


Stresa, Italy  
June 3–5, 2009



acm

Association for  
Computing Machinery

*Advancing Computing as a Science & Profession*



# SACMAT'09

Proceedings of the 14th ACM

**Symposium on Access Control Models and Technologies**

*Sponsored by:*

**ACM SIGSAC**

*Supported by:*

**University of Insubria, Arizona State University,  
& University of Pittsburgh**

# Table of Contents

<b>SACMAT 2009 Symposium Organization</b> .....	viii
---	------

## Session 1: Keynote

- **Challenges and Opportunities for Virtualized Security in the Clouds** ..... 1  
Frank Siebenlist (*Argonne National Laboratory & University of Chicago*)

## Session 2: Security Analysis and Verification

Session Chair: Mahesh V. Tripunitara (*University of Waterloo*)

- **Safety in Discretionary Access Control for Logic-based Publish-Subscribe Systems** ..... 3  
Kazuhiro Minami, Nikita Borisov, Carl A. Gunter (*University of Illinois at Urbana-Champaign*)
- **Ensuring Spatio-Temporal Access Control for Real-World Applications** ..... 13  
Manachai Toahchoodee, Indrakshi Ray (*Colorado State University*),  
Kyriakos Anastasakis (*University of Birmingham*),  
Geri Georg (*Colorado State University*),  
Behzad Bordbar (*University of Birmingham*)
- **An Efficient Framework for User Authorization Queries in RBAC Systems** ..... 23  
Guneshi T. Wickramaarachchi, Wahbeh H. Qardaji, Ninghui Li (*Purdue University*)
- **Towards Formal Security Analysis of GTRBAC using Timed Automata** ..... 33  
Samrat Mondal, Shamik Sural (*IIT Kharagpur*),  
Vijayalakshmi Atluri (*Rutgers University*)

## Session 3: Multidomain Policy Integration

Session Chair: Adam J. Lee (*University of Pittsburgh*)

- **xDomain: Cross-border Proofs of Access** ..... 43  
Lujo Bauer (*Carnegie Mellon University*), Limin Jia (*University of Pennsylvania*),  
Michael K. Reiter (*University of North Carolina at Chapel Hill*),  
David Swasey (*Carnegie Mellon University*)
- **Dynamic Mandatory Access Control for Multiple Stakeholders** ..... 53  
Vikhyath Rao, Trent Jaeger (*The Pennsylvania State University*)
- **An Algebra for Fine-Grained Integration of XACML Policies** ..... 63  
Prathima Rao (*Purdue University*), Dan Lin (*Missouri University of Science & Technology*),  
Elisa Bertino, Ninghui Li (*Purdue University*), Jorge Lobo (*IBM T. J. Watson Research Center*)

## Session 4: Panel I

- **Usability Meets Access Control: Challenges and Research Opportunities** ..... 73  
Konstantin Beznosov (*University of British Columbia*), Philip Inglesant (*University College London*),  
Jorge Lobo (*IBM Research*), Rob Reeder (*Microsoft Research*),  
Mary Ellen Zurko (*IBM Software Group*)

## Session 5: Role Engineering

Session Chair: Vijay Atluri (*Rutgers University*)

- **Automating Role-based Provisioning by Learning from Examples** ..... 75  
Qun Ni (*Purdue University*), Jorge Lobo, Seraphin Calo, Pankaj Rohatgi (*IBM T. J. Watson Research Center*),  
Elisa Bertino (*Purdue University*)
- **A Formal Framework to Elicit Roles with Business Meaning in RBAC Systems** ..... 85  
Alessandro Colantonio (*Engiweb Security*), Roberto Di Pietro (*Università di Roma Tre*),  
Alberto Ocello (*Engiweb Security*), Nino Vincenzo Verde (*Università di Roma Tre*)
- **Evaluating Role Mining Algorithms** ..... 95  
Ian Molloy, Ninghui Li, Tiancheng Li, Ziqing Mao, Qihua Wang (*Purdue University*),  
Jorge Lobo (*IBM T. J. Watson Research Center*)

