   Sponsor: *National Science Foundation*, 2003-2006

10. Next Generation Authentication and Access Control for the FAA
    Principal Investigator: Ravi Sandhu
    Sponsor: *Federal Aviation Administration*, 2004-2005

11. Flexible Policy Models and Architectures for Client and Server-assured Document Access Controls
    Principal Investigator: Roshan Thomas, McAfee Research, Network Associates
    Investigator: Ravi Sandhu
    Sponsor: *Advanced Research and Development Agency*, 2003-05

12. Scalable Authorization in Distributed Systems
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Science Foundation*, 1999-2002

13. Sonora: Secure Metadata Models and Architectures
    Principal Investigator: Ravi Sandhu
    Co-Investigator: Larry Kerschberg
    Sponsor: *Northrop Grumman*, 2001-2002

14. Secure Objects
    Principal Investigator: Ravi Sandhu
    Co-Investigators: Larry Kerschberg and Edgar Sibley
    Sponsor: *National Reconnaissance Office and National Security Agency*, 2000-2001

15. Security and Containment Policy for the Attack Sensing, Warning and Response Laboratory
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1999-2000

16. Secure Role-Based Workflow Systems
    Principal Investigator: Ravi Sandhu
    Sponsor: *Naval Research Laboratory*, 1999

17. Control and Tracking of Information Dissemination
    Principal Investigator: Ravi Sandhu
    Sponsor: *Lockheed Martin*, 1999

18. Distributed Role-Based Access Control Models and Architectures
    Principal Investigator: Ravi Sandhu
    Sponsor: *Sandia National Laboratories*, 1999

19. Role-Based Access Control on the Web
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1998-99

20. Secure Remote Access
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1998

21. Agent-Based Systems
    Principal Investigators: Ravi Sandhu, Prasanta Bose, Elizabeth White
    Sponsor: *National Security Agency*, 1998

22. Multi-Layered Countermeasures to Vulnerabilities in Networked Systems
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1996-97

23. Role-Based Access Control: Phase II
    Principal Investigator: Ed Coyne, SETA Corporation
    Investigators: Ravi Sandhu, Charles Youman (SETA)
    Sponsor: *National Institute of Standards and Technology*, 1995-97

24. Task-based Authorizations: A New Paradigm for Access Control
    Principal Investigator: Roshan Thomas, Odyssey Research Associates
    Investigator: Ravi Sandhu
    Sponsor: *Defense Advanced Research Projects Agency*, 1995-97

25. A Pragmatic Approach to the Design and Analysis of Composite Secure Systems
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1994-97

26. Design of Multilevel Secure Relational Databases
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1994-96

27. Role-Based Access Control: Phase I
    Principal Investigator: Hal Feinstein, SETA Corporation
    Investigators: Ravi Sandhu, Ed Coyne (SETA), Charles Youman (SETA)
    Sponsor: *National Institute of Standards and Technology*, 1994

28. Architectures for Type-Based Distributed Access Control
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1993-96

29. Privacy Models and Policies
    Principal Investigator: Andrew Sage, George Mason University
    Investigators: Ravi Sandhu, Sushil Jajodia and Paul Lehner
    Sponsor: *Internal Revenue Service*, Tax Systems Modernization Institute, 1995

30. Derivation, Modeling, and Analysis of Access Control Systems
    Principal Investigators: Ravi Sandhu and Paul Ammann
    Sponsor: *National Science Foundation*, 1992-95

31. Unified Security Models for Confidentiality and Integrity
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1992-94

32. Foundations of Multilevel Secure Object-Oriented Databases
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1992-94

33. Polyinstantiation in Multilevel Relations
    Principal Investigator: Sushil Jajodia
    Co-Principal Investigator: Ravi Sandhu
    Sponsor: *Rome Air Development Center*, Department of Defense, 1992

34. Models, Mechanisms and Methods for Integrity Policies
    Principal Investigator: Ravi Sandhu
    Sponsor: *National Security Agency*, 1989-92

35. Analysis of Updates of Multilevel Relations
    Principal Investigator: Sushil Jajodia
    Co-Principal Investigator: Ravi Sandhu
    Sponsor: *Rome Air Development Center*, Department of Defense, 1990-91

PhD Advisees

1. Venkata Bhamidipati, *Architectures and Models for Administration of User-Role Assignment in Role Based Access Control*, Fall 2008. (Co-advisor: Daniel Menasce.)

