Preface

What constitutes an identity, how do new technologies affect identity, how do we manage identities in a globally networked information society? The increasing diversity of Information and Communication Technologies and their equally wide range of usage in personal, professional and official capacities raise challenging questions of identity in a variety of contexts.

The aim of the IFIP/FIDIS Summer Schools has been to encourage young academic and industry entrants to share their own ideas about the privacy and identity management and to build up collegial relationships with others. As such, the Summer Schools have been introducing participants to the social implications of Information Technology through the process of informed discussion.

The 4th International Summer School took place in Brno, Czech Republic, from the 1st to the 7th September 2008. It was organized by IFIP (International Federation for Information Processing) working groups 9.2 (Social Accountability), 9.6/11.7 (IT Misuse and the Law) and 11.6 (Identity Management) in cooperation with the EU FP6 Network of Excellence FIDIS and Masaryk University in Brno. The focus of the event was on security and privacy issues in the Internet environment, and namely aspects of Identity Management in relation to current and future technologies in a variety of contexts.

Following the holistic approach advocated by the involved IFIP working groups and by the FIDIS Network of Excellence, a diverse group of participants ranging from young doctoral students to leading researchers in the field engaged in discussions, dialogues and debates in an informal and supportive setting. The interdisciplinary, and international, emphasis of the Summer School allowed for a broader understanding of the issues in the technical and social spheres.

On the first five days (1st to the 5th September), all topical sessions started with introductory lectures by invited speakers, followed by parallel workshops and seminars in the afternoons. The workshops consisted of short presentations based on the contributions submitted by participating PhD students, followed by active discussions. The weekend programme (6th to the 7th September) featured practical hands-on security & privacy workshops, namely a local version of the “Capture The Flag” exercise.

Contributions combining technical, social, ethical or legal perspectives were solicited. Keynote speeches provided the focus for the theme of the Summer School – Historic Perspectives on Software Security and Privacy, Wireless Security and Privacy, Multilateral Security for Reputation Systems, Ambient Law, ePassport Security, Virtual Communities and social and legal aspects, Mobile Identity Management, Security Standards and Privacy Management, Mass Surveillance and Data Retention as well as Anonymity and Censor Free Publishing – and the contributions from participants enhanced the ideas generated by the keynote speeches.

The Summer School was a very successful event. More than fifty delegates from twenty countries actively participated. We succeeded in initiating intensive
discussions between Ph.D. students and senior acknowledged researchers from different disciplines.

These proceedings include both keynote papers and submitted papers accepted by the Programme Committee, which have been presented at the Summer School. The review process consisted of two steps. In the first step, contributions for presentation at the Summer School were selected based on reviews of submitted short papers by the Summer School Programme Committee. The second step took place after the Summer School, when the authors had an opportunity to submit their final full papers addressing discussions at the Summer School. The submissions were again reviewed, by three Reviewers each, and those included in these proceedings were carefully selected by the International Summer School Programme Committee and by additional Reviewers according to common quality criteria.

It is our pleasure to thank the members of the Programme Committee, the additional reviewers, the members of the organising committee as well as all the speakers. Without their work and dedication, this Summer School would not have been possible. At least but not at last, we owe special thanks to Microsoft Research, FIDIS and IFIP for their financial support.

February 2009    Vashek Matyáš, Simone Fisher-Hübner, Daniel Cvrček, Petr Švenda
The Future of Identity in the Information Society -
Challenges for Privacy and Security, FIDIS/IFIP Internet
Security & Privacy Summer School

September 1st – 7th, 2008, Brno, Czech Republic
http://www.buslab.org/SummerSchool2008/

General chair
Vashek Matyáš ................................................... Masaryk University, Czech Republic

Programme Committee Co-Chairs:
Simone Fischer-Hübner ................................................... Karlstad University, Sweden
Daniel Cvrček ........................................................ University of Cambridge, UK