## Session 6: Secure Sharing and Policy Combination

Session Chair: Elena Ferrari (*University of Insubria*)

- **A Decision Support System for Secure Information Sharing** ..... 105  
Achille-Fokoue, Mudhakar Srivatsa, Pankaj Rohatgi (*IBM T. J. Watson Research Center*),  
Peter Wrobel (*CESG*), John Yesberg (*Defense Sciences and Technologies Laboratory*)
- **Foundations for Group-Centric Secure Information Sharing Models** ..... 115  
Ram Krishnan (*George Mason University*),  
Ravi Sandhu, Jianwei Niu (*University of Texas at San Antonio*),  
William H. Winsborough (*University of Texas at San Antonio*)
- **Patient-centric Authorization Framework for Sharing Electronic Health Records** ..... 125  
Jing Jin (*University of North Carolina at Charlotte*),  
Gail-Joon Ahn, Hongxin Hu (*Arizona State University*),  
Michael J. Covington (*Intel Corporation*),  
Xinwen Zhang (*Samsung Information Systems America*)
- **Access Control Policy Combining: Theory Meets Practice** ..... 135  
Ninghui Li, Qihua Wang, Wabbeh Qardaji, Elisa Bertino, Prathima Rao (*Purdue University*),  
Jorge Lobo (*IBM T. J. Watson Research Center*),  
Dan Lin (*Missouri University of Science and Technology*)

## Session 7: XACML and RBAC

Session Chair: Lujo Bauer (*Carnegie Mellon University*)

- **Supporting RBAC with XACML+OWL** ..... 145  
Rodolfo Ferrini, Elisa Bertino (*Purdue University*)
- **Efficient Access Enforcement in Distributed Role-Based Access Control (RBAC) Deployments** ..... 155  
Mahesh V. Tripunitara (*University of Waterloo*), Bogdan Carbunar (*Motorola Inc.*)
- **Symbolic Reachability Analysis for Parameterized Administrative Role Based Access Control** ..... 165  
Scott D. Stoller (*Stony Brook University*), Ping Yang, Mikhail Gofman (*Binghamton University*),  
C. R. Ramakrishnan (*Stony Brook University*)

## Session 8: Panel II

- **Spatio-temporal Access Control: Challenges and Applications** ..... 175  
Maria Luisa Damiani (*University of Milan*), Herve Martin (*University of Grenoble*),  
Yucel Saygin (*Sabanci University*),  
Maria Rita Spada (*Wind Telecomunicazioni*),  
Cedric Ulmer (*SAP Labs France SAS*)

## Session 9: Model/Meta-model and Extensions

Session Chair: Jason Crampton (*University of London*)

- **A Semantic Web Based Framework for Social Network Access Control** ..... 177  
Barbara Carminati, Elena Ferrari (*University of Insubria*),  
Raymond Heatherly, Murat Kantarcioglu, Bhavani Thurainsingham (*The University of Texas at Dallas*)
- **The Next 700 Access Control Models or a Unifying Meta-Model?** ..... 187  
Steve Barker (*King's College London*)
- **Extending Access Control Models with Break-glass** ..... 197  
Achim D. Brucker, Helmut Petritsch (*SAP Research*)

## Session 10: Trust and Access Control in Systems

Session Chair: Indrakshi Ray (*Colorado State University*)

- **Working Set-Based Access Control for Network File Systems** ..... 207  
Stephen Smaldone, Vinod Ganapathy, Liviu Ifode (*Rutgers, The State University of New Jersey*)

- **Towards a Dynamic and Composable Model of Trust** .....217  
Adam J. Lee (*University of Pittsburgh*), Ting Yu (*North Carolina State University*)
- **Analysis of Virtual Machine System Policies** ..... 227  
Sandra Rueda, Hayawardh Vijayakumar, Trent Jaeger (*The Pennsylvania State University*)
- **Trojan Horse Resistant Discretionary Access Control** ..... 237  
Ziqing Mao, Ninghui Li, Hong Chen (*Purdue University*), Xuxian Jiang (*North Carolina State University*)

**Author Index**..... 247