2. Zhixiong Zhang, *Scalable Role and Organization Based Access Control and Its Administration*, GMU, Spring 2008. (Co-advisor: Daniel Menasce.)

3. Xinwen Zhang, *Formal Model and Analysis of Usage Control*, GMU, Summer 2006. (Co-advisor: Francesco Parisi-Presicce.)

4. Mohammad Abdullah Al-Kahtani, *A Family of Models for Rule-Based User-Role Assignment*, GMU, Spring 2004.

5. Jaehong Park, *Usage Control: A Unified Framework for Next Generation Access Control*, GMU, Summer 2003.

6. Ezedin Barka, *Framework for Role-Based Delegation Models*, GMU, Summer 2002.

7. Pete Epstein, *Engineering of Role/Permission Assignments*, GMU, Spring 2002.

8. Qamar Munawer, *Administrative Models for Role-Based Access Control*, GMU, Spring 2000.

9. Gail-Joon Ahn, *The RCL 2000 Language for Role-Based Authorization Constraints*, GMU, Fall 1999.

10. Joon Park, *Secure Attribute Services on the Web*, GMU, Summer 1999.

11. Phillip Hyland, *Concentric Supervision of Security Applications: An Assurance Methodology*, GMU, Spring 1999.

12. Tarik Himdi, *A Scalable Extended DGSA Scheme for Confidential Data Sharing in Multi-Domain Organizations*, GMU, Spring 1998.

13. Srinivas Ganta, *Expressive Power of Access Control Models Based on Propagation of Rights*, GMU, Summer 1996.

14. Roshan Thomas, *Supporting Secure and Efficient Write-Up in High-Assurance Multilevel Object-Based Computing*, GMU, Summer 1994.

USA Patents

1. *Laddered Authentication Security Using Split Key Asymmetric Cryptography*. Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 7,447,903. November 4, 2008. (Continuation of 7,069,435.)

2. *Authentication Protocol Using a Multi-Factor Asymmetric Key Pair*. Ravi Sandhu, Brett Schoppert, Ravi Ganesan, Mihir Bellare and Colin deSa. USA Patent 7,386,720. June 10, 2008.

3. *System and Apparatus for Storage and Transfer of Secure Data on Web.* Ravi Sandhu and Joon Park. USA Patent 7,293,098. November 6, 2007. (Continuation of 6,985,953.)

4. *Method and System for Authorizing Generation of Asymmetric Crypto-Keys*. Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 7,149,310. December 12, 2006.

5. *System and Method for Authentication in a Crypto-System Utilizing Symmetric and Asymmetric Crypto-Keys*. Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 7,069,435. June 27, 2006.

6. *System and Method for Generation and Use of Asymmetric Crypto-Keys Each Having a Public Portion and Multiple Private Portions.* Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 7,065,642. June 20, 2006.

7. *One Time Password Entry to Access Multiple Network Sites.* Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 7,055,032. May 30, 2006.

8. *Secure Communications Network With User Control of Authenticated Personal Information Provided to Network Entities.* Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 7,017,041. March 21, 2006.

9. *System and Apparatus for Storage and Transfer of Secure Data on Web.* Ravi Sandhu and Joon Park. USA Patent 6,985,953. January 10, 2006.

10. *A System and Method for Crypto-key Generation and Use in Cryptosystem*. Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 6,970,562. November 29, 2005.

11. *High Security Cryptosystem*. Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 6,940,980. September 6, 2005.

12. *A System and Method for Password Throttling*. Ravi Sandhu, Colin deSa and Karuna Ganesan. USA Patent 6,883,095. April 19, 2005.