Program Committee
Geoff Busby ........................................................ Independent Consultant, UK
David-Olivier Jaquet-Chiffelle ...... Berne University of Applied Sciences, Switzerland
George Danezis ........................................................ Microsoft Research Cambridge, UK
Penny Duquenoy ........................................... Middlesex University, UK, IFIP WG 9.2 chair
Mark Gasson ...................................................... Reading University, UK
Dieter Gollmann ..................................... Technische Universität Hamburg-Harburg, Germany
Marit Hansen ....................................................... Independent Center for Privacy Protection, Kiel, Germany
Dogan Kesdogan ................................................ Siegen University, Germany
Kai Kimppa ........................................................ University of Turku, Finland
Mathias Klang ....................................................... IT University/University of Göteborg, Sweden
Elisabeth de Leeuw .................................... Ordina, Netherlands, IFIP WG 11.6 chair
Ronald Leenes .................................................... Tilburg University, Netherlands
Marc van Lieshout .............................................. TNO, Netherlands
Javier Lopez ........................................................ University of Malaga, Spain
Leonardo Martucci .............................................. Karlstad University, Sweden
Steven Murdoch ............................................... University of Cambridge, UK
Lexi Pimenidis ................................................... Siegen University, Germany
Kai Rannenberg .................. Goethe University Frankfurt, Germany, IFIP TC11 chair
Zdeněk Říha ........................................ Masaryk University, Brno, Czech Republic
Jozef Vyskoč .................................................. VaF, Slovakia
Diane Whitehouse ................................. The Castlegate Consultancy, UK
Louise Yngström .................................. Stockholm University/KTH, Sweden
Albin Zuccato ............................................................. TeliaSonera, Sweden

Additional Reviewer:
Rose Mharie Åhlfeld .................................................. Skövde University, Sweden

Local Organizing Committee
Petr Švenda (Organizing Committee Chair) ...... Masaryk University, Czech Republic
Jan Krhovják ........................................ Masaryk University, Czech Republic
Marek Kumpošt ............................................... Masaryk University, Czech Republic
Václav Lorenc ............................................... Masaryk University, Czech Republic
Kamil Malinka .................................................. Brno University of Technology, Czech Republic
Andriy Stetsko ............................................... Masaryk University, Czech Republic
Jiří Kůr .................................................. Masaryk University, Czech Republic
# Table of Contents

## Historic Perspective - Lessons Learned Or Not?

Software Security – The Dangers of Abstraction
*Dieter Gollmann* ........................................................................................................... 1

History of Privacy
*Jan Holvast* ..................................................................................................................... 13

## Information, Ethics, Identifiers

Applied Ethics and eHealth: Principles, Identity, and RFID
*Diane Whitehouse, Penny Duquenoy* .............................................................. 44

Identity Management Systems in Healthcare: the Issue of Patient Identifiers
*Els Soenens* .................................................................................................................. 58

A Survey on Transparency Tools for Enhancing Privacy
*Hans Hedbom* ............................................................................................................. 69

## Privacy Issues

When Spiders Bite: The Use, Misuse, and Unintended Consequences of “Silent Information”
*Thomas P. Keenan* ................................................................................................... 85

Data Retention and Anonymity Services, Introducing a New Class of Realistic Adversary Models
*Stefan Berthold, Rainer Böhme, Stefan Köpsell* .................................................. 95

A Survey on Non-transferable Anonymous Credentials
*Sebastian Pape* ........................................................................................................ 110

## Wireless Security and Privacy

Security of Wireless Communication
*Daniel Cvrček* ............................................................................................................ 122
Enhancing Multilateral Security in and by Reputation Systems
Sandra Steinbrecher .......................................................................................................... 139

Challenges of Emerging Technologies
An Overview of Electronic Passport Security Features
Zdeněk Říha ........................................................................................................................ 156
Location Privacy Issues in Wireless Sensor Networks
Jiří Kůr, Andriy Stetsko .................................................................................................. 166

Privacy-enhanced and Anonymous Applications
Design and Analysis of a Practical E-voting Protocol
Marián Novotný ............................................................................................................. 176

Business and Organisational Perspectives
Comparing Identity Management Frameworks in a Business Context
Jaap-Henk Hoepman, Rieks Joosten, Johanneke Siljée .................................................. 190
Security Policy Satisfiability and Failure Resilience in Workflows
Meghna Lowalekar, Ritesh Kumar Tiwari, Kamalakar Karlapalem ............................. 204

Privacy Awareness and Individual Control
User Control Problems and Taking User Empowerment Further
Rowena Rodrigues ......................................................................................................... 218
Privacy Awareness – A Means to Solve the Privacy Paradox?
Stefanie Pötsch ................................................................................................................ 234
Testing Privacy Awareness
Mike Bergmann .............................................................................................................. 246
Privacy & Identity Management
Martin Meints ................................................................................................................ 264

Anonymity Attacks and Analysis
Investigating Anonymity in Group Based Anonymous Authentication
Daniel Slamanig, Christian Stingl .................................................................................. 279