INVITED LECTURES, KEYNOTES, SEMINARS, INCLUDE

1. *Group-Centric Information Sharing*
   Keynote lecture at 4th ICST-Create-Net International Conference on Collaborative Computing: Networking, Applications and Worksharing, Orlando, Florida, Nov. 14, 2008.

2. *Trusted Computing Models*
   Keynote lecture at 2nd IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing (SUTC), Taichung, Taiwan, June 11-13, 2008.

3. *The ASCAA Principles for Access Control Interpreted for Collaboration Systems*
   Invited lecture at Workshop on Collaboration and Security (COLSEC) held at the 2008 International Symposium on Collaborative Technologies and Systems (CTS), Irvine, California, May 19-23, 2008.

4. *Access Control and Semantic Web Technologies*
   Invited lecture at Secure Semantic Web Workshop held at the 24th International Conference on Data Engineering (ICDE), Cancun, México, April 7-12, 2008.

5. *The ASCAA Principles for Next-Generation Role-Based Access Control*
   Keynote lecture at 3rd IEEE International Conference on Availability, Reliability and Security (ARES), Barcelona, Spain, March 4-7, 2008.

6. *The Secure Information Sharing Problem and Solution Approaches*
   Invited seminar at Center for Education and Research in Information Assurance and Security (CERIAS) at Purdue University, West Lafayette, Indiana, September 27, 2006.

7. *Secure Information Sharing Enabled by Trusted Computing and PEI Models*
   Keynote lecture at 1st ACM Symposium on Information, Computer, and Communication Security (AsiaCCS), Taipei, Taiwan, March 21-24, 2006.

8. *Cyber-Identity, Authority and Trust in an Uncertain World*
   Keynote lecture at 6th Brazilian Symposium on Computer and Information Security (SSI), November 9-12, 2004.

9. *A Perspective on Graphs and Access Control Models*
   Keynote lecture at 2nd International Conference on Graph Transformation (ICGT), Rome, Italy, September 28-October 2, 2004.

10. *Cyber-Identity, Authority and Trust in an Uncertain World*
    Invited plenary lecture at 1st Secure Knowledge Management Workshop, Buffalo, New York, September 23-24, 2004.

11. *Future Directions in Role-Based Access Control Models*
    Keynote lecture at 1st International Conference on Mathematical Methods, Models and Architectures for Computer Networks Security, Saint Petersburg, Russia, May 21-23, 2001.

12. *Access Control: The Neglected Frontier*
    Keynote lecture at 1st Australasian Conference on Information Security and Privacy, Wollongong, NSW, Australia, June 23-26, 1996.

13. *Leader, People-to-People Information Security Delegation to China*
    Beijing, Guangzhou, Shanghai, Hong Kong, May 17–June 1, 1996.

14. *Pacific Rim Information Security Seminars*
    Professional seminars in Sydney, Canberra (Australia), Singapore, Kuala Lumpur (Malaysia), Wellington (New Zealand), May 25–June 10 and November 2–18, 1995.

PUBLICATIONS

Journal Publications

1. Xinwen Zhang,, Masayuki Nakae, Michael Covington and Ravi Sandhu,, "Toward a Usage-Based Security Framework for Collaborative Computing Systems." *ACM Transactions on Information and System Security*, Volume 11, Number 1, Article 3, Feb. 2008, pages 1-36.

2. David Ferraiolo, Rick Kuhn and Ravi Sandhu, "RBAC Standard Rationale: Comments on "A Critique of the ANSI Standard on Role-Based Access Control"." *IEEE Security & Privacy*, Volume 5, Number 6, Nov.-Dec. 2007, pages 51-53.

3. Sejong Oh, Ravi Sandhu and Xinwen Zhang, "An Effective Role Administration Model Using Organization Structure." *ACM Transactions on Information and System Security*, Volume 9, Number 2, May 2006, pages 113-137.

4. Elisa Bertino, Latifur Khan, Ravi Sandhu and Bhavani Thuraisingham, "Secure Knowledge Management: Confidentiality, Trust, and Privacy." *IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans*, Volume 36, Number 3, May 2006, pages 429-438.

5. Ravi Sandhu, Xinwen Zhang, Kumar Ranganathan and Michael J. Covington, "Client-side Access Control Enforcement Using Trusted Computing and PEI Models." *Journal of High Speed Networks*, Volume 15, Number 3, 2006, Pages 229-245 (Special issue on Managing security policies: Modeling, verification and configuration).

6. Xinwen Zhang, Francesco Parisi-Presicce, Ravi Sandhu and Jaehong Park, "Formal Model and Policy Specification of Usage Control." *ACM Transactions on Information and System Security*, Volume 8, Number 4, November 2005, pages 351-387.

7. Xinwen Zhang, Songqing Chen, and Ravi Sandhu, "Enhancing Data Authenticity and Integrity in P2P Systems." *IEEE Internet Computing*, Volume 9, Number 6, November-December 2005, pages 42-49.

8. Elisa Bertino and Ravi Sandhu. "Database Security-Concepts, Approaches, and Challenges." *IEEE Transactions on Dependable and Secure Computing*, Volume 2, Number 1, March 2005, pages 2-19.

9. Jaehong Park and Ravi Sandhu. "The $UCON_{ABC}$ Usage Control Model." *ACM Transactions on Information and System Security*, Volume 7, Number 1, February 2004, pages 128-174.

10. Ravi Sandhu, "Good-Enough Security: Toward a Pragmatic Business-Driven Discipline ." *IEEE Internet Computing*, Volume 7, Number 1, January-February 2003, pages 66-68.

11. David F. Ferraiolo, Ravi Sandhu, Serban Gavrila, D. Richard Kuhn and Ramaswamy Chandramouli. "Proposed NIST Standard for Role-Based Access Control." *ACM Transactions on Information and System Security*, Volume 4, Number 3, August 2001, pages 224-274.

12. Joon Park, Ravi Sandhu and Gail-Joon Ahn. "Role-Based Access Control on the Web." *ACM Transactions on Information and System Security*, Volume 4, Number 1, February 2001, pages 37-71.

13. Gail-Joon Ahn and Ravi Sandhu. "Decentralized User Group Assignment in Windows NT." *Journal of Systems and Software*, Volume 56, Issue 1, February 2001, pages 39-49.

14. Gail-Joon Ahn and Ravi Sandhu. "Role-Based Authorization Constraints Specification." *ACM Transactions on Information and System Security*, Volume 3, Number 4, November 2000, pages 207-226.

15. Joon Park and Ravi Sandhu, "Secure Cookies on the Web." *IEEE Internet Computing*, Volume 4, Number 4, July 2000, pages 36-45.

16. Sylvia Osborn, Ravi Sandhu and Qamar Munawer. "Configuring Role-Based Access Control to Enforce Mandatory and Discretionary Access Control Policies." *ACM Transactions on Information and System Security*, Volume 3, Number 2, May 2000, pages 85-106.

17. Ravi Sandhu, Venkata Bhamidipati and Qamar Munawer. "The ARBAC97 Model for Role-Based Administration of Roles." *ACM Transactions on Information and System Security*, Volume 2, Number 1, February 1999, pages 105-135.

18. Ravi Sandhu and Venkata Bhamidipati, "Role-Based Administration of User-Role Assignment: The URA97 Model and its Oracle Implementation." *Journal of Computer Security*, Volume 7, 1999, pages 317-342.

19. Gail-Joon Ahn and Ravi Sandhu, "Towards Role-Based Administration in Network Information Services." *Journal of Network and Computer Applications*, Volume 22, Number 3, July 1999, pages 199–213.

20. Ravi Sandhu and Fang Chen. "The Multilevel Relational Data Model." *ACM Transactions on Information and System Security*, Volume 1, Number 1, November 1998, pages 93-132.

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